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SENT VIA EMAIL TO: Commentletters@waterboards.ca.gov

Ms. Jeanine Townsend
Clerk to the Board
State Water Resources Control Board
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RE: "Comments to A-2239 (a)-(c)"- State Water Boards Review of WDRs General Order [No. R5-2012-0116] For Growers within the Eastern San Joaquin River Watershed that are Members of the Third-Party Group (the Eastern San Joaquin San Joaquin Water Quality Coalition)

Ms. Townsend and Honorable Members of the Board,

The Kern River Watershed Coalition Authority (KRWCA or Coalition) is a Joint Powers Authority, established to serve as the coordinator and coalition (third-party) group under the Irrigated Lands Regulatory Program (ILRP) for portions of the Kern River Watershed and Tehachapi Cummings Valley. The Coalition and its grower members are subject to "Order R5-2013-0120, Waste Discharge Requirements General Order for Growers within the Tulare Lake Basin Area that are Members of a Third-Party Group," as amended (TLB WDRs).[1] However, the Coalition and its grower members may be subject to the precedents set forth in the draft revised Eastern San Joaquin River Watershed order[2] (ESJ Draft Revised Order or Draft Order) of the State Water Resources Control Board (SWRCB or State Water Board), and there is significant concern that

[1] KRWCA is one of the parties to that Petition for Review, or Alternatively, Request for Own Motion Review of the TLB WDRs (adopted September 19, 2013), which petition was filed with the State Water Resources Control Board on October 18, 2013 and is currently pending (TLB WDRs Petition).

[2] Draft SWRCB Order WQ 2016- [02/08/2016], In the Matter of Review of Waste Discharge Requirements General Order No. R5-2012-0116 for Growers Within the Eastern San Joaquin River Watershed that are Members of the Third-Party Group Issued by the California Regional Water Quality Control Board, Central Valley Region, *SWRCB/OCC FILES A-2239(a)-(c)*.

the recommended changes undermine the current ILRP program and do not take into consideration significant unique regional characteristics over different coalition areas, specifically of the KRWCA. Those unique characteristics are described in an extensive record of significant evidence prepared and presented to the Central Valley Regional Water Quality Control Board (CVRWQCB or Regional Water Board) over the course of many years, which is not before the State Water Board. The KRWCA believes that a "one size fits all" approach, as proposed in the Draft Order, is not appropriate or prudent.

The ESJ Draft Revised Order includes recommended changes to the Regional Water Board's Waste Discharge Requirements General Order No. R5-2012-0116 for Growers Within the Eastern San Joaquin River Watershed that are Members of a Third-Party Group (ESJ WDRs). The proposed changes to the ESJ WDRs suggest that State Water Board staff believe that the current ILRP and general agricultural WDRs administered by the CVRWQCB are insufficient. The Coalition disagrees and believes it is premature to judge the success of the ILRP, and is inherently unfair to the Coalition and its members to change or undermine the role of the Coalition midstream. The Coalition, as well as other similar ILRP coalitions throughout the central valley, has invested significant resources in implementation of multiple elements of the existing ILRP WDRs related to groundwater quality. Although the implementation of groundwater elements are in progress, there are several coalition success stories from the existing surface water program which indicate the coalition structure and outreach are vital and effective in significantly addressing water quality issues. In addition, while the basis for some of the State Water Board staff recommendations appear to be the Conclusions of the Agricultural Expert Panel[3] (Expert Panel), commissioned by the State Water Board, the Expert Panel's recommendations were not entirely used as intended by the Expert Panel. Several Expert Panel recommendations were left out altogether, with the end result causing some Expert Panel members to openly criticize the direction of the Draft Order as contrary to their intentions.

The ESJ Draft Revised Order includes changes that will directly affect and increase the burden on the growers, the Coalition, as well as the CVRWQCB. It appears that the entire burden of the proposed changes has not been evaluated economically or environmentally, with changes dismissed as "insubstantial". The practical impacts to ILRP implementation were drastically underestimated in terms of cost, labor, and the ongoing viability of Coalitions and Central Valley farming operations. The changes yielding the most significant impacts are outlined below as related to the various increases to monitoring and reporting requirements:

- Annual submission of field level data identified by location to the CVRWQCB and public databases exposes individual grower members to unnecessary and inappropriate assessment, scrutiny and litigation; undermines the current third party (Coalition) role with growers; and creates a voluminous redundant workload for the CVRWQCB which will undoubtedly translate to higher member costs. The Expert Panel Chair, Dr. Charles

[3] Conclusions of the Agricultural Expert Panel, September 9, 2014.

Burt, has commented before the California Department of Food and Agriculture that reporting of field-level data to the CVRWQCB and the public is unnecessary for regulatory compliance.

- The expedited timeline to establish target Nitrogen species applied (A) over Nitrogen removed (R) ratios with the first three years of submitted data neglects that A/R ratios cannot be accurately determined for many of the crops enrolled in the Coalition and the specific groundwater impacts related to A/R ratios are un-established. Developing Nitrogen (N) removed coefficients to fill data gaps is a massive undertaking which was not considered in the State Water Board staff's recommendation. Ultimately, the effort will still produce an incomplete quantitative metric for compliance. Regional Water Board staff heavily criticized the (heightened) role of the proposed A/R ratio at the May 4, 2016 State Water Board Workshop.

- Monitoring of individual drinking wells requires members to initiate well sampling and notify affected users. This requirement may be beyond the legal authority of many members leasing acreage, is an undue burden of cost and effort on growers, coalitions, and the CVRWQCB, and is a misuse of the ILRP program framework. These efforts should be more efficiently addressed in another more comprehensive domestic well program and should include independent funding mechanisms.

- The removal of High Vulnerability Areas will cause a dramatic increase in member reporting requirements and disrupts and confuses previous outreach efforts conducted by the Coalitions. As member reporting requirements are no longer focused where they are needed the most, additional burden will be placed on members, coalitions, and the CVRWQCB, stretching already limited resources.

As outlined, the recommended changes in the ESJ Draft Revised Order would cause a significant erosion of growers' confidence in the Coalition structure, a loss of the critical Coalition benefit to the grower, and potentially damage the Coalitions' ability to successfully coordinate all aspects of the ILRP. The success of coalitions is dependent on a relationship of trust and confidence, wherein members financially engage the coalition to support their compliance in a fair and direct manner. This allows members to provide accurate and timely information with confidence that they will not be unfairly targeted. As such, the Coalition is the most efficient structure for compliance. In the event that the ESJ Draft Revised Order results in a loss of support for coalitions, it would compromise the significant data management, technical analysis, and outreach service provided by Coalitions; be devastating to the ILRP; and set the program back significantly.

KRWCA believes that the best opportunity to support growers and the fulfillment of the ILRP is to allow the current ILRP WDRs to continue to progress before introducing unnecessary, unproven, and unsubstantiated modifications. The current ILRP WDRs represent years of stakeholder input and effort to produce a workable and effective regulatory program. The ultimate success of the ILRP is dependent on maintaining the balance in member participation,

coalition services, and CRWQCB oversight. Despite the intent of the proposed revisions, the current WDR provisions do appropriately maintain this balance.

Thus, the proposed changes should be rejected. At the very least, the issues discussed above must be addressed to alleviate the undue burden on farmers, Coalitions, and the CVRWQCB and to mitigate the threat to coalition viability and the long term success of the ILRP. An ESJ WDRs rewrite should fully address and mitigate for the concerns discussed above, and any rewrite of the TLB WDRs should only be made after consideration of the Tulare Lake Basin record in an appropriate separate proceeding regarding that particular order and area.

KEY CONCERNS with ESJ Draft Revised Order

Field Level Reporting

The requirement in the ESJ Draft Revised Order for the Coalition to provide full field level data sets of received Farm Evaluations and Irrigation and Nitrogen Management Plans (INMP) with location and member information to the CVRWQCB and publicly available databases is unacceptable. The stated objectives of the submission of this field level data are to allow the CVRWQCB and others to 1) validate Coalition-submitted monitoring reports (ESJ Draft Revised Order, p.28), 2) provide a feedback mechanism for member compliance with receiving water limitations (ESJ Draft Revised Order, p.27), 3) develop compliance targets based on 3-year values of submitted nitrogen management data (ESJ Draft Revised Order, p.38), and 4) analyze full spatial datasets of nitrogen management use, management practice implementation, and water quality trends over entire water sheds to recommend necessary actions to address water quality issues (ESJ Draft Revised Order, p.29).

In reference to the first objective (1), the KRWCA finds the mandate to submit annual field level information for the CVRWQCB and the public review to validate reports to be an entirely redundant requirement which creates a large additional workload for the CVRWQCB and makes Coalition effort meaningless. The annual validation of submitted data is an unnecessary, costly layer of bureaucracy as the existing TLB WDRs already allow the CVRWQCB to validate Coalition provided information by requesting specific field level information that is on record at any time. Additionally, the CVRWQCB verifies that this extremely granular analysis of submitted information is a significant burden which would dramatically increase workload and staff, 80+ additional person-years (PYs), required to administer the ILRP (CVRWQCB Comment). An additional burden and cost to the CVRWQCB will directly translate to an additional cost to the enrolled member growers, many of whom already struggle with costs under the existing WDR.

As for objective (2), the SWRCB further justifies that field level reporting to the CVRWQCB and the public is to provide a feedback mechanism for specific member compliance with receiving water limitations. This is despite the fact that the current WDRs already mandate this information to be managed by the Coalitions and provided in annual report submissions to the CVRWQCB, which are maintained in the public record. These submissions allow for more than

adequate feedback of program implementation. Annual reports summaries are provided as scatter plots populated with the submitted field level member reports by township and crop, yielding nearly 10,000 summaries across the Central Valley. This allows a structured review of all data submitted for enrolled lands while maintaining member privacy.

The State Water Board incorrectly assumes the only issue which may exist in the submission of this member identified data is related to trade secret concerns (ESJ Draft Revised Order, p. 29). Although this is still a major concern to members, another very significant concern is the use of poorly understood data to define members' compliance and then in allowing this "compliance" data to be made public. As the State Water Board Workshops illustrated, growers are adamantly against providing field level information to the CVRWQCB, and more importantly, depositing it in a public database, because of the valid concern that they may be unfairly targeted. As clearly presented by the Expert Panel, submitted field level data was considered suitable for tracking trends over the long term but was not intended for short-term averages for immediate compliance. Analysis based on individual reporting with insufficient understanding of the dynamics of physical factors alongside cultural, nitrogen, and irrigation management practices and their potential impacts to groundwater quality could produce inherently flawed compliance evaluations.

It would be an oversight by the SWRCB to assume that this information would not be used to unnecessarily target growers and their operations (see, e.g., Central Coast lawsuits). This issue also highlights a primary value which the Coalition provides to growers in addition to outreach, education, and cost sharing for regional monitoring programs. Namely, Coalition data analysis and aggregations allows growers to be directly supported by outreach and education to address potential compliance issues rather than being exposed to unfair stigmatization, risk of self-incrimination and premature scrutiny prior to adequate scientific understanding of compliance. If the Coalitions are forced to compromise this role, they will be undermining the efficient implementation of the ILRP order and coalitions' very existence, especially as compounded by the additional costs to growers.[4]

Concerning objectives (3) and (4), the CVRWQCB clearly states in their comments that they are not qualified to develop compliance targets for nutrient management values, objective (3), or analyze full management practices data sets against water quality issues to prescribe corrective actions, objective (4). These tasks also require significant data which cannot be supplied in the timelines provided by the SWRCB. Specifically, data gaps exist regarding A/R ratios, discussed in the following sections, and the potential impacts of field level management practices in different cropping systems on groundwater quality, which is to be provided by the Management Practices Evaluation Program (MPEP). As such, it is fruitless to incur the cost and

[4] The Agricultural Expert Panel's Report emphasized that "grower participation is an absolute requirement. **This is one of the essential aspects of a non-point-source pollution regulatory program related to nitrate in groundwater**," and "growers will be reluctant to participate if they risk self-incrimination." (Conclusions of the Agricultural Expert Panel, September 9, 2014, pp. 7, 36.)

program consequences described above to provide data which cannot meet the goals or expectations stated by the SWRCB.

Although the SWRCB states that they are following the guidance of the Expert Panel, nowhere does the Expert Panel advocate for submitting field level data or evaluating field level performance for member compliance purposes; in fact, Expert Panel Chair Dr. Burt, has stated field level data submitted to the CVRWQCB is unnecessary. Instead, the Expert Panel sought to focus on developing an evolving program that can shift with gains in knowledge, research, training, and farming practices. The current Draft Order focuses on delivering granular data despite the absence of necessary research and understanding of the basis of this information and its application. As an alternative, KRWCA would support the implementation of a standard data review, as outlined in our current WDRs, which the CVRWQCB may request to ensure that all coalitions are collecting information in a consistent format and to meet the requirements of the ILRP.

The KRWCA's position is that the current reporting framework of the ILRP set forth in existing WDRs strikes a more appropriate balance to best serve members and implement the ILRP to protect water quality. This process helps to protect grower privacy because field level locations are not public records that can be unfairly scrutinized. For the CVRWQCB, it helps to avoid receiving hundreds of thousands of data points that they do not have staff time or resources to review, while still receiving comprehensive annual reports tracking program progress to inform the CVRWQCB and the public. Currently, the CVRWQCB is comfortable with this approach because they retain the authority to review specific records should there be questions or concerns about data submitted.

A/R Ratios, N Coefficients, and Member Compliance

SWRCB revisions throughout the Draft Order reference the use of N Applied (A) over N removed (R) ratios (A/R); growers are required to calculate A/R ratios in INMP reporting, the CVRWQCB is required to develop target A/R ratios, member compliance is to be tracked over time with management practice implementation and field level A/R ratios, and members that are greater than one (1) standard deviation from the average A/R ratio are to be reported to the CVRWQCB. The SWRCB appears to understand that the N removed is not available for many crops because the N removed coefficient, which estimates the N removed for different crop yields, has not yet been developed. However, the SWRCB drastically underestimates the effort and cost associated with developing these values (ESJ Draft Revised Order, p. 37).

The SWRCB's Draft Order provides an aggressive and unrealistic timeline requiring the coalition to publish nitrogen removed coefficients for 95% of the acreage by 1 March 2019, and 99% of the acreage enrolled by 1 March 2021 (with estimates allowable for the remaining 1%). These data gaps have already been researched by the Nitrogen Management Plan Technical Advisory Workgroup (NTAWG) and a Nitrogen Knowledge Gap Study Plan (N Study) was submitted to the CVRWQCB on 18 December 2015 with a response to comments provided on 19 February 2016.

As specified in the N Study, reliable N removed coefficients as provided by CDFA FREP are only available for 40% of crop acreage in the Central Valley, including values for Almonds, Corn/Silage, Tomatoes-Processing, Pistachios, Walnuts, and Plums/Prunes. The N study determined 20 crops cover nearly 90% of the central valley acreage, so this analysis indicates 14 additional crops require further research.

The three-year timeline established by the SWRCB to provide the remaining 55% to reach 95% of crop acreage is likely unachievable and will initiate a highly costly and intensive research program which the coalitions cannot manage. It must be understood that although there are Nitrogen calculators available for many crops, often N removed values are not reliable. The majority of past research has focused on the relationship between N applied and yield, without focusing on N removed and lacking rigorous experimental background to develop N removed values. These calculators should absolutely not be used as a reliable N removed calculation within a regulatory framework as a proxy for compliance and enforcement without extensive background research. Developing a valid N Coefficient cannot be accomplished by simply analyzing one or two harvest samples. Permanent cropping systems would also require a multi-year analysis, more than three years, to provide valid data due do to the dynamics of N sequestration. Rather, to establish these values to any degree of scientific validity, based on the level of effort required to establish these values for the crops noted above, would require tens of millions of dollars and many years of research. These costs, once again, would be an undue burden on Coalitions and ultimately increase costs for growers.

Although the Expert Panel recommended using long term averages of A/R ratios to determine trends of improvement, it is unclear how only a three-year period is appropriate, especially prior to the completion of additional ILRP program elements (MPEP, groundwater trend monitoring, etc). There are legitimate reasons for significant variability in A/R ratios between cropping scenarios and year to year which may not be adequately averaged out in a three-year period. Furthermore, isolating members outside of one standard deviation of ambiguously set target ratios has no scientific basis and will lead to additional grower cynicism which will further undermine coalition support and viability. These issues create an environment that indicates to growers that no matter the effort undertaken you may always be under scrutiny and in fear of enforcement.

In addition, requiring growers to independently calculate A/R ratios will likely introduce unnecessary variability due to inaccurate and inconsistent calculations. The KRWCA continues to support the growers' submission of nitrogen applied (A) over harvest yield (Y) values (A/Y). As requested by the CVRWQCB, Coalitions would still be tasked with providing A/R ratios to all growers and helping to provide a fuller understanding of their relative efficiency as compared to growers in similar cropping systems.

