PRELIMINARY DRAFT – FOR DISCUSSION PURPOSES ONLY WITH EAST SAN JOAQUIN WATER QUALITY COALITION

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM ORDER NUMBER R5-2012-XXXX FOR THE EAST SAN JOAQUIN WATER QUALITY COALITION

I. Introduction

This Monitoring and Reporting Program (MRP) is issued pursuant to the California Water Code (Water Code) section 13267 which authorizes the California Regional Water Quality Control Board, Central Valley Region (hereafter Central Valley Water Board), to require preparation and submittal of technical and monitoring reports. As a recognized third-party entity representing individual operators of agricultural lands under General Waste Discharge Order No. R5-2012-XXXX, the East San Joaquin Water Quality Coalition (Coalition) shall not implement any changes to this MRP unless a revised MRP is issued by the Central Valley Water Board or the Executive Officer.

This MRP establishes specific surface and ground water monitoring, reporting, and electronic data deliverable requirements for the Coalition. This MRP includes numeric surface and groundwater quality objectives (Attachment I). Monitoring data collected to meet the requirements of the ILRP must have been collected and analyzed in a manner that assures the quality of the data. The Coalition must follow sampling and analytical procedures as specified in the attached Quality Assurance Project Plan (QAPP) Guidelines (Attachment H). A QAPP shall be developed by the Coalition and shall include site-specific information and field and laboratory quality assurance requirements. A QAPP that meets the requirements of Attachment H is to be submitted to the Central Valley Water Board within six months from the date of approval of this Order.

Due to the nature of agricultural operations, the monitoring parameters for surface waters will be reviewed on a routine basis so that the constituents of concern are monitored during timeframes when they are most likely to affect water quality.

This MRP Order becomes effective on XX, XXX, XXXX.

II. MRP Goals and Objectives

NOTE – BOARD STAFF STILL NEED TO REVIEW THE QUESTIONS/OBJECTIVES FOR CONSISTENCY AND DETERMINE WHETHER BOTH ARE NEEDED. WE WILL ALSO BE EVALUATING WHETHER THE QUESTIONS/OBJECTIVES NEED TO BE STATED DIFFERENTLY FOR SURFACE WATER AND GROUND WATER MONITORING

The overall goals of water quality monitoring and assessment efforts are to determine whether receiving waters to which waste from irrigated lands discharge are in compliance with applicable water quality objectives, TMDLs, and implementation plans in the Basin Plan, and to evaluate the effectiveness of implemented management practices in achieving BPTC/best efforts. To meet these goals, the Coalition must address the identified MRP

water monitoring objectives. These objectives are consistent with the NPS Policy and include the following:

1. Determine whether the discharge of waste from irrigated lands within the Coalition Group boundaries causes or contributes to exceedances of applicable water quality standards or causes nuisance in receiving waters;
2. Provide information about the Coalition Group area characteristics, including but not limited to, land use, crops grown, chemicals used, and management practices implemented;
3. Determine the effectiveness of management practices implemented to address exceedances of applicable water quality standards;
4. Determine which management practices are most effective in reducing wastes discharged to surface and ground waters from irrigated lands;
5. Specify details about monitoring periods, parameters, protocols, and quality assurance; and
6. Evaluate the Coalition Group's compliance with the terms and conditions of the WDR Order.

The requirements of this MRP are designed to ensure that these objectives are met.

The five Program questions listed below will assist the Coalition in producing information to achieve the objectives. The Central Valley Water Board recognizes that the Coalition will not be able to address all five Program questions at one time, given the complexity of agricultural discharges to surface and ground waters and identification of sources, the process needed to assess and implement effective management practices, and other issues.

Question 1: Are conditions in waters of the State that receive discharges of wastes from irrigated lands within the Coalition Group boundaries, as a result of activities within those boundaries, protective of beneficial uses?

Question 2: What is the magnitude and extent of water quality problems in waters of the State that receive agricultural drainage or are affected by other irrigated agriculture activities within the Coalition's boundaries, as determined using monitoring information?

Question 3: What are the contributing source(s) from irrigated agriculture to the water quality problems in waters of the State that receive agricultural drainage or are affected by other irrigated agriculture activities within the Coalition's boundaries?

Question 4: What are the management practices that are being implemented to reduce the impacts of irrigated agriculture on waters of the State within the Coalition's boundaries and where are they being applied?

Question 5: Are water quality conditions in waters of the State within the Coalition's boundaries getting better or worse through implementation of management practices?

III. Surface Water Requirements

A. Data Assessment

The Coalition shall submit an initial Surface Water Quality Data Assessment Report (Data Report) within six months of adoption of this MRP Order. The Data Report must provide a summary and discussion of results from the Coalition's monitoring program. The Data Report may also include data from other sources (e.g. SWAMP, DPR, USGS) to support the Coalition's characterization of water quality conditions. The Coalition shall identify any gaps or deficiencies in monitoring coverage. An update of the Data Assessment Report will be required every five years.

B. Monitoring Strategy

The Coalition will utilize three different types of monitoring sites, including: 1) fixed, long-term trend sites (Core sites); 2) rotating Assessment sites; and 3) Special Project sites. Types of monitoring shall include Assessment Monitoring and Special Project Monitoring. Note that the Coalition's existing Core sites are equivalent to the fixed, long-term trend sites referred to herein.

For monitoring purposes, the Coalition designated six zones within their area based on hydrology, crop types, land use, soil types, and rain fall (map?). Core and Assessment sites were selected within each zone to represent a diversity of water body sizes and flows and different cropping patterns. Additional description of this strategy can be found in the Coalition's August 25, 2008 MRPP (See pages 8-27 and 33-38).