Thus far, a functional path to members' compliance with receiving water limitations has not been defined within the Draft Order. Specific A/R ratios do not have a precisely quantifiable impact to groundwater quality, and although the MPEP will begin to evaluate these

relationships, the A/R ratio will remain a very simplistic evaluation metric. A/R ratios do not include additional N capture pathways such as residual soil N, N to microbial biomass, volatilization, etc. yielding a metric which will always overestimate potential N leaching to groundwater. The recommended time schedules and objectives for compliance must also consider the existing ILRP elements as well as additional developments within parallel programs, namely the MPEP and CV Salts.

These realities should be very critically evaluated alongside KRWCA specific considerations to determine the appropriate timing, use of, and audience for the A/R metric for evaluating compliance with receiving water limitations. For instance, overall Kern County has much deeper groundwater with significantly longer transit times between surface water application and any changes in groundwater quality (Gailey p. 4)[5]. Gailey calculated the average depth to groundwater as follows (Gailey p. 3-4):

East San Joaquin Watershed 88'
Kings Subbasin 87'
Kaweah Subbasin 102'
Tulare Lake Subbasin 77'
Tulare Subbasin 159'
Kern Subbasin 265'

Any monitoring program conducted alongside field level data submissions of A/R ratios will not be able to precisely meet the goal of defining surface activities' impact to underlying groundwater in these areas, specifically due to:

1. Time lags between agricultural activities at the ground surface and changes in groundwater quality as a result of a thick unsaturated zone;
2. Nitrate residing in the unsaturated zone that acts as an ongoing source to groundwater years after nitrogen is applied at the ground surface;
3. Processes acting on return flows during transit through the unsaturated zone; and,
4. Horizontal migration within the saturated zone and the resulting difficulty in attributing observed nitrate to specific source areas.

This understanding must contextualize reported surface level management practices

[5] Gailey, Robert M, PG, CHG. 2013. Comments on Hydrogeologic Points of Concern for the Kern River Watershed Coalition Authority Area: Regarding Monitoring and Reporting Program Tentative order R52013-XXXX Waste Discharge Requirements General Order for Growers within the Tulare Lake Basin Area that are members of Third-Party Group. Pleasant Hill, Cal.: Central Valley Regional Water Quality Control Board. Available at: http://www.waterboards.ca.gov/water_issues/programs/agriculture/docs/cmnts051414/john_schaap.pdf Accessed 1 April 2016.

implementation and A/R ratios as they will not be able to be linked to clear groundwater quality improvements for many, many years. A compliance program set around tracking these values against groundwater quality improvements appears to be decisively biased against the KRWCA region and others with large depths to groundwater.

The costs required to expedite the reporting of A/R ratios only for the sake of field level data submissions will dramatically compromise the relationship between Coalitions and member growers. Furthermore, seeking to employ the A/R ratio as a member's compliance metric prior to the completion of necessary research, including the MPEP, and without appropriate consideration of surface to groundwater time lags will create significant resistance. The SWRCB should remove this required timeline and allow the coalitions to continue working with the CVRWQCB to develop these values based on available funding and workable research timelines.

Domestic Well Testing

SWRCB revisions to the Draft Order require that growers must initiate sampling of all drinking water wells located on enrolled parcels. If a sample is found to exceed the MCL for Nitrates, the member must notify affected residents of wells above the MCL, and the CVRWQCB must ensure affected residents are notified. Coalitions must also report domestic well monitoring results in an annual report and all results are intended to be uploaded to Geotracker, a public database.

These changes further undermine and contradict the Coalition structure as well as increase grower costs. Clearly, coordinating sampling without support and paying for all monitoring out of pocket is a direct burden placed on growers. The objective of the coalition is to significantly reduce the direct costs to members through cost sharing for regional monitoring programs, outreach and education, and completion of reporting requirements. There is also an unclear division of responsibility in the implementation of the monitoring program between members, coalitions, and the CVRWQCB which will lead to additional bureaucratic costs. Beyond the initial testing costs, Coalition efforts to administer and report this information in annual reports will incur additional member costs.

In another significant violation of the relationship between members and the Coalitions, all sampling data is mandated to be made public. Members with drinking wells above the MCL for nitrates on their property would become the immediate object of scrutiny and put in a position to personally rectify the issue. Many growers would likely un-enroll parcels with associated wells or would adamantly refuse to provide any sampling information to avoid the potential of being held falsely accountable for a pervasive non point source groundwater constituent. It must be clarified that growers would whole heartedly want their families and tenants to be assured that their drinking water is of an acceptable quality, but there is legitimate fear of linking this information to ILRP enrollment. This will cause further Coalition withdrawal and disrupt the current progress of the ILRP program.

This requirement also overlooks that many ILRP members are in fact not the owners of the enrolled land, and, depending on the specifications of the lease, will have no authority to access homestead property or domestic wells. Testing wells and notifying users would clearly constitute a landlord-tenant issue in which ILRP members should have no role or responsibility. Although there is a benefit to informing users of the water quality of their drinking well, this is ultimately a public health effort. Realistically, water testing and informing tenants of drinking water quality should not fall under the ILRP and would likely fit better under another program with the specific resources to address these issues without needlessly compromising individual growers, who may not even have legal responsibility for the wells in question.

Additionally, as previously discussed in the KRWCA's 15 April 2013 comment letter on the development of the current TLB WDRs, there are very few areas (approximately 4% of Kern area water systems serving about 0.2% of the overall population) on the Kern valley floor, where communities have drinking water systems which have delivered water that exceeded the Nitrate MCL from 2005 to 2013. In conjunction with EPA's Safe Drinking Water Information System (SDWIS) database and the California Department of Public Health, KRWCA compiled the attached table in 2013 (Attachment A) summarizing water systems within the Kern area with reported nitrate MCL exceedances from 2005-2013 along with a resolution of each, if known. In several instances, these issues have already been addressed and in all cases a solution has been identified and CDPH or the County of Kern are working with the system operators to implement the solution. Fortunately in Kern, most of our population is in larger metropolitan areas or towns where there has been adequate funding to address water quality issues, although the record will show most of the problems are for constituents other than nitrates. KRWCA is still prepared to assist with resolution of any remaining issues as they are found.

Removal of High Vulnerability Area, increased member reporting requirements

The Central Valley coalitions have spent millions of dollars in research to complete Groundwater Quality Assessment Reports (GARs) and to define High Vulnerability Areas (HVA). The Draft Order removes the language of the HVA throughout and increases reporting requirements for all members to have the same report submissions, frequency and certification standards. Although the first submission of required reports is still phased according to grower size (defined as large, medium, and small farms), the submission of a Farm Evaluation and a certified INMP is now required annually for all growers regardless of size and therefore may constitute a hardship for some.

The current WDR allows phasing of member reporting requirements according to farm size and vulnerability designation, limiting the cost of program implementation to the most sensitive growers and allowing the coalitions to carefully leverage their limited resources to maximize outreach. Members outside of HVAs were also exempted from required outreach meeting attendance. The increase in frequency of reports will increase direct member cost of compliance and, considering the massive enrollment of some coalitions, will yield a dramatic

increase inKRWCA data management and outreach activity, which is an additional cost to members through fees.

The SWRCB cites the Expert Panel in rejecting the validity of the HVA, but unfortunately the Expert Panel's implementation recommendations for maximizing limited resources were not considered by the SWRCB. Rather than advocating granular data analysis and significant reporting, the goal of the Expert Panel was to leverage all research and data gathering into direct nutrient and irrigation management support, particularly education and outreach.

KRWCA supports the use of priority areas to focus efforts and limited resources where they are needed the most by using existing HVA designations which have already been accomplished at great expense to coalitions. KRWCA further considers a tiered approach in the High HVA category to prioritize such designated areas. Otherwise the loss of the HVA disrupts outreach and training efforts, creates additional cynicism among growers, and increases reporting burdens and costs to growers.

Legal Concerns

Lack of Due Process, Proper Procedure and Reasonableness

The ESJ Draft Revised Order proposes recommendations that would not only apply to the Eastern San Joaquin Agricultural General WDRs (ESJ WDRs), "but also for the next generation of Regional Water Quality Control Board (Regional Water Board) agricultural regulatory programs statewide." The SWRCB's conclusions in this precedential order would apply statewide, subject only to a very narrow exception.[6] (ESJ Draft Revised Order, p. 8 (emphasis added).)

The Coalition objects to this procedure as an excess of the State Water Board's jurisdiction; being unfair, lacking due process and a prejudicial abuse of discretion. The State Water Board may at any time, on its own motion, take action to review a Regional Water Board's action, in this case the ESJ WDRs. (Water Code § 13320, subd.(a).) However, the Water Code provisions and administrative regulations governing State Water Board proceedings to review a regional board's action (or inaction) require that the evidence before the State Water Board "shall consist of the record before the regional board." (Id., § 13320, subd.(b); 23 Cal. Code Regs., § 2064.)

Coalition representatives have asked State Water Board staff on several occasions whether the record of evidence presented to the CVRWQCB in connection with the development of TLB WDRs will be or should be made part of the record in this potentially precedential proceeding. State Water Board staff have told Coalition representatives that the TLB WDRs record is not and

[6] The exception is "where a Regional Water Board expressly finds that there are truly significant site-specific conditions that render these requirements inappropriate." (Draft Revised Order, p. 8.)

should not be made part of these proceedings, including at an in-person meeting at the State Water Board's office in Sacramento on 4 Apri 2016. Based on representations from State Water Board staff, the Coalition has not taken steps to attempt to make the TLB WDRs record part of these proceedings.

The Coalition believes it is inappropriate to adopt the recommendations in the ESJ Draft Revised Order and apply them statewide to other regional water board agricultural general WDRs, including the TLB WDRs, without prior consideration of the Tulare Lake Basin record in a separate proceeding including appropriate notice[7] to parties interested in and affected by those WDRs and the pending petition thereof before the SWRCB. At a minimum, if the State Water Board adopts any of the proposed recommendations, they should be non-precedential and separately reviewed (de novo) without prejudgment in a separate process by the Regional Water Board (or State Water Board) *before* potential application to the TLB WDRs. Such process should provide the Coalition, its grower members and other interested parties, with a full and fair opportunity to be heard, comment and present evidence relevant to any proposed changes, including the entire TLB WDRs record before the Regional Water Board.

Consideration of the TLB WDRs record, as supplemented by comments and other evidence on the proposed recommendations, before any application of the recommendations to irrigated agriculture in the Tulare Lake Basin area is critical. As explained in more detail in the next section (albeit in far less detail than the TLB WDRs' record), the Tulare Lake Basin area including the irrigated lands of the members of the Coalition within the Kern River sub-watershed are factually unique, different and distinguishable from the groundwater quality and other factors characteristic of the Eastern San Joaquin River Watershed area with respect to irrigated agriculture. This includes[8] small family farmers who cannot afford to pay the substantial[9] additional costs of the proposed recommendations, and who will be forced to fallow lands, cease farming or do business in some other state due to the high costs of compliance. Recommendations will, according to testimony at the SWRCB Workshops, likely be substantially impactful and impose an undue burden on growers, including costs that do not bear a

[7] For example, the Draft Order includes a redline markup of the ESJ WDRs and its appendices, but no such notice regarding how the TLB WDRs would or may be revised if the Draft Order were adopted by the SWRCB.

[8] Within the area covered by the Coalition, there are also a large number of water banking projects that recover and deliver groundwater for irrigation and domestic purposes, which groundwater quality must already meet Title 22 drinking water standards and other stringent water quality requirements.

[9] Footnote 28 of the Draft Revised Order states that the additional costs of the proposed recommendations will be "insubstantial." (Draft Revised Order, pp. 11-12; see also, p. 54 ["We find that the additional costs and burden associated with these revisions are not substantial"].) However, the information presented at Workshops on May 4 and May 17, 2016, demonstrated that the costs will be substantial, although the State Water Board has not conducted an economic analysis of the recommendations' costs or related environmental impacts. As explained below, the Coalition believes economic and environmental analysis of the recommendations is required and important but lacking.

reasonable relationship to their need and benefits (if any). (See, e.g., Water Code § 13267(b)(1); see also, Water Code §§ 13050(l)(1), 13241, 13263(a).) Compounding the due process problem further, testimony at the May 4, 2016 SWRCB Workshop, as became evident through discussion between State Water Board and Regional Water Board representatives, was that some of the proposed recommendations are not even fairly described in the ESJ Draft Revised Order as they were intended.[10]

In conclusion, the proposed recommended changes in the ESJ Draft Revised Order should not be applied in this proceeding to the TLB WDRs, because the Tulare Lake Basin record is not before the State Water Board and required notice is lacking, and because they are unreasonable, unnecessary and unlawful as applied to the Tulare Lake Basin area. At a minimum, to the extent they are not rejected, the proposed recommendations should not be considered as changes to the TLB WDRs, without a prior separate process involving the TLB WDRs and the Tulare Lake Basin WDR record, and whereby the Coalition and its grower members and other interested and affected parties have given appropriate notice and an opportunity to comment and be heard on the proposed recommendations as potentially applied to the Tulare Lake Basin area.

Lack of CEQA Compliance and Economic Analysis

As the Regional Water Board has commented, the proposed recommendations in the ESJ Draft Revised Order appear to have been developed without any required CEQA[11] and economic analysis, supplemental or otherwise.

An economic analysis is required by the Water Code[12] and CEQA. Under CEQA, if economic or social effects of a proposed project directly or indirectly will lead to adverse physical changes in the environment, then CEQA requires disclosure and analysis of these resulting physical impacts. (*Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1205; CEQA Guidelines[13] § 15064, subd. (e).) An activity is a project subject to CEQA, if it will be approved by a public agency and it may cause *any* direct physical change or a reasonably foreseeable indirect physical change to the environment. (*Muzzy Ranch Co. v. Solano County*

[10] State Water Board staff acknowledged that certain language in the Draft Revised Order was not consistent with staff's subjective "intent." It is simply not reasonable or consistent with any formulation of due process to require third parties to somehow divine State Water Board staff's subjective intent. It was apparent from the May 4th Workshop that there was considerable confusion about just what the Draft Order was proposing as revisions to the Eastern San Joaquin General WDRs. Assuming the proposed recommendations are pursued further, this alone counsels for a revised, clarified draft for further public review and comment before the State Water Board considers them for adoption.

[11] California Environmental Quality Act, Public Resources Code § 21000 et seq.

[12] Water Code §§ 13241, 13263, subd. (a), 13267.

[13] 14 Cal. Code Regs. § 15000, et seq.

Airport Land Use Com'n (2007) 41 Cal.4th 372, 381-382; Public Resources Code § 21065, subd.(a).)

The Regional Water Board previously performed an economic analysis and certified a Program EIR (PEIR) for the ILRP over five (5) years ago on 7 April 2011.[14] The PEIR establishes that the cost of the compliance with the ILRP may have significant environmental effects including the removal of farmlands that are prime, unique and/or of statewide importance from production and possibly conversion to non-agricultural uses due to the high costs of compliance. (ESJ Draft Revised Order, Attachment D, p. 15.)) It is therefore well documented that compliance with ILRP WDRs may lead to changes in the physical environment. Thus, the proposed recommendations in the ESJ Draft Revised Order are a project under CEQA, and the State Water Board must conduct appropriate economic analysis and CEQA review of resulting environmental effects *before* considering approval or adoption of the recommendations. (*Save Tara v. City of West* (2008) 45 Cal.4th 116, 130.) However, no CEQA review or economic analysis has been performed to evaluate the impacts and associated cost increases due to each and all of the proposed new recommendations alone or in combination with existing ILRP requirements proposed to be retained.[15]

There is no explanation in the ESJ Draft Revised Order regarding whether the recommended changes in the Draft Order plus the existing ILRP WDRs' requirements proposed to be retained are or are not within the scope of the PEIR alternatives. However, even assuming without admitting they are within the scope of the PEIR, CEQA's procedural and substantive requirements governing use of a program EIR, including to examine subsequent program activities in light of the Program EIR and to make required determinations, have not been met. (E.g., CEQA Guidelines § 15168, subds. (c) & (e); see also, *County Sanitation Dist. No. 2 of Los Angeles County v. County of Kern* (2005) 127 Cal.App.4th 1544.)

In conclusion, the proposed changes in the ESJ Draft Revised Order have not been evaluated for economic or environmental impacts as required by law. The appropriate level of economic and environmental analysis must occur, before the State Water Board or Regional Water Board can approve the proposed changes. This is particularly important since the testimony at the May 4 and 17, 2016, State Water Board Workshops indicated that the additional costs of the recommendations will be substantial. The decision-makers, the SWRCB and Regional Water Board, the affected parties including coalitions and their grower members, and the public must and should all be fully informed of the economic and associated environmental impacts of the proposed far-reaching changes to the ILRP.

[14] Central Valley Regional Water Quality Control Board, Resolution No. R5-2011-0017 (AR 3720-21).
[15] The ESJ Draft Revised Order includes attached CEQA Findings of Fact and Statement of Overriding Considerations, but they appear essentially the same as the old findings used to support the Eastern San Joaquin WDRs (approved before the State Water Board's proposed revisions) and the findings do not relate to the TLB WDRs. (Draft Order, Attachment D.)

Grower Field Level Data Is Not Now, Nor Should It Be, Made Readily Available for Public Inspection and Use under ILRP WDRs

At the SWRCB May 4, 2016 Workshop, the CVRWCB's Executive Officer, Pamela Creedon, suggested in response to a question from Honorable Board Member, Tam Doduc, that under the current ILRP WDRs grower data would be produced upon receipt of a request for production or inspection under the California Public Records Act, Gov't Code § 6250 *et seq*. (CPRA). The KRWCA respectfully disagrees.

The CPRA includes a number of specific[16] exemptions that might apply to exempt the disclosure of the field level data. For example, data in "crop reports" obtained in confidence from any person is exempt. (Gov't Code § 6254(e).) *Uribe v. Howie* (1971) 19 Cal.App.3d 194 interpreted crop reports as information specifying the nature, extent, type and magnitude of the crops being grown. (*Id*., p. 212.) The Court of Appeal recognized that at least one purpose of this exemption was seemingly to protect the financial confidentiality of growers' enterprises, in that the standardized pricing that exists in commodity prices permits using this crop data to "estimate, fairly accurately, a growers' income from knowledge of the quantity of a commodity he will or has harvested." (*Id.*) In addition, making crop data public "might interfere with trading in futures or commodity markets." (*Id*.)

Similarly, the type of information contained in a crop report may also be exempt from production under the federal Freedom of Information Act (FOIA) Exemption 4 for "trade secrets and commercial or financial information obtained from a person and privileged or confidential" (Title 5 U.S.C. § 552(b)(4)). Just recently, the Ninth Circuit Court of Appeal held that information regarding the production rate of eggs at an egg farm was exempt under FOIA as a trade secret, because it was "likely to cause competitive harm because competitors of the egg producers could use the information to form accurate estimates of each farm's or producer's rate of production and use those estimates to underbid." (*Animal Legal Defense Fund v. Food and Drug Admin.,* 2016 WL 1399332, *3 (Filed April 11, 2016).) This case is relevant because CPRA exempts production of "records, the disclosure of which is exempted or prohibited pursuant to federal or state law," including records containing trade secrets. (Gov't Code § 6254(k); *California Sch. Employees Assn. v. Sunnyvale Elementary Sch. Dist.* (1973) 36 Cal.App.3d 46, 65-66.) Moreover, while *Animal Legal Defense Fund, supra*, was not interpreting the CPRA, the case law recognizes that the CPRA was modeled upon FOIA, the two statutes have a common purpose, and the federal "legislative history and judicial construction of FOIA,

[16] There is also the more general exemption permitting an agency to withhold a public record as exempt based on particular facts showing that the "public interest served by not disclosing the record clearly outweighs the public interest served by disclosure of the record." (Gov't Code § 6255, subd. (a).) Given the testimony at the Workshops that transmission to the Regional Water Board of township-level data is sufficient, that the board does not need field level data, and that a public database requirement may discourage grower participation in coalitions (the maintenance of which everybody seems to agree is important to the success of the ILRP), public interest in non-disclosure arguably clearly outweighs the public interest served by disclosure and this exemption may apply.

may be used in construing the" CPRA. (*City of San Jose v. Superior Court* (1999) 74 Cal.App.4th 1008, 1016.) Accordingly, *Animal Legal Defense Fund* is likely instructive, particularly since the purpose of the CPRA's crop report exemption and FOIA's Exemption 4 are both seemingly to protect commercial financial information of grower enterprises and prevent competitive harm, and both the FOIA and CPRA similarly exempt trade secret information.

The existing ILRP WDRs make it clear that reporting is not intended to waive any applicable CPRA exemptions. For example, the ESJ WDRs state, in part, that:

> "All reports prepared and submitted to the Executive Office in accordance with the terms of this Order will be made available for public inspection at the Offices of the Central Valley Water Board, except for reports, or portions of such reports, subject to an exemption from public disclosure in accordance with California law and regulations, including the Public Records Act..." (ESJ WDRs, § IX, ¶ 4 (emphasis added).)

Existing ILRP WDRs also recognize that under the Water Code portions of reports furnished "that *might* disclose trade secrets or secret processes may *not* be made available for inspection by the public," notwithstanding that they may be requested and used by a state agency for official purposes. (E.g., ESJ WDRs, Finding 21, p. 6, citing Water Code § 13267(b)(1) (emphasis added).)

The field level data that the Draft Order proposes to mandate be deposited into a Geotracker or otherwise be made public *by field and location* – e.g., crop type, age, production units, yield, acreage, etc., is similar to the agricultural data that the courts have said is or would be exempt from public disclosure under the CPRA and FOIA. (See, e.g., Draft Order, Appendix MRP-4, p. 10 [Irrigation and Nitrogen Management Plan].) There was abundant evidence at both Workshops that growers view their field level data as essentially provided in confidence to their coalitions, and that growers were very concerned about their sensitive farming information being used by others for improper purposes – ranging from competitive to loss of agricultural business contracts to environmental nuisance lawsuit concerns. We suspect written comments will echo and expand upon these legitimate concerns. There was also evidence that some coalitions are private no-profit entities, which do not regard themselves or the data they keep for growers being subject to a public records act request at all.

In conclusion, under existing ILRP WDRs, although the Regional Water Board may request certain grower information for official purposes to determine compliance with the ILRP WDRs, that does not necessarily or automatically make grower data publically available, and, indeed, in the event of a public records request grower field level data may be legally exempt from public inspection in whole or part. Therefore, creating a mandate that field level data be deposited into a public database, such as Geotracker, or otherwise made available to the public – if not contrary to law – is a substantial, radical change from the current agricultural general

orders, which would expose thousands of coalition growers to improper lawsuits and other undue criticism, harm and burdens that would most certainly flow from publicizing their sensitive field level farming data. Compounding the problem, seeing coalitions as a conduit for field level data disclosure, growers may become disinclined to provide accurate data to coalitions due to fear of the same sort of self-incrimination that the Expert Panel warned against. (Expert Panel Report, p. 36 [collected data should be used for education and management plans, and not initially for enforcement, and "growers will be reluctant to participate in programs if the risk self-incrimination."].)

KRWCA Specific Information, Unique Aspects of Kern Region

We have provided extensive comments and technical information in the past which are part of an extensive record before the CVRWQCB, including our letter of 10 August 2012 on the CVRWQCB's TLB WDRs dated July 2012 (Order R5-2013-XXXX) and a letter of 13 April 2013 on the CVRWQCB's Draft TLB WDRs dated 15 March 2013 (Order R5-2013-XXXX), and provided grower and expert testimony at various ILRP workshops and meetings.

Beyond the concerns with the proposed Draft Order, there is <u>additional Kern-specific information which should and must be given consideration before any of the proposed recommendations in the ESJ Draft Revised Order can be applied to the TLB WDRs</u>. The specific information included the significant depth to groundwater, the highly efficient cropping systems currently employed, and limited drinking water systems exceeding the MCL for Nitrates. With increasing depth to groundwater, the likelihood of attenuation may increase. The thicker vadose zone provides greater opportunities for ion exchanges and changes to any chemically unstable constituents such as nitrate. However, legacy nitrates residing in the unsaturated zone can be a significant ongoing and legacy source for years to come, regardless of current farming practices (Gailey). As discussed previously, the average depth to water of 265' (Gailey) significantly increases these likelihoods, and limits the efficacy of any monitoring programs attempting to link surface activities to changes in groundwater quality.

Irrigation practices in the Kern area are some of the most advanced in the world. As a result of increasing water costs and to improve efficiency and production, many growers have switched away from traditional flood and furrow irrigation and now utilize some form of low application sprinklers (mostly micro spray) or drip technology. "In relative comparisons, the potential for nitrate leaching [in the KRWCA area] has decreased significantly over the past 20 years and in many areas is negligible due to the rapid conversion to highly efficient irrigated perennial crops from historic surface irrigated row and field crops. In general, results confirm that perennial crops on high efficiency irrigation systems (common to the Kern sub basin), result in limited return flows to groundwater. The largest return flows occur under corn/wheat, Sudan/wheat or alfalfa crop rotations that are commonly associated with feeding operations for dairies. The

majority of these systems are currently regulated under the Dairy General Order (2007-035)." (Kimmelshue p.3)[17]

These unique characteristics of the Kern area, which are quite different and distinguishable from the characteristics of the Eastern San Joaquin area, are more fully detailed in the extensive TLB WDRs record before the Regional Water Board and which should and must be considered before any of the proposed changes can be considered appropriate for the TLB WDRs.

ESJ Draft Revised Order Workload & Cost Impacts

The SWRCB has not conducted an economic analysis to determine the additional costs to the CVRWQCB, the Coalitions and member growers to implement the changes to the Draft Order, but the Draft Order asserts that the additional costs and burden associated are not substantial (ESJ Draft Revised Order, pp. 11-12 fn. 28, 54). However, the evidence presented at the State Water Board Workshops indicated that the costs of the recommended changes have not been evaluated and would be *substantial.* Although the PEIR estimated costs for different alternatives for the Long Term ILRP, the Draft Order proposes changes to add new elements and a different association of elements that have not been evaluated for cost impacts before.

The CVRWQCB believes that the cost increases will be substantial, based on baseline estimates provided in the PEIR with an additional 50% for administration to complete additional data analysis and compliance tracking specified for the CVRWQCB. The CVRWQCB has estimated that the State Water Board's changes will require hiring a minimum of over 80 additional full-time Regional Water Board staff members, and result in tens of millions in additional costs to coalitions and their members. The CVRWQCB estimate does not include, however, the costs for providing expedited N coefficients or additional staff members full cost burden per PY.

While the SWRCB needs to perform a full economic analysis of the proposed changes as applied to all agricultural general orders (assuming they will be precedential), it is clear that the increased costs to KRWCA and its members will be substantial. The specific cost increases were calculated in reference to the baseline annual values developed in the 2013 ILRP Cost report submitted by Provost & Pritchard (Attachment B). The 2013 Cost report estimated every aspect of the ILRP program as defined in the Tulare Lake Basin tentative order, including both up front and annual costs to coalitions and members. The original cost report estimates were modified

[17] Kimmelshue, Joel, PhD, CPSS and Stephanie Tillman, MS, CPSS. Kern River Watershed Coalition Authority Assessment of Potential for Nitrate Migration in Kern Sub-Basin. 13 April 2013. Sacramento, Cal.: Central Valley Regional Water Quality Control Board.
Available at:
http://www.waterboards.ca.gov/water_issues/programs/agriculture/docs/cmnts051414/john_schaap.pdf Accessed 1 April 2016.

to meet current knowledge from Coalition experience during the first reporting period of 1 March 2016. Preliminary estimates of the specific increases were made by updating the Cost Report produced by Provost & Pritchard in 2013 with the drafted requirements and current membership demographics.

Table 1 below provides the increase in the annual direct cost of reporting due to the removal of HVA areas on a per member basis. Member hours required to complete the Farm Evaluation and Nitrogen Management Plan for the current costs and the draft ESJ order implementation were updated based on recent grower feedback on the hours required to complete current reporting templates. Cost estimates for consultants required to certify Nitrogen Management Plans and for testing were based on costs associated with similar Dairy General Order elements, as outlined in the initial cost report, for small and large farms. These consultant costs for the Draft ESJ Order were increased by 20% above the current estimate to account for the additional data management effort required in the proposed INMP template. As can be seen, some growers direct cost would increase over $4,000 annually.

Table 1: Current and projected annual direct member reporting requirement cost

Reporting Requirement		Current Costs ($/member/Yr)	Projected Costs ($/member/Yr)	Incremental Increase ($/member/Yr)	% Increase per Member
Farm Evaluation-Low	Small[1]	$72	$360	$288	400%
	Large[2]	$192	$960	$768	400%
Farm Evaluation-High[3]		$795	$795	$0	0%
Nitrogen Management Plan-Low	Small	$1,823[4]	$3,383[5]	$1,560	86%
	Large	$15,774[6]	$19,914[7]	$4,140	26%
Nitrogen Management Plan-High	Small	$2,433[8]	$3,383[5]	$950	39%
	Large	$19,314[9]	$19,914[7]	$600	3%

1. 3 hrs over 5 years (current) or annual (projected), $120/hr used throughout
2. 8 hrs over 5 years (current) or annual (projected)
3. 6 2/3 hrs average for large and small, annual
4. 14.25 hrs + consultant $0 + testing $113, annual
5. 14.25 hrs + consultant $1,560 testing $113, annual
6. 120.5 hrs + consultant $0 + testing $1314, annual
7. 125 hrs + consultant $3600 + testing $1314, annual
8. 8.5 hrs + consultant $1,300 + testing $113 annual
9. 125 hrs + consultant $3,000 + testing $1,314, annual

To understand the cumulative impact of the required changes in costs to members, the KRWCA estimated the member impact of select ESJ Draft Order revisions. There was insufficient data to provide anything beyond a degree of magnitude estimate for some changes. There is very limited information available to estimate the total cost of conducting N coefficients research to

provide for 95%, 99%, and 100% of the cropped acreage throughout the Central Valley or to determine the ultimate cost to KRWCA. Based on similar research projects conducted, filling the data gaps on the remaining 14+ crops to reach 95% coverage would cost tens of millions of dollars. This estimate does not account for any additional costs of attempting to complete concurrent research projects within three years, nor the significant difficulty in completing a meaningful program for permanent crops in this limited timeframe.

KRWCA also estimated the increased costs of the proposed Draft Order for all its members. To ensure equitable comparisons, some aspects of the original cost report were updated to calculate costs based on the currently available information, as noted for Table 1, and current Coalition demographics. These values are provided in **Table 2**.

The direct cost increase to members includes the requirements for all members to submit certified INMPs, annual Farm Evaluations, and to test domestic monitoring wells. Indirect cost increases will manifest as increased coalition fees due to increased coalition staff time, the additional staff required by the CVRWQCB, and the extensive research program required to develop N removed coefficients within three years. Limiting these estimates to include increased reporting requirements, drinking well monitoring, and increased CVRWQCB staffing yields a cost to members of $3 million dollars annually. These changes cumulatively sum to a $5.59/acre incremental increase above the current program element costs to members. For reference, this is 100% greater than the current coalition acreage fees ($5.25/acre).

Table 2: Incremental ($/yr) and ($/acre) costs from proposed revisions for the KRWCA area.

Requirement	Increased Annual Member Costs ($/Yr)	Incremental Cost[1] ($/Acre/Yr)
Annual INMP & Farm Evaluation Submission to Coalition	$1,000,000[2]	$1.90
Drinking Water Well Monitoring & Reporting	$650,000[3]	$1.23
Increased Water Board Staff	$1,300,000[4]	$2.46
TOTAL Increased Costs	**$2,950,000**	**$5.59**

1. Incremental acreage cost employed 527,116 enrolled acres as of April 15th 2016.
2. Increased member costs calculation defined in Table 1, cumulative estimate based on 188 small high vulnerability members, 497 large high vulnerability members, 51 small low vulnerability members, and 85 large low vulnerability growers as of April 15th 2016.
3. Assuming all 685 high vulnerability members must test 2 wells annually, spending 4 hrs at $120/hr coordinating sampling + spending $200/sample
4. 80.3 additional PY (Per CVRWQCB). PY cost adjusted from PEIR estimate of $160,000/PY in

2010 to $175,000 based on CPI values. KRWCA share calculated based on acreage proportion to Central Valley acreage (527,116 acres KRWCA; 5,600,000 acres Central Valley)

Conclusions

KRWCA requests that the SWRCB not adopt the proposed changes to the ILRP in the Draft Order. The existing ESJ WDRs and TLB WDRs are a better alternative, which will more than adequately protects groundwater quality as program elements are implemented. The Coalition and its member growers have already invested substantial sums and growers have agreed to fund and participate in the coalitions based on the structure of the existing order. Changing the rules in the middle of the game, as the Draft Order essentially would do, is inherently unfair, possibly unlawful, unnecessary, and will risk threatening the success and continued role of the coalition in the ILRP process.