1. Long-term Trend Sites (Core Sites)

The Core sites that are designated within each zone shall be monitored as fixed, long-term trend monitoring sites. Monitoring at these sites must be designed to support statistically valid data analyses of long-term data sets which can then be utilized to determine whether receiving water quality is changing. Assessment level monitoring shall be conducted at Core sites for two consecutive years, followed by two years of no monitoring, unless Special Project monitoring is required or monitoring of other parameters of concern are requested by the Central Valley Water Board Executive Officer. If Special Project monitoring is required, only the constituents being addressed need to be monitored during the non-assessment years.

2. Assessment Sites

In their 2008 MRPP, the Coalition identified anywhere from 3 to 11 rotating assessment monitoring sites within each of the six zones, depending on the number deemed necessary to adequately characterize surface water quality in all waters of the State with the Coalition region. The Coalition shall conduct assessment level monitoring at the designated Assessment sites (map) according to the strategy identified in the 2008 MRPP. In each zone, Assessment sites will be monitored for two years and rotated every two years, which will allow for the characterization of a large number of water bodies throughout the region and over time. Rotation will be continuous so that any given water body within a zone will be reassessed on a regular basis.

3. Special Project Sites

In addition to Core and Assessment Sites, the Coalition shall designate Special Project Sites as needed to address implementation of a management plan or a TMDL; to evaluate commodity or management practice-specific effects on identified water quality problems; or to evaluate sources of identified water quality problems.

The Executive Officer may require the Coalition to conduct local or site-specific monitoring where assessment monitoring identifies a localized water quality problem. Core sites and Assessment sites where management plans are required will also become Special Project Sites. As such, monitoring requirements related to both types of sites shall be implemented.

4. Representative Monitoring

The Coalition's monitoring strategy may rely on representative monitoring to characterize surface water quality conditions in their region. However, representative monitoring should only be utilized on a limited basis where direct monitoring is not feasible or is not likely to provide reliable results. A technically sound justification for using representative monitoring must be provided. Coalition members within watershed areas that are represented by monitoring in another watershed must apply all management plan requirements associated with the representative monitoring site.

C. Monitoring Locations

The monitoring sites identified in this MRP are sites that are currently monitored by the Coalition to meet ILRP requirements. This includes 33 rotating Assessment Monitoring sites and six (6) Core sites for trend monitoring. The description and rationale for selection of the monitoring sites is described in the Coalition's August 25, 2008 MRPP (see Monitoring Strategy, pages 35-40). A description of each monitoring site subwatershed is provided on pages 41-51 of the MRPP. A map of each site subwatershed is provided in Attachment II of the MRPP. The monitoring sites are suitable to characterize water quality for surface waters of the State that may be affected by irrigated agriculture within the Coalition's boundaries. The sites are identified in Table 1 below.

Table 1. East San Joaquin Coalition Core and Assessment Monitoring Sites

ID	Zone	Monitoring Type	Site Name	Station Code	Latitude	Longitude
1	6	Assessment	Ash Slough @ Ave 21	545XASAAT	37.05450	-120.41580
2	4	Assessment	Bear Creek @ Kibby Rd	535XBCAKR	37.31280	-120.41380
3	6	Assessment	Berenda Slough along Ave 18 1/2	545XBSAAE	37.01820	-120.32650
4	4	Assessment	Black Rascal Creek @ Yosemite Rd	535BRCAYR	37.33210	-120.39470
5	1	Assessment	Burnett Lateral @ 28 Mile Rd	535BLATMR	37.80343	-120.83992
6	4	Assessment	Canal Creek @ West Bellevue Rd	535CCAWBR	37.36075	-120.54941
A	6	Core	Cottonwood Creek @ Rd 20	545XCCART	36.8686	-120.1818
7	5	Assessment	Deadman Creek @ Gurr Rd	535XDCAGR	37.19360	-120.56120
8	5	Assessment	Deadman Creek @ Hwy 59	535DMCAHF	37.19810	-120.48690

ID	Zone	Monitoring Type	Site Name	Station Code	Latitude	Longitude
9	6	Assessment	Dry Creek @ Rd 18	545XDCARE	36.98180	-120.21950
B	1	Core	Dry Creek @ Wellsford Rd	535XDCAWR	37.6602	-120.8743
C	5	Core	Duck Slough @ Gurr Rd	535XDSAGR	37.2142	-120.5596
10	5	Assessment	Duck Slough @ Hwy 99	535XDSAHN	37.25010	-120.41000
11	2	Assessment	Hatch Drain @ Tuolumne Rd	535XHDATR	37.51490	-121.01220
D	3	Core	Highline Canal @ Hwy 99	535XHCHNN	37.4153	-120.7557
12	3	Assessment	Highline Canal @ Lombardy Ave	535XHCHNN	37.45560	-120.72070
13	2	Assessment	Hilmar Drain @ Central Ave	535XHDACA	37.39060	-120.95820
14	4	Assessment	Howard Lateral @ Hwy 140	535XHLAHO	37.30790	-120.78200
15	2	Assessment	Lateral 2 1/2 near Keyes Rd	535LTHNKR	37.54780	-121.09274
16	2	Assessment	Lateral 5 1/2 @ South Blaker Rd	535LFHASB	37.45823	-120.96726
17	2	Assessment	Lateral 6 and 7 @ Central Ave	535LSSACA	37.39779	-120.95971
18	2	Assessment	Levee Drain @ Carpenter Rd	535XLDACR	37.47903	-121.03012
19	4	Assessment	Livingston Drain @ Robin Ave	535XLDARA	37.31690	-120.74230
20	2	Assessment	Lower Stevinson @ Faith Home Rd	535LSAFHR	37.37238	-120.92318
21	4	Assessment	McCoy Lateral @ Hwy 140	535XMLAHO	37.30945	-120.78759
E	4	Core	Merced River @ Santa Fe	535XMRSFD	37.4271	-120.6721
22	5	Assessment	Miles Creek @ Reilly Rd	535XMCARR	37.25820	-120.47550
23	1	Assessment	Mootz Drain @ Langworth Rd	535XMDALR	37.70582	-120.89303
35	1	Assessment	Mootz Drain Downstream of Langworth Pond	535XMDDLP	37.70551	-120.89438
24	3	Assessment	Mustang Creek @ East Ave	535XMCAEA	37.49180	-120.68390
25	3	Assessment	Peaslee Creek @ Lake Rd	535XPCALR	37.61769	-120.50733
F	2	Core	Prairie Flower Drain @ Crows Landing Rd	535XPFDCL	37.4422	-121.0024
26	1	Assessment	Rodden Creek @ Rodden Rd	535XRCARD	37.79042	-120.80790
27	4	Assessment	Silva Drain @ Meadow Dr	535XSDAMD	37.42910	-120.62610
28	4	Assessment	South Slough @ Quinley Rd	535XSSAQR	37.26990	-120.59710
29	4	Assessment	Unnamed Drain @ Cemetary Rd	535XUDACR	37.32835	-120.92290
30	2	Assessment	Unnamed Drain @ Hogin Rd	535XUDAHR	37.43129	-120.99380
31	4	Assessment	Unnamed Drain @ Hwy 140	535XUDAHO	37.31370	-120.89110
32	4	Assessment	Unnamed Drain near Bear Ck @ West Bose Rd	535UNDAWB	37.29159	-120.81410
33	2	Assessment	Westport Drain @ Vivian Rd	535XWDAVR	37.53680	-121.04860
34	2	Assessment	Yori Grove Drain @ East Taylor Rd	535YGDETR	37.53690	-120.98346

D. Monitoring Requirements and Schedule

1. Assessment Monitoring

Assessment monitoring consists of a comprehensive suite of parameters that allows an evaluation of the condition of a water body and determination of whether irrigated agriculture operations are contributing to any water quality problems.

Assessment monitoring shall take place at newly established monitoring sites and at sites that have not been fully characterized. Once a site is fully characterized, monitoring shall be conducted on a regular basis at Core sites and rotating Assessment sites as described under Section III, subsection C. Monitoring Strategy.

To be considered fully characterized, a site must have a minimum of two years of monitoring results for the parameter(s) of interest during the time periods when detections or exceedances would be likely to occur and at a frequency that allows detection, based on use patterns, chemical characteristics, previous data, or other considerations. The purpose of periodically repeating the Assessment Monitoring analytical regime is to evaluate the effects of changes in agricultural land-use and management practices and provide information about long-term trends and effectiveness of the management practices.

Assessment monitoring shall occur at accessible sites and consist of the general water quality parameters, nutrients, pathogens, water column and sediment toxicity, pesticides, and metals identified in Section E3. As described in Section E3, the Coalition shall identify a specific set of assessment monitoring parameters for each site subwatershed by 1 August of the year in which Assessment monitoring begins. An Assessment monitoring year is defined according to water year, which is 1 October through 30 September.

The Central Valley Water Board Executive Officer may request that a parameter(s) of concern continue to be monitored at specific sites during non-assessment years. Parameters of concern may be selected from toxicity, pesticides, or metals analyses that result in an exceedance or detection during Assessment monitoring.

Additionally, monitoring must include water bodies and constituents on the Clean Water Act section 303(d) list (303(d) list) when agriculture is identified as a contributing source. The Coalition shall conduct appropriate monitoring when implementing an applicable Total Maximum Daily Load (TMDL).

Sampling events shall be scheduled to attempt to capture at least two storm runoff events per year, except where a different frequency has been requested or approved by the Executive Officer.

2. Monitoring Schedule and Frequency

The Coalition shall identify the appropriate monitoring periods (e.g., months, seasons) for all parameters that require testing. For registered pesticides, the monitoring periods shall be determined utilizing the three previous years of available PUR data. Based on an analysis of the PUR data set, the months of sample collection for each pesticide will be selected using the percent of total irrigated acres treated per month of application. Summed together, the selected monitoring months should encompass approximately 85 percent or more of the total acres to which each pesticide was applied. In general, any single month that accounts for more than five percent of the total acreage treated should be considered for monitoring.

The Coalition may also evaluate pesticide use trends to determine appropriate monitoring months.

For metals, the monitoring periods shall be determined utilizing previous monitoring results, knowledge of agricultural use patterns (if applicable), chemical characteristics, and other applicable criteria. All other required parameters shall be monitored according to an approved schedule and frequency during the years in which assessment monitoring is conducted.

The timing of data collection must be when beneficial use impact could occur (if there is a temporal component to the beneficial use) and when the pollutant is most likely to be present. The frequency of data collection must be sufficient to allow determination of compliance with the relevant numeric water quality objective(s) or criteria being applied to interpret compliance with narrative objectives.

Based on the Coalition's completion of prior sampling events and monitoring results, assessment monitoring at Core Sites and Assessment Sites will be conducted from 20XX through 20XX according to the schedule in Table 2. The Coalition may submit written requests for the removal or addition of monitoring sites or parameters, or to modify the monitoring frequency for approval by the Executive Officer.