The existing process provides for the coalition's housing and summarizing, for Regional Water Board purposes, of sensitive grower member farm field-level data. Growers signed up for and agreed to participate in coalitions with the expectation that their data would only be used as necessary by the Coalition and Regional Water Board for purposes of the general order; there was no expectation that field-level data was being provided to be made readily available in a public database or for other purposes. The coalitions have already initiated the preliminary process to research and define N removed values for cropping systems throughout the Central Valley but the expedited three-years to define and employ these values is infeasible. The current process to fill N data gaps should be allowed to continue to optimize the use of coalition resources and optimize partnerships with commodity groups, research agencies, and the UC extension community. When available, A/R ratios should not be used to define member compliance without adequate research that can be conducted to define their significance in relation to minimizing nitrate leaching and groundwater impacts. Drinking well monitoring will further disengage growers from the coalitions due to the increase in cost, management burden, and fear of unfair incrimination. These concerns with the additional cost of monitoring and reporting for members impacted by the removal of HVA areas make the changes proposed in the Draft Order untenable and ultimately may compromise the progress of the ILRP and efforts of coalitions.

However, if changes to the ILRP WDRs are made (through an appropriate process), KRWCA requests that they be revised in a manner consistent with KRWCA's concerns, suggestions and objections described above. KRWCA believes its request is necessary to avoid and mitigate the undue burden on farmers, Coalitions, and the CVRWQCB, and to avoid the loss of coalition viability which would jeopardize the long-term success of the ILRP. To that end, KRWCA recommends the following alternative to ensure growers are not unduly impacted and coalitions can continue to provide vital services:

1) Remove the requirement to submit full field level data with location information to a public database; instead allow the CVRWQCB to maintain the authority to request this data as technically merited ;

2) Move the requirement for monitoring drinking water wells to a more appropriate program;

3) Remove the requirement for growers to calculate N removed values and keep that responsibility with the coalitions. Increase the allowable timeline to define N removed coefficients, develop reasonable compliance metrics and targets, and assess the relationship between these values and groundwater impacts; and

4) Allow HVA prioritization to phase reporting requirements, focus outreach and education efforts, and ensure resources are used effectively to meet member's needs.

5) Consider Kern County's unique characteristics and scientific based research.

Respectfully,

Nicole M. Bell

Nicole M. Bell
Manager

Attachments

Attachment A- KRWCA 2013 Comment Letter Table of Water Systems within the KRWCA with Nitrate Exceedances

Attachment B- Estimated Cost of Compliance Technical Report prepared for KRWCA (revised 5/12/2014)

Attachment A

Status of Solutions for Kern Systems with Nitrate Exceedances

Water System Name	Population Served[1]	No. of Connections[2]	Number of Exceedances				Most recent NO_3 conc.[1], ppm NO_3	Compliance Period[1]	Solutions Identified[2]
			2005-2007	2008-2010	2011	2012			
Anthony Vineyard Water System	104	8	6	11	3	3	50		Handwashing permit recently revoked due to changing regulations. Bottled water currently provided, POU with RO being considered.
Arvin Community Services District	14,713	3,536	2	2					Issue resolved, as affected well is offline. Replacing when funds are available.
Brock Mutual WC[3]	500	155		2					Consolidating with Vaughn Water Co. Well
East Wilson Road Water Company	35				4	1	54	1st Qtr 2012	Connection to East Niles CSD. They got a planning grant and are extending a pipeline and will abandon affected wells.
Enos Lane Public Utility District	270	82	1				52.1	2nd Qtr 2007	Options: Nitrate blending treatment OR consolidate w Vaughn Water Co.
Farmer John Egg Ranch #2	30	6	3	10	4	6	97	2nd Qtr 2012	Bottled water provided until permanent solution determined
Golden State Vintners-Franzia McFarland	35	1	11	8	4	3	85.6		Recently had handwashing permit revoked due to changing regulations. Bottled water provided as interim solution
Gooselake Water Company	80	32		1			48.3	4th Qtr 2008	Options: Drill 2nd well OR consolidate w nearby water system.
Grimmway Farms Frozen Foods[4]	300	7				3	54	3rd Qtr 2012	Solution being identified.
Heck Cellars Water System	45	8	5	8		3	60	2nd Qtr 2012	Bottled water provided until permanent solution determined
I & I Farms Inc.	50		1		3	1	74	1st Qtr 2012	RO treatment (assumed)
Murray Family Farms Fruit Stand	50			1		1	50	1st Qtr 2012	RO treatment (assumed)
Orange Grove RV Park[3]	200	180	2						Considering connection to East Niles CSD.
San Joaquin Estates Mutual Water Co	165				2	1	57	1st Qtr 2012	Options: Consolidate w East Niles, drill new well, OR treat water
Seventh Standard Mutual	66	22	2	2	1	1	46	1st Qtr 2012	Install water delivery pipeline & new lines & meters to residents. Consolidating with Oildale Mutual.

Attachment A

Status of Solutions for Kern Systems with Nitrate Exceedances

Water System Name	Population Served[1]	No. of Connections[2]	Number of Exceedances				Most recent NO_3 conc.[1], ppm NO_3	Compliance Period[1]	Solutions Identified[2]
			2005-2007	2008-2010	2011	2012			
Son Shine Properties	500	106		2	1		49	4th Qtr 2011	Consolidation with Arvin CSD pending.
Sun Pacific Shippers - Maricopa Water Sys	350				2	1	48	1st Qtr 2012	RO treatment (assumed)
Sun World International, Inc. Com Center	80	6	9	9	2	5		2nd Qtr 2012	Bottle water provided until permanent solution determined
Sunview Cold Storage Water System	130	4	8						RO treatment provided since2006
Sycamore Canyon Golf Course	400	1	10	3	3	4	47	2nd Qtr 2012	Bottle water provided currently for purchase. Potential connection with Arvin CSD for solution
Wheeler Farms Headquarters	25	13			4	1	140	1st Qtr 2012	RO treatment (assumed)
Wilson Road Water Community	72			3	4	1	76	1st Qtr 2012	Options: water treatment or intertie with East Niles CSD
Total Exceedance by Year			**54**	**51**	**34**	**32**			

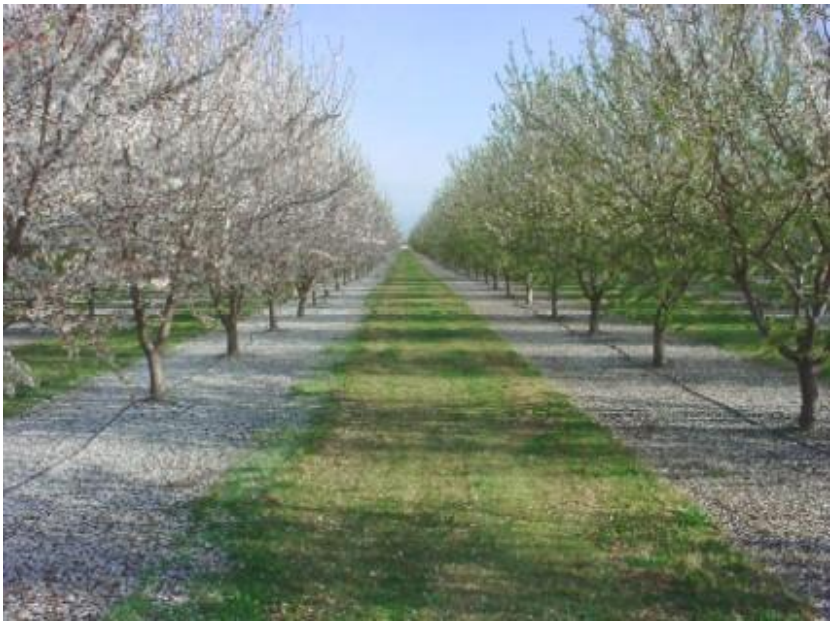
[1] Information from database search on EPA's SDWIS website (http://oaspub.epa.gov/enviro/sdw_form_v2.create_page?state_abbr=CA)

[2] Information from database search from CA Dept. of Public Health for unincorporated water systems

[3] Water system added from database search from CA Dept. of Public Health for incorporated water areas

[4] Grimmway Farms exceedance occurred late in 2012 and a compliance order has just been sent to them

TENTATIVE WASTE DISCHARGE REQUIREMENTS GENERAL ORDER FOR GROWERS WITHIN THE TULARE LAKE BASIN AREA THAT ARE MEMBERS OF A THIRD-PARTY GROUP



4/15/2013
REVISED 5/12/2014

ESTIMATED COST OF COMPLIANCE TECHNICAL REPORT – KERN COALITION

Prepared For:

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Principal Authors - Provost & Pritchard Consulting Group

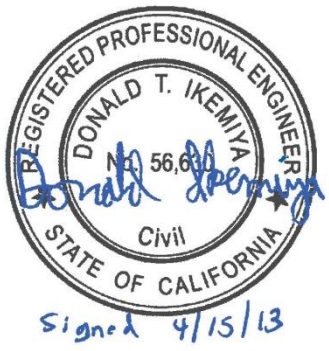
The principal authors of this Report have hands on experience with farming and irrigation practices in the Southern San Joaquin Valley. They were also the principal engineers to help develop the implementation cost estimates for the Dairy General Order working with agronomists, the dairy industry organizations, and the Rancho Cordova Water Board Staff.

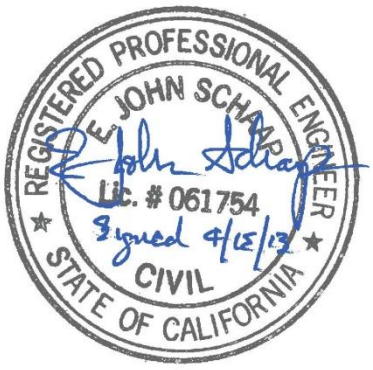
Donald Ikemiya, P.E. – Mr. Ikemiya is a Vice President at Provost & Pritchard with 28 years of engineering experience. He is a California registered Civil Engineer and Agricultural Engineer. He formerly was the Area Engineer for the USDA Natural Resources Conservation Service covering most of the southern Central Valley. He grew up on a farm and currently manages the financial aspects of the now leased family farm, located within the Tulare Lake Basin Area.

E. John Schaap, M.S., P.E. - Mr. Schaap is a Vice President at Provost & Pritchard with 17 years of engineering experience. He is a California registered Civil Engineer and Agricultural Engineer. He formerly managed his own engineering firm and worked for a major Central Valley agricultural producer. He grew up on a dairy in Texas, New Mexico, and Kern County, California.

The cost estimate presented in this Report was developed with significant detail by designating direct hourly costs and expenses to each of the required tasks in the March 2013 Tulare Lake Basin Area Tentative General Order.

An initial version of the cost spreadsheets and per acre costs were presented to the Water Board staff in Fresno on January 29, 2013.





ESTIMATED COST OF COMPLIANCE

TECHNICAL REPORT

KERN RIVER WATERSHED COALITION AUTHORITY

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1

OBJECTIVES, APPROACH & ASSUMPTIONS

A. OBJECTIVES

The objectives of this Estimated Cost of Compliance Technical Report (Report/Study) include the following:

1. Provide a detailed assessment of the Kern River Watershed Coalition Authority's (KRWCA) Third Party and Member costs to comply with the March 2013 Tentative Waste Discharge Requirements General Order for Growers within the Tulare Lake Basin Area (Order).
2. Provide a comparative analysis of the $1.90 per acre incremental cost estimate above the current surface water only program, provided under Finding No. 39 in the Order, to the costs determined in this Study. We are unaware of what detailed assumptions the Water Board staff used or specifically how the $1.90/acre was determined, and are unaware if these assumptions were made public.
3. This Report is to provide concise explanations, coupled with detailed technical background.

B. APPROACH

1. The Kern Coalition is a sub-watershed of the Tulare Lake Basin area. This Report assesses the cost impacts of the Order within the Kern Coalition area and its Members. The Kern Coalition irrigated area is approximately 1,040,000 acres in size with an estimate of 902 Members ultimately joining the Kern Coalition.
2. The primary approach is to designate specific hours, an hourly rate, consultant expenses, and administrative expenses, on a requirement-by-requirement basis as written in the Order. The Report is written to correlate with the Order's Sections.
3. The surface water quality requirements are currently being addressed by the Kern Coalition and therefore the Third-Party and Member costs to comply with the surface water quality sections of the Order were not included in this Report.
4. The costs associated with implementing management practices that might be indirectly triggered or required, were largely not included in the Report costs. Only direct compliance practices (i.e. nitrogen management plans) were estimated. Although these costs will be significant for some individual members, a large majority of Kern Coalition Members have already implemented pressurized irrigation systems, tailwater recovery systems, and other practices that have improved irrigation water distribution uniformity.

C. ASSUMPTIONS

1. It is acknowledged that many of the specific requirements referenced and assumptions made in this Report are based on the information available at the time the Report was written. Future refinements of the costs are expected.
2. The Tentative Order's requirements are not well defined in numerous areas, thus assumptions were made in order to assign costs.
3. Numerical assumptions used in this Report are listed in Table 1 – 1 Kern Coalition Cost Analysis Assumptions.
4. Each Table in this report utilized data summarized from the corresponding detailed spreadsheet in the Appendix.

Table 1 – 1. Kern Coalition Cost Analysis Assumptions

Description	Tulare Lake Basin Area Tentative Order	Kern Coalition	Units
Total Irrigated Lands Area	2,890,000[1/]	1,040,000	Acres
Acres to be Under the Order	850,000[1/ 4/]	1,040,000	Acres
Growers with Irrigated Lands	10,700[1/]	902[3/]	Growers
Potential Members	7,200[1/]	902[3/]	Members
Current Members	--	350	Members
Members Needing to Enroll	--	552	Members
Small Farming Operation (<60 acres) Members	6,206[1/]	182[3/]	Small Farm Members
Small Farming Operation (<60 acres) Acres	133,000[1/]	4500[3/]	Small Farm Acres
Member Hourly Rate	$120[2/]	$120	Per Hour
Coalition Staff Hourly Rate	--	$120	Per Hour
Consultant Staff Hourly Rate	$120[2/]	--	Per Hour
Member Water Board Fee	$0.56	$0.56	Per Acre

1/ March 2013 Tentative Order - Findings No. 12

2/ July 2010 Draft Economic Analysis Technical Memorandum ICF International – Page 2-22

3/ Kern County Agricultural Commissioner Data

4/ This appears to be an error. The acres should match irrigated acres of 2,890,000.

2

WASTE DISCHARGE REQUIREMENTS THIRD-PARTY GROUP COSTS (SECTIONS IV.C & VIII)

A. SECTION IV.C PROVISIONS & REQUIREMENTS – THIRD PARTY

The costs associated with the Third-Party requirements to comply with the WDRs Section IV.C are described in this section. **Table 2 – 1 "Third Party Section IV.C Costs"** summarizes the estimated Kern Coalition costs.

Table 2 – 1 Third-Party Section IV.C Costs

Report Heading	WDR Section	Description	Third-Party One Time Costs			Third-Party Annual Costs		
			Total Hours	Expenses	One Time Upfront Costs[1/]	Total Hours	Expenses	Annual Costs
1.	IV.C.1	Organizational Documentation	72	$7,000	$15640	--	--	--
2.	IV.C.2	Prepare Annual Summaries	--	--	--	144	$4,000	$21,280
3.	IV.C.3	Response to Notice of Violation (NOV)	--	--	--	108	$22,600	$35,560
4.	IV.C.4	Develop, implement, track and evaluate effectiveness of GQMP	200	$100,000	$124,000	100	$40,000	$52,000
5.	IV.C.5	Submittals	--	--	--	100	$5,000	$17,000
6.	IV.C.6	Quality Assurance/Quality Control	--	--	--	100	$1,000	$13,000
7.	IV.C.7	Receipt of Notice of Applicability (NOA)	260	$7,000	$38,200	--	--	--
8.	IV.C.8	Conduct Education and Outreach activities			--	500	$24,000	$84,000
9.	IV.C.9	Annual Membership Participation Report			--	500	$11,000	$71,000
10.	IV.C.10	Ensure Requirements are Met			--	80	$2,000	$11,600
11.	IV.C.11	Fees			--	210	$10,000	$35,200
Third-Party Subtotal			**532**	**$114,000**	**$177,840**	**1,842**	**$119,600**	**$340,640**

1/ One time costs can occur anytime within the first five years of implementation.

1. Organizational Documentation (IV.C.1)

One time upfront costs for:

- Hiring staff to manage the operations.
- Identify responsible persons for program fulfillment.
- Setting up an organizational system and office.
- Update website for Third-Party functionality, create database for contact emails, addresses, transmittals of hardcopies and recordkeeping for Members.
- Annual costs are built into the other ongoing tasks.

2. Prepare Annual Summaries (IV.C.2)

Annual costs for:

- Utilizing accounting staff.
- Fee notices, collection of fees, and receipts.
- Prepare annual summaries of expenditures and revenue.
- Summaries mailed or made readily available to Members.
- First year fee notices and collections are higher in year one, but were annualized over 5 years.