3. Monitoring Parameters

Water quality and flow monitoring shall be used to assess the wastes in discharges from irrigated lands to surface waters and to evaluate the effectiveness of management practice implementation efforts. Water quality is evaluated with both field-measured parameters and laboratory analytical data. Field measured parameters shall include flow, pH, electrical conductivity, temperature, and dissolved oxygen. Laboratory analytical data shall include, but not be limited to, the constituents, parameters, and tests listed in Table 2 of this MRP. Site conditions shall be documented by taking digital photos at every monitoring site during each monitoring event. The pesticide and metals parameters to be monitored shall be identified according to the criteria discussed below.

303(d) listed pollutants shall also be monitored if agriculture is identified as a contributing source. When implementing an applicable TMDL, the Coalition shall conduct monitoring of the appropriate constituent(s) at appropriate sites and according to a schedule and frequency that will meet the TMDL requirements in the Basin Plan. The organochlorine pesticides identified in Table 2 of this MRP shall be monitored during Assessment monitoring years according to a schedule and frequency determined by the Coalition and approved by the Executive Officer.

The Coalition shall identify the pesticide (current use) and metal monitoring parameters for each site subwatershed prior to the beginning of each assessment monitoring period. The specific pesticides to be monitored at sites within each zone shall be determined (in part) using three consecutive years (most recent available) of pesticide use information and the Coalition's previous monitoring results. Based on this information, the Coalition shall identify all pesticides applied or detected during the three-year PUR evaluation period. Pesticides (current use) that have not been applied within a site subwatershed area for three consecutive years and have not

been detected during Coalition Group monitoring will not require monitoring during the subsequent period of Assessment monitoring.

Pesticides (current use) that have been applied and/or detected in a site subwatershed area during all or part of three consecutive years of PUR data will be monitored, unless exclusion from monitoring is justified through an evaluation of additional factors. Additional factors that may be considered to determine if monitoring of a pesticide is warranted include: the proportion of acres treated out of total irrigated acres; total pounds or pounds per acre of pesticide applied; application rates; LC50 or EC50 toxicity thresholds; prior monitoring results; availability of reliable analytical methods; and chemical characteristics of the parameter, such as mobility or half-life. The Coalition may also consider pesticide-use trends when evaluating pesticides that may need to be monitored. A complete documentation of the evaluations must be provided, including a table or chart that summarizes the three previous years of pesticide use data.

The metals parameters to be monitored at sites within each site subwatershed shall be determined through an evaluation of several factors, which taken together will provide the basis for including or excluding each metal. These evaluation factors shall include, but not be limited to: documented use of the metal applied to lands for agricultural purposes; prior monitoring results; geological or hydrological conditions; and mobilization or concentration through agricultural operations. The Coalition may also consider other factors such as acute and chronic toxicity thresholds and chemical characteristics of the metals. The Coalition shall evaluate the metals parameters listed in Table 2 to determine which metals warrant monitoring for each subwatershed. A complete documentation of the evaluations must be provided.

The Coalition shall identify the pesticide and metals parameters to be monitored within each site subwatershed area by 1 August of the year in which Assessment monitoring begins.

TABLE 2: Monitoring Parameters

	Measured Parameter	Matrix	Assessment	
Field Measurements	Flow (cfs)	Water	x	
	Photo Documentation	Site	x	
	Electrical Conductivity (µs/cm)	Water	x	
	Temperature (ºC)	Water	x	
	pH	Water	x	
	Dissolved Oxygen (mg/L)	Water	x	
Drinking Water	E. Coli	Water	x	
	Total Organic Carbon (TOC)	Water	x	
Gen Phys	Hardness (as CACO3)	Water	x	
	Total Suspended Solids (TSS)	Water	x	
	Turbidity	Water	x	

TABLE 2: Monitoring Parameters

	Measured Parameter	Matrix	Assessment	
Metals	Arsenic (total)	Water	TBD	
	Boron (total)	Water	TBD	
	Cadmium (total and dissolved)	Water	TBD	
	Copper (total and dissolved)	Water	TBD	
	Lead (total and dissolved)	Water	TBD	
	Molybdenum (total)	Water	TBD	
	Nickel (total and dissolved)	Water	TBD	
	Selenium (total)	Water	TBD	
	Zinc (total and dissolved)	Water	TBD	
Nutrients	Total Ammonia (as N)	Water	**x**	
	Unionized Ammonia (calc value)	Water	**x**	
	Nitrogen, Nitrate+Nitrite	Water	**x**	
	Total Kjeldahl Nitrogen	Water	**x**	
	Total Phosphorus as P	Water	**x**	
	Soluble Orthophosphate	Water	**x**	
Pesticides	Current use pesticides determined according to the criteria in Section IX.	Water	TBD	
303(d)	303(d) listed constituents to be monitored if agriculture is identified as a contributing source	Water or Sediment	TBD	
Group A OC Pesticides	Aldrin*	Water	TBD	
	a-BHC*	Water	TBD	
	b-BHC*	Water	TBD	
	d-BHC*	Water	TBD	
	g-BHC (Lindane)*	Water	TBD	
	a-Chlordane*	Water	TBD	
	g-Chlordane*	Water	TBD	
	Endosulfan I*	Water	TBD	
	Endosulfan II*	Water	TBD	
	Endosulfan Sulfate*	Water	TBD	
	Heptachlor*	Water	TBD	
	Heptachlor epoxide*	Water	TBD	
	Toxaphene*	Water	TBD	
OC Pest	Dicofol	Water	**x**	
	DDD(p,p')	Water	**x**	
	DDE(p,p')	Water	**x**	
	DDT(p,p')	Water	**x**	
	Dieldrin	Water	**x**	

TABLE 2: Monitoring Parameters

	Measured Parameter	Matrix	Assessment	
	Endrin	Water	x	
	Methoxychlor	Water	x	
Toxicity	Ceriodaphnia dubia	Water	x	
Toxicity	Pimephales promelas	Water	x	
Toxicity	Selenastrum capricornutum	Water	x	
Toxicity	Toxicity Identification Evaluation	Water	As needed, see Part II.E	
Toxicity	Hyalella azteca	Sediment Water	x	
Pesticides & Sediment Parameters	Bifenthrin	Both	As needed**	
Pesticides & Sediment Parameters	Cyfluthrin	Both	As needed	
Pesticides & Sediment Parameters	Cypermethrin	Both	As needed	
Pesticides & Sediment Parameters	Esfenvalerate/Fenvalerate	Both	As needed	
Pesticides & Sediment Parameters	Fenpropathrin	Both	As needed	
Pesticides & Sediment Parameters	Lambda cyhalothrin	Both	As needed	
Pesticides & Sediment Parameters	Permethrin	Both	As needed	
Pesticides & Sediment Parameters	Chlorpyrifos	Both	As needed	
Pesticides & Sediment Parameters	Total Organic Carbon	Both	x	
Pesticides & Sediment Parameters	Grain Size	Both	x	

* Group A pesticides will only be analyzed for water bodies that are 303(d) listed for Group A Pesticides, or that are directly tributary to stream segments that are 303(d) listed for Group A
** Sediment Toxicity Tests: For sediment samples measuring significant toxicity and ≥20% from Control, the sediment pesticide analysis will be performed. Water column pyrethroids and chlorpyrifos analyses shall be performed on water samples collected simultaneously with *Hyalella azteca* water column toxicity samples.

4. Aquatic Toxicity Testing

Discharge from irrigated agricultural operations to receiving waters and sediment must be evaluated using aquatic toxicity testing. The purpose of toxicity testing is to: 1) evaluate compliance with the narrative toxicity water quality objective; 2) identify the causes of toxicity when and where it is observed (e.g. metals, pesticides, ammonia, etc.); 3) evaluate any additive toxicity or synergistic effects due to the presence of multiple constituents; and 4) determine the sources of the toxicants identified.

Aquatic toxicity testing shall include *Ceriodaphnia dubia*, *Pimephales promelas*, and *Selenastrum capricornatum* in the water column. *Ceriodaphnia dubia and Pimephales promelas* testing shall follow the USEPA chronic testing methods.

Proposal for Alternative Testing Requirements:

Aquatic toxicity testing shall include *Ceriodaphnia dubia*, *Hyalella azteca*, Pimephales promelas, and *Selenastrum capricornatum* in the water column. *Ceriodaphnia dubia* testing shall follow the USEPA **chronic** testing methodology. *Hyalella azteca* water column testing shall be used to evaluate compliance with the

narrative toxicity water quality objective for the presence of constituents to which other test organisms are not typically sensitive (e.g. pyrethroids). This sample collection shall be timed to coincide with the periods these constituents are likely to be found in the water column.

Sampling and analysis for sediment toxicity testing utilizing *Hyalella azteca* shall be carried out at each monitoring location established by the Coalition for water quality monitoring, if appropriate sediment (i.e. silt, clay) is present at the site. If appropriate sediment is not present at the designated water quality monitoring site, an alternative site with appropriate sediment shall be designated for all sediment collection and toxicity testing events. Sediment samples shall be collected and analyzed for toxicity twice per year, with one sample collected between August 15 and October 15, and one sample collected between March 1 and April 30, during each year of Assessment monitoring. All sediment samples must be analyzed for total organic carbon (TOC) and grain size. The Executive Officer may request different sample collection timing and frequency under a Management Plan.

Sediment samples that show significant toxicity to *Hyalella azteca* at the end of an acceptable test and that exhibit ≥ 20% reduction in organism survival compared to the control will require pesticide analysis of the same sample in an effort to determine the cause of toxicity. The Coalition may also follow up with a sediment TIE when there is ≥ 50% reduction in test organism survival as compared to the laboratory control. Sediment TIEs are an optional tool.

Statistical analysis of aquatic toxicity test data shall utilize the USEPA Test of Significant Toxicity (TST) method (Reference) to determine whether significant toxicity is present.

Further details regarding requirements for TIE and dilution series and sample collection can be found in Attachment H (QAPP Guidance). Note: these additional details need to be added to our QAPP Guidance.

5. Water Quality Data Gaps and Source Identification

Assessment level monitoring is needed to determine whether irrigated agriculture is affecting surface water quality. The Coalition must monitor any parameter in a watershed that has been determined by the Central Valley Water Board or Executive Officer to be insufficiently monitored (i.e. a data gap exists) or that is identified in the Coalition's Water Quality Data Assessment Report.

Areas with identified surface water quality problems (e.g., exceedance of water quality objectives, degradation of water quality), where irrigated agriculture operations have not been identified as a source but may be a potential contributor will be required to conduct monitoring and applicable source studies (see Attachment C). A component of the assessment of the potential contribution of irrigated lands discharges to the surface water body may include an evaluation of the intensity and type of irrigated land use in the watershed; and the relevant geologic, chemical and hydrologic characteristics of the watershed.

In submitting source identification studies for Executive Officer approval, the Coalition must provide the justification for their proposed study design, specifically identifying how the study design will resolve any uncertainty regarding the potential irrigated agriculture contribution to the water quality problem. The proposed study must include an evaluation of the feasibility of conducting commodity specific field studies for those commodities that could potentially be associated with the pollutant of concern.

Where additional data collection is needed to determine the relative threat to water quality and to determine sources of identified threats, the Central Valley Water Board will prioritize data collection efforts.

Source identification studies are required for pH, dissolved oxygen, electrical conductivity, E. coli, fecal coliform, total coliform, metals (except selenium and copper), sediment toxicity, and water column toxicity, unless otherwise determined by the Board or EO.