3. Response to Notice of Violation (IV.C.3)

Annual costs for responses to a Notice of Violation (NOV):

- Assume one NOV per year, with approximately 20 Members impacted.
- Notify affected Members within 30 days of receiving NOV.
- Provide confirmation to Water Board of each notification.
- Prepare an annual summary of NOVs for submission to the RWQCB.
- Retain and manage consultants to help respond to and resolve NOV items.
- The cost for a consultant is allocated to expenses.

4. Develop & Implement Plans to Track & Evaluate (IV.C.4)

One time upfront costs for:

- The Third-Party is to develop and implement plans to track and evaluate the effectiveness of water quality management practices, pursuant to the Groundwater Quality Management Plan (GQMP).
- Requirements are identified in WDRs IV.C.4, VIII.I and portions of MRP-1.

Annual costs for:

- Annual updates to the GQMP due in May of each year,.

5. Submittals (IV.C.5)

Annual costs:

Most submittal requirement costs are embedded in the costs for each report. However, additional administrative costs are required to track, schedule, meet the deadlines, and file on an annual basis.

6. Quality Assurance Quality Control (QAQC) (IV.C.6)

Annual costs:
Annual costs are required to provide a fresh look at water quality monitoring and assessments in conformance with QA/QC.

7. Receipt of Notice of Applicability (NOA) (IV.C.7)

Upfront costs:

- Up-front costs to inform Members and future Members (within 30 days) of approval of the NOA, and to provide Members information on the Order's requirements.
- Request and track return receipt of a notice of confirmation form to be completed by each Member.

8. Conduct Education and Outreach Activities (IV.C.8)

Annual costs:

a) Educate Members of program requirements:
   - Water quality problems.
   - Exceedances of water quality objectives.
   - Degradation of water quality.

b) Maintain attendance lists for outreach events.

c) Provide Members with information on:
   - Water quality practices.
   - Environmental impacts of water quality practices.

d) Provide annual summary of education and outreach activities to Board, including:
   - Copies of educational and management practice information provided.
   - Report the total number of Members attended.
   - Describe the process used to provide information to non-attendees.

9. Annual Membership Participation Report (IV.C.9)

Annual costs:

a) Work with RWQCB to ensure all Members are addressing exceedances or degradation.

b) As part of the Membership List submittal, identify growers who have failed to:
   - Implement improved water quality management practices as specified (GQMP).
   - Respond to an information request associated with the GQMP or this Order.
   - Participate in Third-Party studies where the Third-Party is the lead.
   - Provide confirmation in an outreach event.
   - Submit required fees to the Third-Party.

10. Requirements by Subsidiary Groups (IV.C.10)

Annual costs:

- Ensure activities performed by subsidiary groups meet requirements.
- Assume 5 days of work per subsidiary group and up to 16 groups.

11. Fees (IV.C.11)

Annual costs:

- Collect RWQCB fees from Members and submit to Board.
- Collect fees from Members for reimbursement of Third-Party activities.
- Maintain records and/or reports for 5 years.

B. SECTION VIII REQUIRED REPORTS AND NOTICES – THIRD PARTY

The costs associated with the Third-Party requirements to comply with the WDRs Section VIII are described below. **Table 2 – 2 "Third-Party Section VIII Costs"** summarizes the Kern Coalition costs.

Table 2 – 2 Third-Party Section VIII Costs

Report Heading	WDR Section	Description	Third-Party One Time Costs			Third-Party Annual Costs		
			Total Hours	Expenses	One Time Upfront Costs	Total Hours	Expenses	Annual Costs
1.	VIII.A	Third-Party Application	40	$2,000	$6,800	--	--	--
2.	VIII.B	Membership (Participant) List	720	$3,100	$89,500	90	$600	$11,400
3.	VIII.C	Templates	0	$0	$0	55	$700	$7,300
4.	VIII.D	Groundwater Quality Assessment Report and Evaluation/Monitoring Workplans	Included in Attachment B MRP					
5.	VIII.F	Sediment Discharge and Erosion Assessment Report	200	$70,000	$94,000	--	--	--
6.	VIII.H	Monitoring Report (Attachment B – V.C)	--	--	--	800	$5,000	$101,000
7.	VIII.I	Comprehensive Groundwater Quality Management Plans (GQMP)	Included in MRP-1					
8.	VIII.J	Technical Reports-Where monitoring in not effective, provide technical reports	--	--	--	350	$2,000	$44,000
9.	VIII.K	Notice of Termination	--	--	--	--	--	--
10.	VIII.L	Total Maximum Daily Load (TMDL) Requirements	300	$5,000	$41,000	--	--	--
		Third-Party Subtotal	**1,260**	**$80,100**	**$231,300**	**1,280**	**$8,300**	**$163,700**

1. Third-Party Application (VIII.A)

Upfront costs:

- Submit request to Board within 30 days of Order effective date.

- Follow up actions.
- Formation costs in IV.C.1

2. Membership (Participant) List (VIII.B)

Upfront costs of and annual costs :

a) Submit list of Members to Board:
   - Within 180 days of reviewing NOA.
   - Annually by July 31 of each year.

b) List shall contain, at minimum:
   - All parcel numbers covered under the membership.
   - County of each parcel.
   - Section, Township, and Range associated with each parcel.
   - Number of irrigated acres for each parcel
   - Member names, mailing addresses, and contact name and phone number (can use Third-Party) with annual updates.
   - Name of farm operator for each parcel if different from the Member.
   - Identification of the crops grown and acreage of each crop.
   - Identification of each parcel that is a part of the Small Farming Operation, if applicable.

3. Templates (VIII.C)

The Kern Coalition costs were estimated with the assumption that the Eastern San Joaquin Coalition templates (yet to be approved) would be utilized. Costs for development of the templates have already been incurred, as part of the group option, and are not included in this estimate.

Upfront costs submitted to the RWQCB and annual costs of $7,000:

a) Farm Evaluation Template:
   - Group Option to Water Board within 90 days of NOA.
   - Identification of on-farm management practices implemented to achieve the Order's farm management performance standards.
   - Specifically track which management practices recommended in management plans have been implemented on the farm.
   - Identification if movement of soil occurs during storm events and/or during irrigation drainage events (sediment and erosion risk areas) and a description of where this occurs.
   - Identification if water leaves the property and is conveyed downstream and a description of where this occurs.
   - Location of in-service wells and abandoned wells.
   - Identification if well-head and backflow protection practices have been implemented.

b) Nitrogen Management Plan Template:
   - Costs for member compliance with the templates are captured in section C, Member Requirements below.
   - Nitrogen Management Plan Summary Report.

c) Sediment and Erosion Control Plan Template:

4. Groundwater Quality Assessment Report and Evaluation/Monitoring Workplans (VIII.D)

Costs for this section are included in the MRP Attachment B of the Order and Section 3 of this Report.

5. Sediment Discharge and Erosion Assessment Report (VIII.F)

Upfront costs:
- Submit one year after receiving NOA (Attachment B, VI).
- Notify impacted Members to prepare plan.

6. Monitoring Report (VIII.H)

Annual costs:
- MRP Attachment B, V.C.
- Submit monitoring reports to State Board GeoTracker database by 1 May annually.

7. Comprehensive Groundwater Quality Management Plan (GQMP) (VIII.I)

- The costs for this item are estimated under Section 4 of the report, Management Plan Requirements.

8. Technical Reports (VIII.J)

Annual costs:
- Where monitoring is not effective, provide technical reports.
- One report per year.

9. Notice of Termination (VIII.K)

- Negligible costs are estimated to be associated with this item.

10. Total Maximum Daily Load (TMDL) Requirements (VIII.L)

Upfront costs:
- Implement approved TMDLs in the Basin Plan, as applicable.

C. SECTION VII REQUIRED REPORTS & NOTICES – MEMBER

The costs associated with Member requirements to comply with the WDRs Section VII are described in this section. **Table 2 – 3 "Member Section VII Costs"** summarizes the Kern Coalition Costs.

Table 2 – 3 Member Section VII Costs

Report Heading	WDR Section	Descriptions	Member One Time Costs			Member Annual Costs		
			Total Hours	Expenses	One Time Upfront Costs	Total Hours	Expenses	Annual Costs
1.	VII.A	Notice of Confirmation (NOC) / Notice of Intent (NOI) / Membership Application	3,548	$123,900	$549,660			$0
2.	VII.B	Farm Evaluation	5,548	$22,933	$688,633	920	$0	$110,354
3.	VII.C	Sediment and Erosion Control Plan	63	$110,000	$117,500	50	$0	$6,000
4.	VII.D	Nitrogen Management Plan (NMP)				90,920	$2,637,246	$13,547,646
5.	VII.E	Mitigation Monitoring – Certain Members required to implement mitigation measures in Attachment C	400	$300,000	$348,000	40	$10,000	$14,800
6.	VII.F	Notice of Termination				50	$200	$6,200
7.	XI	Annual Fees Paid by Member					$582,500	$582,500
Member Subtotal			**9,559**	**$556,833**	**$1,703,793**	**91,980**	**$3,329,946**	**$14,267,500**

1. Notice of Confirmation (NOC) / NOTICE OF INTENT (NOI) / MEMBERSHIP APPLICATION (VII.A)

a) Member enrolled under Order R5-2006-00XX Southern San Joaquin Water Quality Coalition; 350 estimated Kern Members.
- Within 150 days of NOA by Executive Officer.
- Third-Party will provide NOC form from Member within 30 days of receiving NOA.

b) All other Growers:
- Growers not in Coalition, estimated 500 Members need to join.
- Complete Third-Party membership application.
- One-time fee of $200.
- Provide certification, written notice was provided of enrollment to non-Member parties.
- Third-Party will confirm membership.

c) 151 days after the Executive Officer's issuance of NOA to the Third-Party, Growers no yet members must:
- Estimate 52 Growers will miss the deadline.
- Complete NOI application to the Board.
- NOI processing fee.
- Membership application to Third-Party.
- Alternatively, a Grower may submit to the Board a RWD or NOI as an individual discharger. These costs not accounted in the cost estimate.

2. Farm Evaluation (VII.B) Upfront

The costs for the Farm Evaluation were estimated based on the template provided to the RWQCB on April 11, 2013 by the East San Joaquin Water Quality Coalition, under the group option. If the template or other Farm Evaluation guidelines are ultimately revised, our cost estimate will need corresponding adjustment.

a) Approximately $19,400 in third party up-front cost were estimated for five grower outreach events to explain and provide clarification in filling out the forms.
- Member time was included in the estimate for attending the outreach meetings.
- A small amount of member time was allotted for gathering parcel information, doing research on management practices in preparation for the meeting.
- Filling out part B for combinations of management practices by crop per farm.
- Drawing a map of the farm for onsite inspection purposes.

b) Assumptions for small vs large farms in low vs. high vulnerability are detailed in **Table 2 - 4 Farm Size and Vulnerabiity Areas** below.
- Slightly more time and expense was estimated for filling out the farm evaluation for large farms than for small. (3 combinations of crops/management practices to detail in part B vs. 1 for small farms).
- The time to fill out the farm evaluation on a recurring basis (annually in high vulnerability and every 5 years in low vulnerability) was estimated to be significantly less, once growers were familiar with it.

The following summarizes the major results of the Farm Evaluation cost estimate:

c) Members in Low Vulnerability Areas:
- Small Farming Operations cost to fill out the form of $595 per member.

- Farming Operations greater than 60 acres: $775 per member.
- Costs to fill out evaluations every five years were annualized. Costs to fill out the form on a recurring basis was estimated at $162 per member.

d) Members in High Vulnerability Areas:
   - Costs for large growers were used for all growers in high vulnerability.
   - For more details, refer to the **WDR Member Requirements Attachment.**

3. Sediment and Erosion Control Plan (VII.C)

The costs for the Sediment and Erosion Control Plan were estimated based on the template provided to the RWQCB on April 11, 2013 by the East San Joaquin Water Quality Coalition, under the group option. If the template or other guidelines are ultimately revised, our cost estimate will need corresponding adjustment.

a) Fifty (50) farms were assumed to be subject to the requirement for a Sediment and Erosion Control Plan in the Kern sub-watershed.
   - Since the details of a self certification program are unknown at this point, and since a significant (and valuable) investment of time on the part of the grower would also be required for self certification, certification by a professional engineer was assumed.
   - We assumed a flat cost of approximately $2200 to certify a plan based on the template.
   - The plan assumes a small amount of grower time to work with the certifying party.
   - The total cost estimated for each plan was $2,338.
   - The estimated costs to implement management practices that would possibly be specified by the plans were not included.

4. Nitrogen Management Plan (NMP) (VII.D)

The costs for the nitrogen management plan were estimated based on the NMP template provided to the RWQCB on April 11, 2013 by the East San Joaquin Water Quality Coalition, under the group option.

a) Given the definition of high vulnerability stated in the Tentative Order, it is assumed that the entire Westside and all areas with poor quality perched water and underlying high nitrates will be high vulnerability.

b) It was assumed that only about 30% of the farms would be in the low vulnerability area, with corresponding lower regulatory requirements.

c) According to Kern Ag Commissioner data, there are approximately 902 farms in Kern, and approximately 182 of those farms have less than 60 acres.

d) **Table 2 - 4 Farm Size and Vulnerability Assumptions** summarizes the distribution of farm sizes assumed for the nutrient management cost analysis.

Table 2 – 4 Farm Size and Vulnerability Assumptions

	Small	Farms > 60 ac	Total
Low vulnerability	60	216	**276**
High vulnerability	122	504	**626**
TOTAL	**182**	**720**	**902**

e) There are approximately 1,040,000 irrigated acres in the Kern sub-watershed. Small farms comprise approximately 4500 acres, which averages out to approximately 25 acres per farm. Our analysis assumed that the remaining farms averaged 1,438 acres per farm, so that the sum total of acres would match the sub-watershed total.

f) Since the details of a self certification program are unknown at this point, and since a significant (and valuable) investment of time on the part of the grower would also be required for self certification, certification by a Certified Crop Advisor (**CCA**) was assumed. From our experience with the dairy order, we assumed a minimum flat cost of $1,200 plus $100 per field. Field size was assumed to be 25 acres on small farms and 80 acres on large farms. An irrigation well was assumed to exist on every small farm. On large farms, every well was assumed to serve 240 acres. Thus, large farms were assumed to have 6 wells.

g) Lab analysis cost assumptions are summarized in **Table 2 – 5 Lab Analysis Cost and Frequency Assumptions**.

Table 2 – 5 Lab Analysis Cost and Frequency Assumptions

Analysis	Cost per sample	Sample frequency
Soil	$20	One per field per year
Irrigation water	$60	One per well per year
Manure/compost	$33	One per field per year

h) Approximately six hours of time was assumed to be required per field, per year, for nutrient and yield recordkeeping. Other small amounts of grower time per field were assumed to be necessary for the following:

- Review of yield history and preparation for nutrient planning at the beginning of the season;
- Mid season review of yield potential and adjustments in nutrient planning;

- Ratio calculation;
- Reporting (in high vulnerability only).

i) Some expense is estimated for accomplishing grower outreach meetings in various parts of the sub-watershed, to help orient growers to the new requirements and to provide helpful information and guidance. This shows up as an up-front third party cost.

The following summarizes the major aspects of the results of the NMP cost analysis:

j) High Vulnerability Groundwater Area costs to prepare, certify, and implement an NMP:
   - Small Farming Operations: $2,433 total cost per farm, or about $97.30 per acre.
   - Farming Operations > 60 ac: $19,314 total cost per farm, or about $13.40 per acre.

k) Low Vulnerability Groundwater Area costs to prepare and implement an NMP:
   - Small Farming Operations: $1,823 total cost per farm, or about $72.90 per acre.
   - Farming Operations > 60 ac: $15,774 total cost per farm, or about $11 per acre.

5. CEQA Mitigation Monitoring (Attachment C) (VII.E)

a) Submit mitigation monitoring by an estimated 10 members per year for upfront and annual costs.
   - Implementation of CEQA mitigation measures (cultural resources, veg & wildlife, fisheries, ag resources, GHG emissions
   - Measures implemented
   - Potential environmental impact measures addressed
   - Location of measures (parcel number, county)
   - Steps taken to monitor success of measure

6. Notice of Termination (VII.F)

Estimate 5 terminations per year, mostly due to change in ownership or consolidation of farms.

7. Annual Fees Paid by Member (XI)

Tier 1 Water Board Fees at $100 per group plus $0.56 per acre.

3

MONITORING AND REPORTING PROGRAM ATTACHMENT B OF GENERAL ORDER

A. MONITORING AND REPORTING PROGRAM, SECTION IV

The costs associated with the Third-Party requirements to comply with the Monitoring and Reporting Program (MRP) in Attachment B, Section IV are described in this section. **Table 3 – 1 "Attachment B – MRP Section IV Low Estimate"** summarizes the Kern Coalition estimated costs.

Table 3 – 1 Attachment B – MRP Section IV Low Estimate

Report Heading	MRP Section	Description	Third Party-Upfront			Third Party-Annual		
			Total Hours	Expenses	One Time Upfront Costs	Total Hours	Expenses	Annual Costs
1.	IV.A	Groundwater Quality Assessment Report (GAR)	450	$250,500	$304,500			
2.	IV.B	Management Practice Evaluation Program (MPEP)	253	$141,028	$171,429			
3.	IV.C	Groundwater Quality Trend Monitoring IV.C	120	$5,000	$19,400	2,300	$12,000	$288,000
4.	IV.D	Management Practices Evaluation Workplan IV.D	253	$141,028	$171,429			
5.	IV.E	Trend Monitoring Workplan-following MRP IV.E	1,900	$16,000	$244,000			
Section IV Subtotal			**2,977**	**$553,556**	**$910,758**	**2,300**	**$12,000**	**$288,000**

Table 3 – 2 Attachment B – MRP Section IV High Estimate

Report Heading	MRP Section	Description	Third Party-Upfront			Third Party-Annual		
			Total Hours	Expenses	One Time Upfront Costs	Total Hours	Expenses	Annual Costs
1.	IV.A	Groundwater Quality Assessment Report (GAR)	450	$250,500	$304,500			
2.	IV.B	Management Practice Evaluation Program (MPEP)	1,250	$1,350,000	$1,500,000			
3.	IV.C	Groundwater Quality Trend Monitoring IV.C	120	$5,000	$19,400	2,300	$12,000	$288,000
4.	IV.D	Management Practices Evaluation Workplan IV.D	1,250	$1,350,000	$1,500,000			
5.	IV.E	Trend Monitoring Workplan-following MRP IV.E	1,900	$16,000	$244,000			
Section IV Subtotal			**4,970**	**$2,971,500**	**$3,567,900**	**2,300**	**$12,000**	**$288,000**

1. Groundwater Quality Assessment Report (GAR) (IV.A)

The proposed GAR outline must be submitted within 3 months after receiving the notice of applicability (**NOA**). The completed GAR must be submitted within 1 year after receiving the NOA. The following data and analysis are required:

a) GAR Components from existing federal/state/county/local databases and documents:
- Detailed land use information.
- Depth to groundwater map.
- Groundwater recharge information.
- Soil survey information.
- Shallow groundwater constituent concentrations (potential COCs).
- Existing groundwater data collection and analysis efforts.
- Discuss geological and hydrogeologic information.

b) GAR data review and analysis:
- Determine high vulnerability areas based on potential impacts from irrigated agricultural activities.
- Determine merit of incorporating existing data collection efforts to achieve objectives.
- Prepare ranking of high vulnerability area for prioritization of workplan activities.
- Utilize GIS mapping applications, graphics, tables to convey data, analysis, and results.

c) Groundwater vulnerability designations:

- Designate high/low vulnerability areas.
- Modify designations every 5 years after GAR approval.

d) Prioritization of high vulnerability groundwater areas:
- Identify exceedances of water quality objectives.
- Proximity of high vulnerability area to areas contributing to recharge to urban and rural communities.
- Identify existing irrigated agriculture field or operational practices.
- Consider largest commodity types comprising up to at least 80% of irrigated agricultural acreage.
- Consider legacy or ambient conditions of groundwater.
- Identify groundwater basins currently or proposed to be under review by CV-SALTS.
- Identify constituents of concern (e.g. relative toxicity, mobility).

Based on other prior detailed estimates of GAR cost that we have performed, we estimate the GAR cost for the sub-watershed to be approximately $304,500. This estimate is in reasonable agreement with the reported initial contracted price of the East San Joaquin GAR.

2. Management Practice Evaluation Program (MPEP) (IV.B)

The goal of the MPEP is to determine effects, if any, that irrigated agricultural practices have on groundwater quality. The following are requirements of the MPEP that are detailed in the Monitoring and Reporting Program of the Tentative Order.

a) Objectives of MPEP:
- Identify existing site and/or commodity specific practices protective of groundwater quality.
- Determine if newly implemented management practices are improving or may improve groundwater quality.
- Develop an estimate of the effected Members' discharges of COCs using a mass balance model.
- Utilize results of evaluated management practices to determine if management practices need to be improved.

b) Implementation on a watershed or regional commodity basis with other Third-Party groups. Prepare and submit a master schedule of the rank or priority for investigation of high-vulnerability areas.

c) Reports of the MPEP – reports shall evaluate the data and make a determination whether groundwater is being impacted by activities at farms.

d) Management Practices Evaluation Report (MPER):
- No later than 6 years after implementation of each phase.
- Identify management practices that are protective of groundwater quality.
- Identify management practices that are appropriate for site conditions on farms.

- Include maps showing types of management practices that should be implemented in certain areas.
- MPEP to include adequate technical justification for identifying protective management practices.
- Propose and implement new/alternative management practices if existing are not protective.
- GQMPs are to be updated to be consistent with the findings of the MPER.

The costs of the MPEP are variable at this point. There are two major options as noted above: perform the MPEP as a group, or just within the Kern area. Costs estimates can be refined once a decision is made on approach and once an MPEP workplan has been approved by the RWQCB. The following is our best estimate of the total cost of all activities associated with the MPEP options. Please refer to the following related areas of this report and the cost estimate spreadsheet:

- Management Practices Evaluation Workplan (item 4 below), and;
- Monitoring Well Installation, Sampling Plan, And Completion Report (section 5 of this report. This estimates major monitoring well costs for a Kern only approach.)

e) The Kern only option for executing the MPEP will be extremely expensive in Kern due to the significant depth to groundwater. Results will also be slow to reach monitoring wells, which may require monitoring over a longer period before conclusions can be made, probably incurring more cost. Nevertheless, growers in Kern may not choose to rely on conclusions that are derived in areas with much shallower groundwater. There is an argument for Kern doing its own MPEP, as Rob Gailey noted that 85% of the Kern area has groundwater deeper than what has been covered by existing studies. Areas with shallower groundwater may not have geology that is as protective, and may not benefit from natural attenuation or denitrification that Kern may benefit from due to its deeper groundwater.

f) Clay Rodgers noted at the 8/21/12 Tulare workshop that the Representative Monitoring Program (now MPEP), will be expensive. The name has changed, and there will potentially be less reliance on first encountered groundwater monitoring and more reliance on vadose zone monitoring (potentially using lysimeters) and modeling; however, staff has expressed that monitoring well data will be necessary to validate conclusions. Mr. Rodgers approached the question of cost using the Dairy Representative Monitoring Program (RMP) as an example. Mr. Rodgers indicated that the Dairy RMP had spent $2 million in two years and that it had a revenue stream of approximately $1.25 million dollars per year to support it.

g) As Mr. Rodgers noted, Central Valley irrigated agriculture, is much larger in scope than the dairy industry consisting of 33,000 farms on 7.5 million acres, with in excess of 250 crops. Mr. Rodgers emphasized that the management practices would likely be a bigger driver in determining the amount of work necessary for evaluating irrigated ag than the number of crops. Mr. Rodgers noted that there are fewer dairies with a smaller number of crops, but they have production areas in addition to cropland. Mr. Rodgers theorized that in the best case would be that the MPEP would be the same size as the dairy RMP, or a little larger. He theorized that the worst case the MPEP would be five times larger. This would result in a cost range of $1.5 to $7 million per year, or $0.20 to $1/acre a year. Using a cooperative approach, he estimated that costs would be on the low end. He noted that the disadvantages of representative monitoring include that after having agreed to representative monitoring, if results indicate that a grower needs to improve their management practices, they will be obligated to follow through and cannot at the end refuse to make prescribed improvements. Thus, growers must carefully consider their commitment to a monitoring program that proposes to monitor elsewhere, and make sure that all necessary variables are taken into account, to provide accurate results. This will be an important item for Kern's consideration, as it will be very expensive to monitor in Kern.

h) Looking at the draft Farm Evaluation template submitted on 4/11/13, the management practices can be characterized in the following way:
- Pesticide practices: 15 practices noted.
- Irrigation practices: 9 noted, which could fall into two broad categories of pressurized vs. surface irrigation systems.
- Nitrogen management practices: 11 noted. These could be further classified as application methods vs. management tools.
    - At the simplest level, the application methods could be contrasted as fertigation vs. alternative delivery methods (foliar, split applications, variable rate/GPS).
    - Management tools can be classified as technical (lab testing) vs. simple advising (published guidelines, etc.)
    - Thus under management, there seems to be a minimum of 4 combinations to evaluate.

i) If we consider only irrigation and nutrient practices and combinations therein, we could have a minimum of 2 irrigation x 4 nitrogen practices = 8 combinations of

practices. It would easily be conceivable to have up to 16 combinations or more that should be incorporated, if we were to add pesticide practices as a variable, or further resolution on irrigation or nitrogen practices.

j) Mr. Rodgers noted that there are in excess of 250 crops grown in the Central Valley. At the simplest level these can probably be aggregated into three groups: field crops, vegetable crops, and fruit & nut crops. Knowing that there are many unique aspects about various crops, this may not be appropriate. It's very possible that there could be 25 or more crop groups that should be analyzed.

k) Regarding site conditions, at the simplest level, there should probably be three variables: coarse or sandy soils, medium texture soils, and fine (clayey) soils. Looking at the soil triangle, there could easily be 9 or more variables for site condition. Depth to water and other variables could also be introduced here, adding more variables.

l) Thus, looking at the possible combinations for a MPEP effort, we could have the following:
- Minimum: 3 crops groups x 8 management practices x 3 site conditions = 72 monitoring sites.
- Middle scenario: 14 crops groups x 12 management practices x 6 site conditions = 1008 monitoring sites.
- Possible maximum: 25 crops groups x 16 management practices x 9 site conditions = 3600 monitoring sites.

m) If a Kern-only MPEP were to be undertaken, it would have less diversity than the whole Central Valley. It may be possible to aggregate Kern into 6 crop groups x 8 management practices x 3 site conditions. There has been a relatively uniform adoption of advanced practices in Kern, which may lend to analyzing something closer to the minimum number of management practice factors. Regarding site conditions, 3 factors may be appropriate, as noted in Dr. Kimmelshue's work, and characterization of the sub-watershed into 3 major texture categories.

n) Given the above possibilities for combinations that may need to be analyzed, and using cost assumptions such as those noted in Section 5 regarding MWISP costs, we estimated the potential up-front and annual costs that may be incurred for MPEP programs at the various intensity levels. Assumptions used in the model included the following:
- Higher MPEP workplan costs for aggregation into fewer crop groups.

- Higher MPEP analysis and reporting work necessary to derive conclusion when crops were aggregated into fewer, larger groups.
- 3 wells per monitoring site (as opposed to the 5 or 6 that were used in the Dairy RMP). This is in recognition of the changes made with the name change from RMP to MPEP, with the intent to reduce the number of wells and rely on alternative methods instead. While alternatives to groundwater monitoring can have considerable cost, we did not account for their cost in this analysis.
- $4000 monitoring well cost for group option work, assuming that wells will be constructed in places with shallower groundwater.
- Kern share calculated by taking 1/7th of up-front and annual group option costs.

o) Once a model was built, other scenarios were devised that would roughly match the dairy RMP cost and something that was close to Mr. Rodgers anticipated worst case scenario of 5 times the dairy RMP cost.

Calculations for a Kern-only MPEP were undertaken with similar assumptions, but using a $17,000 well cost instead, to account for the deeper groundwater.

The data for all of these scenarios is summarized in **Table 3 - 3**. In addition, the percent of growers monitored is noted. As a reference, the dairy RMP proposes to ultimately monitor 65 out of 1250 dairies, a rate of approximately 5%

.

Table 3 – 3 MPER Cost Grid

Description	Crop groups	Management Practices	Site Conditions	Sites	% of growers monitored	Wells per site	Workplan cost per crop group	Analysis cost per crop group	Well drilling cost, ea	One time costs	Annual costs, $	Annual costs, $/ac	Annual, % of dairy RMP cost	Comments
Kern Only	6	8	3	144	16%	3	$250,000	$250,000	$17,000	$11,864,64	$5,932,800	$5.70	456%	There will doubtless be some duplication of effort with a Kern only MPEP. Is there a possibility for a hybrid option? Group option for certain crops, Kern only for other crops?
Group option														
Description	**Crop groups**	**Management Practices**	**Site Conditions**	**Sites**	**% of growers monitored**	**Wells per site**	**Workplan cost per crop group**	**Analysis cost per crop group**	**Well drilling cost, ea**	**Kern share of one-time costs**	**Kern share of annual costs, $**	**Annual costs, $/ac**	**Group annual cost, % of dairy RMP cost**	**Comments**
Match dairy RMP cost	3	4	3	36	0.1%	3	$300,000	$300,000	$4,000	$373,166	$211,886	$0.21	114%	Doubtful that we could cover the whole valley on this few combinations.
Minimum combinations	3	8	3	72	0.2%	3	$300,000	$300,000	$4,000	$489,189	$423,771	$0.42	228%	Risk being regulated on data that doesn't fit. This may not be enough combinations.
5x Dairy RMP	4	8	5	160	0.5%	3	$300,000	$300,000	$4,000	$858,514	$941,714	$0.94	507%	This was Clay Rodgers' worst case scenario. This may not be enough combinations to avoid bad conclusions.
Middle scenario for combinations	14	12	6	1008	3.1%	3	$150,000	$150,000	$4,000	$3,848,640	$5,932,800	$5.93	3195%	Cost goes up exponentially with increase in combinations. Dairy RMP monitored 65 dairies out of 1250 represented = 5%. This is closest scenario to the same ratio.
Possible max combinations	25	16	9	3600	10.9%	3	$100,000	$100,000	$4,000	$12,316,57	$21,188,571	$21.19	11409%	This is still a modest number of crop groups and management practices considering the Valley's diversity. Costs are astronomical.

MPEP Conclusions:

Based on inspection of table 3.3, we think that the MPEP cost will exceed close to the worst case scenario noted by Mr. Rodgers, approximately five times the cost of the dairy RMP. This is just above the minimum scenario, with 4 crop groups, 8 management practices, and 5 site conditions, resulting in 160 monitoring sites. While all of the coalitions want to minimize the cost of the MPEP and other compliance obligations, irrigated agriculture cannot afford to be regulated based on bad data. If derived conclusions are wrong, it will be much more costly to change management practices wrongly. Given the fact that the executive officer has all of the power in approving the MPEP workplan, and given how adding factors can increase the work and cost almost exponentially, it will be very important to secure some sort of maximum expenditure for the MPEP, perhaps at the worst case scenario level of five times the dairy RMP (or about $1/acre/year), noted by the Assistant Executive Officer. Since irrigated agriculture can't afford to be regulated by bad data, additional time may be necessary to accomplish the MPEP, if the cost of work to be done on an annual basis needs to be limited.

As noted by the Kern-only MPEP scenario, if the Kern sub-watershed decides that it will not be able to abide by conclusions derived in shallower groundwater areas, the costs could be much higher. In addition, monitoring would have to be undertaken for a much longer period of time in order to get results. Monitoring for the Kern-only option, if undertaken at the intensity estimated, could cost close to $6/acre/year. Until other assurances can be made, this contingency could also cover the possibility of the number of combinations to be analyzed in the group option getting closer to the level of the middle scenario (14 crop groups x 12 management practices x 6 site conditions = 1008 monitoring sites.) If undertaken on behalf of the whole Central Valley, this represents monitoring on approximately 3.1% of the grower farms, a ratio that is closest to the ratio exhibited in the dairy RMP. Our cost estimate summary thus reflects a range of costs, due to the uncertainty surrounding the cost of the MPEP.

3. Groundwater Quality Trend Monitoring (IV.C)

a) Objectives:
- Determine baseline groundwater quality relevant to irrigated agriculture.
- Develop long-term groundwater quality info that can be used to evaluate regional effects of irrigated agriculture.

b) Implementation:
- Develop a groundwater monitoring network over high & low vulnerability areas.
- Employ existing shallow wells but not necessarily wells in the upper zone of the first encountered groundwater.
- Submit proposed Trend Groundwater Monitoring Workplan (MRP IV.E)

c) Reporting:
- Maps, tabulation of data, time of concentration charts, submitted electronically to GeoTracker.

- Evaluate data for trends as proposed in MRP IV.E.