6. Special Project and Site Specific Monitoring

The Coalition must conduct receiving water trend monitoring and site-specific studies that are representative of the effects of changes in management practices for the parameters of concern. In submitting special project monitoring proposals, the Coalition must provide the justification for their proposed study design, specifically identifying how the study design will quantify irrigated agriculture's contribution to the water quality problem; identify sources; and evaluate management practice effectiveness. The proposed study must include an evaluation of the feasibility of conducting commodity and management practice specific field studies for those commodities and practices that could potentially be associated with the pollutants of concern.

The Central Valley Water Board or Executive Officer may require the Coalition to conduct local or site-specific monitoring where assessment monitoring identifies a localized water quality problem.

Special project monitoring includes specific targeted monitoring or studies to address implementation of a TMDL or implementation of a Management Plan that results from exceedances of water quality objectives. Based on previous monitoring results, the Coalition has identified locations where Management Plans will be implemented. The Coalition's approved 2008 Management Plan describes their management plan strategy, implementation steps, special project sites, and schedule.

Special project monitoring constituents, frequency, or other elements shall be reviewed with Central Valley Water Board Staff at least annually and may be revised over time. Revisions of monitoring sites, constituents, schedule, and other elements for Management Plans which are approved by the Executive Officer will then supersede those in prior Management Plans.

E. Management Plans

If more than one exceedance of the same parameter at the same location occurs within a three-year period (that is not already addressed in an approved management plan), then a Management Plan shall be developed according to Attachment C and shall be provided to the Central Valley Water Board staff within one year of the exceedance that triggers a Management Plan. The Executive Officer can require a written Management Plan for an exceedance of any constituent at any time. Management Plans may also be required when monitoring from other Water Board programs result in exceedances.

Attachment C of this WDR Order provides detailed descriptions of surface water quality management plan requirements.

F. Data Management Requirements

All field and laboratory data must be uploaded into a Central Valley Regional Data Center (CVRDC) and California Environmental Data Exchange Network (CEDEN) comparable database (CEDEN comparable database). The Coalition will manage this database and all data entry or upload. The Coalition will need to work closely with the Central Valley Water Board ILRP staff to ensure that the database architecture is kept up-to-date.

The Coalition must meet all data formatting and submission requirements, including loading of water quality data into a CEDEN comparable database. In coordination with the CVRDC, the ILRP will provide the Coalition with the applicable database. The ILRP and CVRDC will provide support to the Coalition with database updates and maintenance. The Coalition shall ensure that the most current version of the database is being utilized and that required updates to lookup lists are communicated on a routine basis.

The Coalition shall ensure that the data loaded meets the formatting and business rules as detailed in the most current version of the document "Format and Business Rules for the CVRDC CEDEN Comparable Database." The ILRP has developed several tools to assist the Coalition with processing and loading of their data. These tools, whether required or optional, will help the Coalition to efficiently conduct data processing and loading and meet data management requirements.

CEDEN Comparable Field Sheets (Required)

An example CEDEN comparable field sheet can be found on the CVRDC webpage. This field sheet was designed to match the entry user interface within the CEDEN comparable database to allow for easier data entry of all sample collection information. Modified versions of the field sheet may be submitted to the ILRP for approval.

Format Quick Guide

The Format Quick Guide is a guidance document for the formatting of data tailored specifically for the Coalition. It contains a column by column guide for filling out the ILRP/CVRDC data templates with the applicable required codes. The ILRP and CVRDC will provide this document, and updates to it, upon request.

EDD Checklist

The electronic data deliverable (EDD) checklist provides for a structured method for reviewing data deliverables from data entry staff or laboratories prior to loading. An updated checklist will be made available on the CVRDC website.

Online Data Checker

An online data checker was developed to automate the checking of the datasets against the current format requirements and business rules. The data checker can be accessed on the CVRDC webpage. Please note that ILRP data submission will not be accepted through this tool.

Electronic Quality Assurance Program Plan (eQAPP) (Required)

The eQAPP is an Excel document containing the quality control requirements for each analyte and method as detailed in the most current version of the Coalition's QAPP. Each analyte, method, extraction, units, recovery limits, QA sample requirement, etc. is included in this document using the exact codes required for the CEDEN comparable database. This document should be used to format the reported data and conduct a quality control review prior to loading. Data that does not meet the project quality assurance acceptance guidelines must be flagged accordingly and must include brief notes detailing the problem within the provided comments field. Included in this file is also the most recent station ID list as well as the applicable project CEDEN codes for retrieving data from the CEDEN website once it arrives there.

G. Reporting Requirements

In addition to the Coalition's QAPP and Management Plan submittals, Annual Monitoring Reports (AMRs) and Quarterly Data Reports must be provided as described below. Exceedance Reports are also required for every exceedance of water quality objectives. Management Plans are required when more than one exceedance of any water quality standard occurs at a particular site within any three year period, or if requested by the Executive Officer.

1. Quarterly Submittals of Monitoring Results

Each quarter the Coalition shall submit the previous quarter monitoring results in an electronic format. The dates of these submittals shall be as listed in Table III.A below.

TABLE III.A
ANNUAL AND QUARTERLY MONITORING DATA REPORTING SCHEDULE

DUE DATE	TYPE	REPORTING PERIOD
1 March	Annual Report	1 October to 30 September[1]
1 March	Quarterly Monitoring Data Report	1 July through 30 September of previous calendar year
1 June	Quarterly Monitoring Data Report	1 October through 31 December of previous calendar year
1 September	Quarterly Monitoring Data Report	1 January through 31 March of same calendar year
1 December	Quarterly Monitoring Data Report	1 April through 30 June of same calendar year

1. The Annual Report due on 1 March includes one hydrologic water year prior to the Annual Report calendar year. This will encompass the following periods: 1 October through 31 December two years

prior to the Annual Report year, and 1 January through 30 September of the year prior to the Annual Report year.

Exceptions to due dates for submittal of electronic data may be granted by the Executive Officer if sufficient rationale exists.

The Quarterly Monitoring Data Report shall include the following for the required reporting period (See Table III.A):

a) An Excel workbook containing an export of all data records uploaded and/or entered into the CEDEN comparable database. The workbook shall contain, at a minimum, those items detailed in Attachment X.
b) The most current version of the Coalition's eQAPP.
c) Electronic copies of all field sheets.
d) Electronic copies of photos obtained from all monitoring sites, clearly labeled with site identification number and date.
e) Electronic copies of all applicable laboratory analytical reports on a CD.
f) For toxicity reports, all laboratory raw data must be included in the analytical report (including data for failed tests), including copies of all original bench sheets showing the results of individual replicates, such that all calculations and statistics can be reconstructed. The toxicity analyses data submittals must include individual sample results, negative control summary results, and replicate results. Minimum and maximum water quality measurements must also be reported.
g) For chemistry data, analytical reports must include, at a minimum, the following:
    i. A lab narrative describing QC failures,
    ii. Analytical problems and anomalous occurrences,
    iii. Chain of custody (COCs) and sample receipt documentation,
    iv. All sample results for contract and subcontract laboratories with units, RLs and MDLs,
    v. Sample preparation, extraction and analysis dates, and
    vi. Results for all QC samples including all field and laboratory blanks, lab control spikes, matrix spikes, field and laboratory duplicates, and surrogate recoveries.

Laboratory raw data such as chromatograms, spectra, summaries of initial and continuing calibrations, sample injection or sequence logs, prep sheets, etc., are not required for submittal, but must be retained for a minimum of five years and be provided to the Central Valley Water Board upon request. All original raw data must be maintained and available for a minimum of five years.

2. Annual Monitoring Reports

The Annual Monitoring Report shall be submitted by **1 March**, covering the monitoring periods from the previous hydrologic water year. This will encompass the following periods: 1 October through 31 December two years prior to the Annual Report year, and 1 January through 30 September of the year prior to the Annual Report year. Each monitoring report shall include the following components:

1. Signed Transmittal Letter;
2. Title page;
3. Table of contents;
4. Executive Summary;
5. Description of the Coalition Group geographical area;
6. Monitoring objectives and design;
7. Sampling site descriptions and rainfall records for the time period covered under the AMR;
8. Location map(s) of sampling sites, crops and land uses;
9. Tabulated results of all analyses arranged in tabular form so that the required information is readily discernible;
10. Discussion of data to clearly illustrate compliance with the Coalition Group Conditional Waiver, water quality standards, and trigger limits;
11. Sampling and analytical methods used;
12. Summary of Quality Assurance Evaluation results (as identified in Attachment H for Precision, Accuracy and Completeness);
13. Specification of the method(s) used to obtain flow at each monitoring site during each monitoring event;
14. Summary of exceedances occurring during the reporting period and related pesticide use information;
15. Actions taken to address water quality exceedances that have occurred, including but not limited to, revised or additional management practices implemented;
16. Assessment of monitoring data to identify subwatershed or Coalition-wide trends and patterns.
17. Conclusions and recommendations.

Additional requirements and clarifications necessary for the above annual report components are described below:

Report Component No. 1—Signed Transmittal Letter

A transmittal letter shall accompany each report. The transmittal letter shall be signed and contain a penalty of perjury statement by the Coalition Group's authorized agent. This statement shall state:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for violations."

Report Component No. 8—Location Maps

Location map(s) showing the sampling sites, crops, and land uses within the Coalition Group's geographic area must be updated once per year (based on **available** sources

of information) and included in the Annual Monitoring Report. An accompanying list or table of monitoring site information must include the site name and identification number, ILRP station code number, and Global Positioning System (GPS) coordinates. The map(s) must contain a level of detail that ensures they are informative and useful. GPS coordinates must be provided as latitude and longitude in the decimal degree coordinate system (at a minimum of five decimal places). The datum must be either WGS 1984 or NAD83, and clearly identified on the map. The source and date of all data layers must be identified on the map(s).

Report Component No. 9 – Tabulated results

In reporting monitoring data, the Coalition Group shall arrange the data in tabular form so that the required information is readily discernible. The data shall be summarized in such a manner to clearly illustrate compliance with the Coalition Group Conditional Waiver.

Report Component No. 10—Data Discussion to Illustrate Compliance

The annual report shall include a discussion of the Coalition Group's data to illustrate compliance with the Coalition Group Conditional Waiver. If a required component was not met, an explanation for the missing data must be included. Results must also be compared to water quality standards and trigger limits.

Report Component No. 12—Quality Assurance Evaluation (Precision, Accuracy and Completeness)

A summary of precision and accuracy results (both laboratory and field) is required in the annual monitoring report. The data quality indicators required for the ILRP are identified in Attachment H; acceptance criteria for all measurements of precision and accuracy must be identified. The Coalition must review all QA/QC results to verify that protocols were followed and identify any results that did not meet acceptance criteria. A summary table or narrative description of all QA/QC results that did not meet objectives must be included in the annual report. Additionally, the report must include a discussion of how the failed QA/QC results affect the validity of the reported data. The corrective actions to be implemented are described in Attachment H.

In addition to precision and accuracy, the Coalition must also calculate and report Completeness. Completeness includes the percentage of all quality control results that met acceptance criteria, as well as a determination of project completeness. For further explanation of this requirement, refer to Attachment H. Completeness is also defined in Attachment B (Applicable Definitions and Acronyms).