4. Management Practices Evaluation Workplan (IV.D)

a) Submit workplan within 2 years after GAR approval.
b) Workplan approach:
   - Groundwater monitoring – must be first encountered groundwater.
   - Modeling of groundwater data.
   - Vadose zone sampling.
   - Other scientifically sound and technically justifiable methods for meeting objectives of the MPEP.
c) Groundwater quality monitoring – constituent selection (when groundwater monitoring is proposed):
   - Constituents to be assessed.
   - Frequency of data collection for each constituent.
d) Workplan implementation and analysis – explain how data at evaluated farms will be used to assess groundwater impacts on farms not evaluated.
e) Master work plan prioritization:
   - If high vulnerability areas are ranked in GAR, prepare a workplan timeline, priority, for areas and/or commodity.
   - Submittal dates for addendums proposing the details of each area's investigation.
f) Installation of monitoring wells:
   - Upon approval of a workplan, prepare and submit a Monitoring Well Installation & Sampling Plan (MWISP) as described in MRP-2.

5. Trend Monitoring Workplan – MRP IV.C (IV.E)

a) Submit workplan within 1 year after GAR approval.
b) Workplan approach:
   - Discussion of rationale for number of proposed monitoring wells and locations.
   - Consider variety of agricultural commodities produced.
   - Consider conditions discussed/identified in GAR related to vulnerability prioritization.
   - Areas identified as recharge to urban and rural communities
c) Well details for wells included in Trend Monitoring:
   - GPS coordinates, physical address of property, and CA State well number.
   - Well depth, top and bottom perforation depths.
   - Copy of the well drillers log, if available.
   - Depth to standing water (static), if available.
   - Well seal information (type of material, length of seal).
d) Proposed sampling schedule:
   - Annual sampling.
e) Workplan implementation and analysis:
   - Proposed method(s) to be used to evaluate tends in the groundwater monitoring data over time.

B. MONITORING AND REPORTING PROGRAM, SECTION V

The costs associated with the Third-Party requirements to comply with the Monitoring and Reporting Program (**MRP**) in Attachment B – Section V are described in this section. **Table 3 – 2 "Attachment B – MRP Section V"** summarizes the Kern Coalition costs.

Table 3 – 2 Attachment B – MRP Section V

Report Heading	MRP Section	Description	Third Party-Upfront			Third Party-Annual		
			Total Hours	Expenses	One Time Upfront Costs	Total Hours	Expenses	Annual Costs
1.	V.A	Quarterly Submittal of Monitoring Results	$0					
2.	V.B	Annual Groundwater Monitoring Results-Annually by May 1	$0			44	$16,000	$21,280
3.	V.C	Monitoring Reports-Annually by May 1			$0	410	$80,000	$129,000
4.	V.D	Surface Water Exceedance Reports	$0					
5.	VII	Water Quality Triggers for Development of Management Plans	$0					
6.	VIII	Quality Assurance Project Plan (QAPP)	$5000					
		Section V Subtotal				**454**	**$96,000**	**$155,480**

1. Quarterly Submittals of Surface Water Monitoring Results (V.A)

This program is actively being implemented. Therefore, no future costs are estimated here.

2. Annual Groundwater Monitoring Report (GWMR) (V.B)

This program is actively being implemented. Therefore, no future costs are estimated here.

3. Monitoring Reports (V.C)

The costs shown in the table above estimate the costs of prepare and submission of annual monitoring reports.

4. Surface Water Exceedance Reports (V.D)

This program is actively being implemented. Therefore, no future costs are estimated here.

5. Water Quality Triggers for Development of Management Plans (VIII)

This program is actively being implemented. Therefore, no future costs are estimated here.

6. Quality Assurance Project Plan (QAPP) (XI)

The QAPP will be modified from the present version. Approximately $5000 in extra effort is anticipated to incorporate groundwater item.

4

MANAGEMENT PLAN REQUIREMENTS MRP-1 OF GENERAL ORDER

The costs associated with the Third-Party requirements to comply with the Groundwater Management Plan in MRP-1 are described in this section. **Table 4 – 1 "MRP-1 –Groundwater MRP"** summarizes the Kern Coalition costs.

Table 4 – 1 MRP-1 –Groundwater Management Plan Requirements

			Third Party				Member	
			Up-front		Annual		Annual	
Report Heading	MRP-1 Section	Descriptions	Hours	Cost	Hours	Cost	Hours	Cost
1	A	Introduction and Background Section	24	$2,880				
2	B	Physical Setting and Information	492	$59,040				
3	C	Management Plan Strategy	210	$25,200				
4	D	Monitoring Method	76	$9,120				
5	E	Data Evaluation	72	$8,640				
6	F	Records and Reporting-Management Plan Progress Report			285	$34,200		
7	G	Source Identification Study Requirements	96	$11,520				
8		Implementation Estimate	250	$30,000	2000	$240,000	1800	$216,000
MRP-1 Subtotal			1220	$146,400	2285	$274,200	1800	$216,000

There are many uncertainties regarding a groundwater management plan, including what constituents will need to be included, and the areal extent of the impacts. It is assumed that the major item to deal with will be nitrates, and that a Comprehensive Groundwater Management Plan will be issued with the GAR.

1. Introduction and Background Section (MRP-1.A)

Much of this work will be drawn from the GAR.

- Discussion of COCs, water quality objective(s), or trigger(s).
- Identification (narrative & map format) of boundaries to be covered by the management plan.
- Discussion how boundaries were delineated.

2. Physical Setting and Information (MRP-1.B)

a) Land use maps – partially satisfied in GAR:
   - Crop information by square-mile section (TRS) level.
   - Maps in electronic format using ArcGIS format.

b) Identification of potential irrigated agricultural sources of COCs:
   - If potential sources unknown, conduct source identification study (triggers MRP-1.G).
   - Or develop management plan for COCs (Triggers MRP-1.C).

c) List of designated beneficial uses for impacted water.

d) Baseline inventory of existing management practices with location to TRS level. Much of this will be drawn from the Farm Evaluations.

e) Available surface and/or groundwater quality data – partially satisfied in GAR:
   - Summary, discussion, and compilation of available data.
   - For COCs in the management plan.
   - Acceptable sources of quality data include, but not limited to SWAMP, GAMMA, USGS, DPH, DPR, DWR, local groundwater management plans, and GAR prepared by the Third-Party.

2.1 Groundwater – Additional Requirements (MRP-1.B)

a) Soil types and soil data as described by NRCS soil survey.

b) Description of geology and hydrogeology for the area:

c) Regional and area specific geology:
   - Groundwater basin and sub-basin in the area.
   - General water chemistry known.
   - Concentrations of major anions, cations, nutrients, TDS, pH, DO and hardness.
   - Provide Piper (tri-linear), Stiff, and/or Durov diagrams for the area.

d) Hydrogeology information:
   - Known water bearing zones.
   - Areas of shallow and/or perched groundwater.
   - Areas of discharge and recharge to basin.

e) Identify water bearing zones utilized for domestic, irrigation, and municipal water.

f) Aquifer characteristics know from existing information:
   - Depth to groundwater.
   - Groundwater flow and direction.

- Hydraulic gradient and conductivity.

g) Identification of irrigation water sources and general water chemistry.

3. Management Plan Strategy (MRP-1.C)

a) Description of approach and prioritization.
b) Goals and objectives:
    - Compliance with water quality objectives.
    - Education and outreach.
    - Identify, validate, and implement management practices.
c) Identify duties and responsibilities of individuals/groups:
    - Identification of key individuals.
    - Discussion of each individual's responsibilities.
    - Organizational chart with identified lines of authority.
d) Strategies to implement Management Plan tasks:
    - Identify entities/agencies contacted to obtain data and assistance.
    - Identify management practices used to control COC.
    - Identify outreach to participants. Outreach is anticipated to deal with NMP training and accounting for N in well water. Meetings, website, and district correspondence is anticipated to be employed.
    - Schedule and milestones for implementation of management practices and tasks.
    - Establish measurable performance goals. Ratios will be monitored and progress will be tracked.

4. Monitoring Methods (MRP-1.D)

a) General requirements:
    - Designed to measure effectiveness at achieving goals and objectives.
    - Capable of determining management practices made in response to plan are effective.
b) Groundwater – additional requirements:
    - May include commodity-based representative monitoring. We anticipate that we will rely on and tier off of MPEP efforts.
    - Conducted to determine effectiveness of management practices implemented.

5. Data Evaluation (MRP-1.E)

a) Methods utilized to perform data analysis.
b) Identify information necessary to quantify program effectiveness.
    - Tracking of management practice implementation.
    - Describe approach used to determine effectiveness of management practices.
    - Describe process for tracking implementation of management practices.
    - Description of how information is collected from growers.

- Type of information collected.
- How information will be verified and reported.

6. Records and Reporting – Management Plan Progress Report (MRP-1.F)

a) This report is annual once management plan is implemented.
b) Executive summary, location map(s), and front pages.
c) Table with exceedances from the management plan.
d) Status update on preparation of the new management plan.
e) Summary and assessment of data collected during reporting period.
f) Summary of grower outreach conducted.
g) Summary of implementation of management practices.
h) Results of evaluation of management practices.
i) Evaluation of progress in meeting performance goals and schedules.
j) Recommendations for changes.

7. Source Identification Study Requirements (MRP-1.G)

a) This is a triggered report; not always required/included.
b) Evaluation of types of practices, commodities, and locations that may be a source. For nitrate, the NHI could be useful for this.
c) Continued monitoring at site/area and increased monitoring, if appropriate. For nitrate, we will monitor ratios, primarily.
d) Assessment of potential pathways through which discharge can occur.
e) Schedule of conducting study
f) Field studies:
    - Evaluate feasibility of field studies as part of their source identification study proposal. We anticipate that we will rely heavily on MPEP work.
    - Identify a reasonable number and variety of field study sites that are representative.
g) Alternative source identification – if not performing a source ID study:
    - Demonstrate how method will produce data/information.
    - Determine contributions from irrigated agricultural sources.

8. Implementation

a) Registered pesticides. There are minimal Groundwater Protection Areas (GWPAs) in Kern. Some follow-up may be triggered, depending on what the data looks like.
b) Toxicity.
c) Contingency / as-required phase on high priority items (covers the first two years).
    - Quarterly progress reports.
    - Meetings with RWQCB staff.
    - Addressing issues that may arise.
d) Legacy pesticides and trace metals.
e) DO and pH.
f) Salinity and pathogens.

- Quarterly progress reports.
- Meetings with RWQCB staff.
- Addressing issues that may arise.

g) Nitrates – groundwater management plan items. This is assumed to require one person-year to monitor grower nitrogen ratios, research acceptable values, meet with growers, do outreach, interact with and support MPEP work, and provide support for growers and answer questions. We assumed that 600 growers would be in the high vulnerability area. Each grower or their representative would attend one outreach per year for their crop.

For more detail, see the corresponding cost estimation spreadsheet.

Our cost estimate does not include grower time or expense to implement practices. None of our costs include farm level management practices that may be indirectly triggered. (Direct compliance practices, such as the NMP were estimated).

5

MONITORING WELL INSTALLATION, SAMPLING PLAN AND COMPLETION REPORT MRP-2 OF GENERAL ORDER

The costs associated with the Third-Party requirements to comply with Monitoring Well Installation, Sampling Plan, and Completion Report in MRP-2 are described in this section. **Table 5 – 1 "MRP-2 – MWISP"** summarizes possible Kern Coalition costs. The costs associated with monitoring wells are closely linked with the Management Practice Evaluation Program (MPEP). Please refer back to section 3 for a discussion of the MPEP. The costs estimated here are for a Kern only MPEP option (not the group option).

Table 5 – 1 MRP-2 MWISP

Report Heading	MRP-2 Section	Description	Third Party (Upfront)		Third-Party (Annual Costs)	
			Hours	Phase Cost	Hours	Phase Cost
B.	II	Per Phase Monitoring Well Installation and Sampling Plan (MWISP)	6480	$777,600	0	0
C.	III	Monitoring Well Installation Completion Report (MWICR) and implementation, including well construction, monthly sampling and analysis, and quarterly reporting.	6192	$8,087,040	0	$5,932,800
		MRP-2 Subtotal	**4,224**	**$8,864,640**	**0**	**$5,932,800**

A. ASSUMPTIONS

- 6 crop groups, 8 management practices, and 3 site conditions will result in 144 combinations to monitor for first encountered groundwater quality as part of the MPEP. This is associated with the highest cost option for carrying out the MPEP. The MPEP can be done cooperatively with other coalition areas, representing the lower possible cost option. This was estimated separately in the MPEP section.
- A minimum of 3 wells are required to ascertain impacts up/down gradient of a potential source. Therefore, a total of 432 wells would be needed at an average depth to groundwater of 220 ft in Kern.

B. MONITORING WELL INSTALLATION AND SAMPLING PLANS (MWISP) (MRP-2.II)

The following information is required in an MWISP.

1. Stipulations

2. MWISP Required Elements:

a) General Information:
- Topographic map, site plan.
- Rationale for number of monitoring wells proposed.
- Local permitting information.
- Drilling details.
- Health and safety plan.

b) Proposed drilling details:
- Drilling techniques.
- Well/soil sample collection and logging method(s).

c) Proposed monitoring well design.
d) Proposed monitoring well development.
e) Proposed surveying.
f) Monitoring according to QAPP.

We estimated the cost of an MWISP at approximately $5400 per site. For 144 sites, the cost is $777,600.

C. MONITORING WELL INSTALLATION COMPLETION REPORT (MWICR) (MRP-2.III)

The following information is required in an MWICR.

1. General Information

a) Brief overview of field activities.
b) Site plan.
c) Period of field activities and milestone events.

2. Monitoring Well Construction

3. Monitoring Well Development

We estimated the cost of an MWICR at approximately $3480 per site. For 144 sites, the cost is $501,120.

4. Monitoring Well Survey

We estimated the cost of a monitoring well survey at approximately $1680 per site. For 144 sites, the cost is $241,920.

5. Implementation Costs

a) Well construction, project management and oversight. With depths in the Kern sub-watershed, a direct rotary rig will be needed in most places. We estimated approximately $17,000 per well with e-log, project management, and oversight. For 432 wells, the cost would be $7,344,000.
b) Sampling and analysis cost, assuming monthly sampling. We estimated $1000 per site for sampling and $1100/site for analysis, to include pesticides. Thus, the cost for 144 sites would be $302,400 per month or $3,628,800 per year.
c) Quarterly reporting of results to RWQCB. We estimated $4000 per site for reporting event. With 144 sites and quarterly reporting, the cost is estimated to be $2,304,000 per year.

More detail regarding the calculations can be found on the MRP-2 sheet from the attached spreadsheet.

6

CONCLUSIONS & SUMMARY

A. COST SUMMARY

a) This Report provides a vigorous and in-depth assessment of the Kern Coalition's Third Party and Member costs to comply with the March 2013 Tentative Order. Upon request, additional background and information can be provided to the Water Board.

b) The $1.90 per acre incremental cost estimate provided under Finding No. 39 in the Order and in Attachment A Information Sheet are summarized in **Table 6-1 Water Board Estimated Costs**.

Table 6-1

Water Board Estimated Costs.

	Tulare Lake Basin Area Order	Current Surface Water Program	Change from Groundwater Program
Administration	$1.19	$0.91	**$0.28**
Farm Plans	$0.29	$0.00	**$0.29**
Monitoring/Reporting/Tracking	$2.11	$0.79	**$1.31**
Management Practices	$15.87	$15.84	**$0.02**
Total	**$19.46**	**$17.54**	**$1.90**

c) The Management Practice Evaluation Program and Workplan are subject to significant variation in costs. As stated in Section 3 of this Report, a lower and higher cost was determined.

d) The upfront costs are expected to be a one-time cost that could be required in year one (1) or beyond year five (5). For comparative purposes, the upfront costs per acre were divided by five years to provide an annualized per acre cost. The actual year of upfront cost expenditures will vary.

e) For the lower cost scenario, the upfront cost of $3.65/acre divided by 5 years = $0.73/acre/year + the annual cost of $16.04/acre/year = $16.77/acre/year for the first five years. After five years the annual cost would be $16.04/acre/year.

f) For the higher cost scenario, the upfront cost of $14.21/acre divided by 5 years = $2.84/acre/year + the annual cost of $20.84/acre/year = $23.68/acre/year for the first five years. After five years the annual cost would be $20.84/acre/year.

g) **Table 6-2 Kern Coalition Lower Estimated Costs** and **Table 6-3 Kern Coalition Higher Estimated Costs** depict the summary totals of costs.