The Coalition may ask the laboratory to provide assistance with evaluation of their QA/QC data, provided that the Coalition prepares the summary table or narrative description of the results for the annual monitoring report.

Report Component No. 14—Summary of Exceedances

A summary of the exceedances that may have occurred during the monitoring period is required in the AMR. In the event of exceedances for pesticides or toxicity, pesticide use data must be included in the annual monitoring report. Pesticide use information will be acquired from the agricultural commissioner. This requirement is described further in the following section on Exceedance Reports.

Report Component No. 16—Assessment of Monitoring Data

An assessment of the Coalition's monitoring data is required in the AMR in order to identify whether long-term or broad trends and patterns exist. The Coalition shall evaluate their monitoring results in the context of their comprehensive monitoring database to determine whether exceedances or detections of monitored constituents show significant changes in number, temporal or spatial distribution, or magnitude on a subwatershed or Coalition-wide basis. The Coalition should incorporate pesticide use information, as needed, to assist in their data evaluation. Tables or graphs that illustrate and summarize the data evaluation should be utilized when possible.

3. Exceedance Reporting

The Coalition Group shall provide exceedance reports if monitoring results show exceedances of water quality standards or trigger limits. When a water quality standard is exceeded at a monitoring location(s), the Coalition Group shall submit an Exceedance Report to the Central Valley Water Board. The estimated flow at the monitoring location and photographs of the site must be included. The Coalition Group shall evaluate all monitoring data and make a determination of an exceedance no later than five (5) business days after receiving the laboratory analytical reports for an event. The Exceedance Report shall be sent by email to the Coalition's designated Central Valley Water Board staff contact within the next business day, describing the exceedance, the follow-up monitoring, and analysis or other actions the Coalition Group may take to address the exceedance.

When any pesticide or toxicity exceedance is identified at a location that is not under an approved Management Plan for toxicity or pesticides, follow-up actions must include an investigation of pesticide use within the watershed area that is physically associated with the exceedance location. For toxicity exceedances, this includes all pesticides applied within the area that drains to the monitoring site during the four weeks prior to the exceedance date. The pesticide use information may be acquired from the Agricultural Commissioner, or from information received from agriculture practitioners within the same drainage area. Results of the pesticide use investigation must be summarized and discussed in the Annual Monitoring Report. Actions required at locations that are already described in an approved Management Plan for pesticides or toxicity will be identified in the Management Plan(s).

IV. Groundwater Requirements

A. Data Assessment

B. Monitoring and Reporting Program Plan (MRPP)

C. Monitoring Strategy

D. Monitoring Locations

E. Monitoring Requirements and Schedule

F. Management Plans (refer to GQMP)

G. Reporting Requirements

V. Water Quality Objectives

This General Order requires Coalition members to comply with all water quality objectives and federal water quality criteria for surface waters applicable to their discharge and operations.

Water quality objectives are listed separately for surface water and groundwater in Chapter III of the Basin Plan and are either numeric or narrative. The numeric water quality objectives that are relevant and appropriate to implement narrative water quality objectives applicable to many of the primary constituents of concern in discharges of waste from irrigated agricultural operations that could affect groundwater and surface water are listed in Attachment I. These receiving water limitations shall generally apply as appropriate to irrigated agricultural operations covered under this Order, unless differing beneficial uses apply to the specific receiving water, or as otherwise directed by the Central Valley Water Board or the Executive Officer. Additional constituents will be added to the table as needed.

Create a table of objectives, limits, thresholds for the Order

VI. Quality Assurance Project Plan (QAPP)

The Coalition must develop a QAPP that includes watershed and site-specific information, project organization and responsibilities, and the quality assurance components in Attachment H of this MRP. Chemical, bacteriological, and bioassay analyses shall be conducted at a laboratory certified for such analyses by the California Department of Health Services (DHS), except where the DHS has not developed a certification program for the material to be analyzed.

The Coalition shall submit the QAPP to staff of the Central Valley Water Board for review and approval by the Water Board Quality Assurance Officer. If the Coalition's existing QAPP meets the requirements outlined for this MRP, a new QAPP will not be needed. QAPP revisions may be required to address additions or changes in this MRP in the future. Any proposed modifications to the approved QAPP must receive Executive Officer approval prior to implementation.

The Central Valley Water Board may conduct an audit of the Coalition Group's contracted laboratories at any time in order to evaluate compliance with the QAPP. Quality control requirements are applicable to all of the constituents listed in Attachment H, as well as any additional constituents that are analyzed or measured, as described in the appropriate

method. Acceptable methods for laboratory and field procedures as well as quantitation limits are described in Attachment H.

The QAPP Guidance needs to be updated to include requirements for groundwater monitoring.

The Central Valley Water Board Executive Officer may revise this East San Joaquin Water Quality Coalition MRP as necessary, and the Coalition shall comply with the MRP Order as revised by the Executive Officer.

The Coalition, on behalf of the individual member Dischargers, shall implement the above monitoring and reporting program as of the date of this Order.

ATTACHMENTS

Order Attachment A – Information Sheet (To include regulatory background, goals, and objectives)

Order Attachment B – Definitions and Acronyms

Order Attachment C – Surface Water Quality Management Plan Requirements

Order Attachment D – Groundwater Quality Management Plan Requirements

Order Attachment E – Nutrient Management Plan Guidelines

Order Attachment F – Farm Water Quality Management Plans

Order Attachment G – Farm Evaluations (**We should re-name this – what about Grower Practices Evaluation?)**

Order Attachment H – Quality Assurance Project Plan Guidelines (need to expand to include groundwater requirements)

Order Attachment I – Water Quality Objectives