Table 6-2

Kern Coalition Lower Estimated Costs

Costs		Up-Front Costs		Annual Costs	
		Third-Party	Member	Third-Party	Member
Waste Discharge Requirements General Order					
	Third-Party - Provisions	$177,840	--	$340,640	--
	Third-Party - Required Reports & Notices	$231,300	--	$163,400	--
	Member - Notice of Confirmation/Intent/Application	--	$549,660	--	$0
	Member - Farm Evaluation	$19,400	$688,633	--	$110,354
	Member - Sediment & Erosion Control Plan	$8,200	$117,500	--	$6,000
	Member - Nitrogen Management Plan (NMP)	$19,400	--	--	$13,547,646
	Member - CEQA Mitigation Monitoring (Attachment C)	--	$348,000	--	$14,800
	Member - Notice of Termination	--	$0	--	$6,200
	Member - Annual Fees	--	$0	--	$582,500
Attachment B - Monitoring & Reporting Program					
	Groundwater Quality Assessment Report (GAR)**	$304,500	--	--	--
	Management Practice Evaluation Program (MPEP)	$171,429	--	--	--
	Groundwater Quality Trend Monitoring	$19,400	--	$288,000	$31,200
	Management Practices Evaluation Workplan	$171,429	--	--	--
	Trend Monitoring Workplan	$244,000	$48,000	--	--
Attachment B - Groundwater Monitoring Report (GWMR)		--	--	$155,480	--
MRP-1 Quality Management Plan Requirements	Groundwater Quality Management Plan (GQMP)	$146,400	--	$274,200	$216,000
MRP-2	Monitoring Well Installation, Sampling Plan, and Completion Report	$515,657	--	$941,714	--
	Total	**$2,028,954**	**$1,751,793**	**$2,163,434**	**$14,514,700**
	Total	**$3,780,748**		**$16,678,135**	
	Cost per Acre ***	**$1.95**	**$1.68**	**$2.08**	**$13.96**
	Total Cost per Acre	**$3.63**		**$16.04**	

*** Assumes workplan portion, not the alternative*

**** Per acre cost is based on the total costs divided by the Kern Coalition irrigated acres*

Table 6-3

Kern Coalition Higher Estimated Costs

Costs	Up-Front Costs		Annual Costs	
	Third-Party	Member	Third-Party	Member
Waste Discharge Requirements General Order				
Third-Party - Provisions	$177,840	--	$340,640	--
Third-Party - Required Reports & Notices	$231,300	--	$163,400	--
Member - Notice of Confirmation/Intent/Application	--	$549,660	--	$0
Member - Farm Evaluation	$19,400	$688,633	--	$110,354
Member - Sediment & Erosion Control Plan	$8,200	$117,500	--	$6,000
Member - Nitrogen Management Plan (NMP)	$19,400	--	--	$13,547,646
Member - CEQA Mitigation Monitoring (Attachment C)	--	$348,000	--	$14,800
Member - Notice of Termination	--	$0	--	$6,200
Member - Annual Fees	--	$0	--	$582,500
Attachment B - Monitoring & Reporting Program				
Groundwater Quality Assessment Report (GAR)**	$304,500	--	--	--
Management Practice Evaluation Program (MPEP)	$1,500,000	--	--	--
Groundwater Quality Trend Monitoring	$19,400	--	$288,000	$31,200
Management Practices Evaluation Workplan	$1,500,000	--	--	--
Trend Monitoring Workplan	$244,000	$48,000	--	--
Attachment B - Groundwater Monitoring Report (GWMR)	--	--	$155,480	--
MRP-1 Quality Management Plan Requirements Groundwater Quality Management Plan (GQMP)	$146,400	--	$274,200	$216,000
MRP-2 Monitoring Well Installation, Sampling Plan, and Completion Report	$8,864,640	--	$5,932,800	--
Total	**$13,035,080**	**$1,751,793**	**$7,154,520**	**$14,514,700**
Total	**$14,786,873**		**$21,699,220**	
Cost per Acre * **	**$12.53**	**$1.68**	**$6.88**	**$13.96**
Total Cost per Acre	**$14.21**		**$20.84**	

*** Assumes workplan portion, not the alternative*

**** Per acre cost is based on the total costs divided by the Kern Coalition irrigated acres*

B. CONCLUSIONS

a) The Kern Coalition's upfront annualized costs plus the annual costs result in the following comparative values to the Tentative Order and summarized in **Table 6-4 Comparative Estimated Costs.**

Table 6-4

Comparative Estimated Costs

	Tulare Lake Basin Area Order Groundwater Program	**Kern Coalition Lower Cost Scenario**	**Kern Coalition Higher Cost Scenario**
	($/acre/year)	**($/acre/year)**	**($/acre/year)**
Total Cost - First 5 Years	**$1.90**	**$16.76**	**$23.68**
Total Cost – Year 6+	**$1.90**	**$16.04**	**$20.84**

b) The Tentative Order (at $1.90) is significantly lower than the results from this Report. The high cost scenario (at $23.68) is over 12 times higher than the $1.90.
c) The Water Board must take into consideration the detailed costs of this Report and work with the Kern Coalition to reduce the cost burdens of the March 2013 Tentative Order.

Kern Coalition ILRP - Lower Cost Estimate*

Assumptions:

Kern Third-Party Potential Members	902	members (estimate)
Kern Coalition Current Members	350	members (about 40%)
Members Needing to Enroll	552	members (about 60%)
Kern Coalition Irrigated Acres	1,040,000	acres
South San Joaquin Valley Irrigated Acres	2,640,000	acres
Member Hourly Rate	$120	per hr
Coalition Hourly Rate (Coalition Staff)	$120	per hr
Average Farm Acres	1,438	acres
Low vulnerability area (estimated)	300,000	acres
Member Water Board Fee	$0.56	per acre

**Based on Kern Coalition Acres and the March 2013 Tulare Lake Basin Area Tentative WDR's General Order (Groundwater only)*

Costs	Up-Front Costs		Annual Costs	
	Third-Party	Member	Third-Party	Member
Waste Discharge Requirements General Order				
Third-Party - Provisions	$177,840	--	$340,640	--
Third-Party - Required Reports & Notices	$231,300	--	$163,400	--
Member - Notice of Confirmation/Intent/Application	--	$549,660	--	$0
Member - Farm Evaluation	$19,400	$688,633	--	$110,354
Member - Sediment & Erosion Control Plan	$8,200	$117,500	--	$6,000
Member - Nitrogen Management Plan (NMP)	$19,400	--	--	$13,547,646
Member - CEQA Mitigation Monitoring (Attachment C)	--	$348,000	--	$14,800
Member - Notice of Termination	--	$0	--	$6,200
Member - Annual Fees	--	$0	--	$582,500
Attachment B - Monitoring & Reporting Program				
Groundwater Quality Assessment Report (GAR)**	$304,500	--	--	--
Management Practice Evaluation Program (MPEP)	$171,429	--	--	--
Groundwater Quality Trend Monitoring	$19,400	--	$288,000	$31,200
Management Practices Evaluation Workplan	$171,429	--	--	--
Trend Monitoring Workplan	$244,000	$48,000	--	--
Attachment B - Groundwater Monitoring Report (GWMR)	--	--	$155,480	--
MRP-1 Quality Management Plan Requirements Groundwater Quality Management Plan (GQMP)	$146,400	--	$274,200	$216,000
MRP-2 Monitoring Well Installation, Sampling Plan, and Completion Report	$515,657	--	$941,714	--
Total	**$2,028,954**	**$1,751,793**	**$2,163,434**	**$14,514,700**
Total	**$3,780,748**		**$16,678,135**	
Cost per Acre ***	**$1.95**	**$1.68**	**$2.08**	**$13.96**
Total Cost per Acre	**$3.63**		**$16.04**	

*** Assumes workplan portion, not the alternative*

**** Per acre cost is based on the total costs divided by the Kern Coalition irrigated acres*

Kern Coalition ILRP - Higher Cost Estimate*

Assumptions:

Kern Third-Party Potential Members	902	members (estimate)
Kern Coalition Current Members	350	members (about 40%)
Members Needing to Enroll	552	members (about 60%)
Kern Coalition Irrigated Acres	1,040,000	acres
South San Joaquin Valley Irrigated Acres	2,640,000	acres
Member Hourly Rate	$120	per hr
Coalition Hourly Rate (Coalition Staff)	$120	per hr
Average Farm Acres	1,438	acres
Low vulnerability area (estimated)	300,000	acres
Member Water Board Fee	$0.56	per acre

**Based on Kern Coalition Acres and the March 2013 Tulare Lake Basin Area Tentative WDR's General Order (Groundwater only)*

Costs	Up-Front Costs		Annual Costs	
	Third-Party	Member	Third-Party	Member
Waste Discharge Requirements General Order				
Third-Party - Provisions	$177,840	--	$340,640	--
Third-Party - Required Reports & Notices	$231,300	--	$163,400	--
Member - Notice of Confirmation/Intent/Application	--	$549,660	--	$0
Member - Farm Evaluation	$19,400	$688,633	--	$110,354
Member - Sediment & Erosion Control Plan	$8,200	$117,500	--	$6,000
Member - Nitrogen Management Plan (NMP)	$19,400	--	--	$13,547,646
Member - CEQA Mitigation Monitoring (Attachment C)	--	$348,000	--	$14,800
Member - Notice of Termination	--	$0	--	$6,200
Member - Annual Fees	--	$0	--	$582,500
Attachment B - Monitoring & Reporting Program				
Groundwater Quality Assessment Report (GAR)**	$304,500	--	--	--
Management Practice Evaluation Program (MPEP)	$1,500,000	--	--	--
Groundwater Quality Trend Monitoring	$19,400	--	$288,000	$31,200
Management Practices Evaluation Workplan	$1,500,000	--	--	--
Trend Monitoring Workplan	$244,000	$48,000	--	--
Attachment B - Groundwater Monitoring Report (GWMR)	--	--	$155,480	--
MRP-1 Quality Management Plan Requirements Groundwater Quality Management Plan (GQMP)	$146,400	--	$274,200	$216,000
MRP-2 Monitoring Well Installation, Sampling Plan, and Completion Report	$8,864,640	--	$5,932,800	--
Total	**$13,035,080**	**$1,751,793**	**$7,154,520**	**$14,514,700**
Total	**$14,786,873**		**$21,669,220**	
Cost per Acre ***	**$12.53**	**$1.68**	**$6.88**	**$13.96**
Total Cost per Acre	**$14.21**		**$20.84**	

*** Assumes workplan portion, not the alternative*

**** Per acre cost is based on the total costs divided by the Kern Coalition irrigated acres*

WDRs - Third-Party Provisions

Based on the March 2013 Tulare Lake Basin Area Tentative WDRs General Order

Hourly Costs $120

Third-Party Provisions - Costs	Third-Party - Upfront Costs			Third-Party - Annual Costs					
WDR Section IV.C (Provisions, Requirements for the Third-Party)	Hours	Expenses	Cost	Hours	Expenses	Cost			
IV.C.1. Organizational Documentation									
a. Documentation of organization or management structure	24	$1,000	$3,880	--	--	--	Water Board approval of new third party entity		
b. Identify responsible persons	8	$1,000	$1,960	--	--	--	Hires, identify individuals, ranks		
c. Documentation made readily available to members	40	$5,000	$9,800	--	--	--	Website updates, email, hardcopies for members		
IV.C.2. Prepare Annual Summaries							Accounting staff		
a. Expenditures of fees and revenue used to comply	--	--	--	120	$3,000	$17,400	Higher first year fee notices, collection, receipts, expenditures, but annualized over 5 years		
b. Summaries made readily available to members	--	--	--	24	$1,000	$3,880	Summary and mailer		
IV.C.3. Response to Notice of Violation (NOV)							Assuming 1 NOV per year		
a. Provide members information regarding reason(s) of violation	--	--	--	20	$500	$2,900	Assume 20 members in violation		
b. Provide notification to all Members in areas covered by the NOV	--	--	--	20	$1,000	$3,400	Within 30 days		
c. Provide confirmation to Water Board of each notification	--	--	--	8	$100	$1,060			
d. Annual summary of all notices	--	--	--	20	$1,000	$3,400	Annual summary of notices		
e. Respond and resolve NOV	--	--	--	40	$20,000	$24,800	Hire consultant/engineer		
IV.C.4. Develop, implement, track and evaluate effectiveness of:									May 1 each year
a. Groundwater Quality Management Plans (GQMP)	200	$100,000	$124,000	100	$40,000	$52,000	Annually for 5 years	45,000 acres of 436,000 acres	May 1 each year
IV.C.5. Submittals									
a. Provide timely & complete submittal of any plans or reports required by this Order	--	--	--	100	$5,000	$17,000			
IV.C.6. Quality Assurance/Quality Control									
a. Conduct water quality monitoring & assessments in conformance with QA/QC	--	--	--	100	$1,000	$13,000			
IV.C.7. Receipt of Notice of Applicability (NOA)									
a. Inform members of NOA requirements within 30 days of receipt	60	$2,000	$9,200	--	--	--			
b. Send a notice of confirmation form to each Member	200	$5,000	$29,000	--	--	--			
IV.C.8. Conduct Education and Outreach activities									
a. Inform Members of program requirements							2 classes/yr and Qrt newsletter @ 4 d/class and 3 d/ltr		
i. Program requirements									
ii. Water quality problems	--	--	--	240	$10,000	$38,800			
iii. Exceedances of water quality objectives									
iv. Degradation of water quality									
b. Maintain attendance lists for outreach events	--	--	--	40	$1,000	$5,800			
c. Provide Members with information on									
i. Water quality practices	--	--	--	160	$10,000	$29,200			
ii. Environmental impacts of water quality practices									
d. Provide annual summary of education and outreach activities to Board, including:									
i. Copies of educational and management practice information provided									
ii. Report the total number of Members attended	--	--	--	60	$3,000	$10,200			
iii. Describe the process used to provide information to non-attendees									
IV.C.9. Annual Membership Participation Report									
a. Work with RWQCB to ensure all Members are addressing exceedances or degradation				250	$5,000	$35,000			
b. As part of the Membership List submittal, identify growers who have failed to:									
1 Implement improved water quality management practices as specified (GQMP)									
2 Respond to an information request associated with the GQMP or this Order									
3 Participate in third-party studies where the third-party is the lead				250	$6,000	$36,000			
4 Provide confirmation in an outreach event									
5 Submit required fees to the Third-Party									
IV.C.10. Ensure activities performed by subsidiary groups meet requirements				80	$2,000	$11,600	5 days per group		
IV.C.11. Fees									
a. Transmit RWQCB fees from Members and submit to Board				105	$5,000	$17,600	40% enrolled in surface water Coalition, need to enroll 60%		
b. Collect fees from Members for reimbursement of Third-Party activities				105	$5,000	$17,600	21 Districts x 5 hours each		
Totals	**532**	**$114,000**	**$177,840**	**1,842**	**$119,600**	**$340,640**			

WDRs - Third-Party Requirements

Based on the March 2013 Tulare Lake Basin Area Tentative WDRs General Order

Hourly Costs $120

Third-Party Requirement Costs WDR Section VIII (Required Reports and Notices - Third-Party)	Third-Party - One Time Cost Hours	 Expenses	 Cost	Third-Party - Annual Costs Hours	 Expenses	 Cost	
VIII.A. Third-Party Application							
1 Submit request to Board within 30 days of Order effective date & follow-up actions	40	$2,000	$6,800				Formation costs in IV.C.1.
VIII.B. Membership (Participant) List							
1 Submit list of Members to Board							
a. Within 180 days of receiving NOA	20	$100	$2,500				
b. Annually by July 31 of each year				20	$100	$2,500	
2 List shall contain, at minimum							
a. All parcel numbers covered under the membership							
b. County of each parcel							
c. Section, Township, Range associated with each parcel							
d. Number of irrigated acres for each parcel	700	$3,000	$87,000	70	$500	$8,900	Annual updates
e. Members names, mailing address, and contact name and phone number (can use Third-Party contact)							
f. Name of farm operator for each parcel if different from the Member							Identification of the crops grown and acreage of each crop.
g. Identification of each parcel that is a part of a Small Farming Operation, if applicable							• Location of the farm.
VIII.C. Templates							
1 Farm Evaluation Template							• Identification of on-farm management practices implemented to achieve the Order's farm management performance standards. Specifically track which management practices recommended in management plans have been implemented at the farm.
a. Farm Evaluation Template - Group Option, to Water Board within 90-days of NOA				20	$250	$2,650	• Identification of whether or not there is movement of soil during storm events and/or during irrigation drainage events (sediment and erosion risk areas) and a description of where this occurs.
b. Central Valley Water Board - Farm Evaluation Template			$0			$0	• Identification of whether or not water leaves the property and is conveyed downstream and a description of where this occurs.
2 Nitrogen Management Plan Template							• Location of in-service wells and abandoned wells. Identification of whether wellhead protection and backflow prevention practices have been implemented.
a. Nitrogen Management Plan Template - Group Option				20	$250	$2,650	
b. Central Valley Water Board - Nitrogen Management Plan Template			$0			$0	
c. Nitrogen Management Plan Summary Report				10	$100	$1,300	
3 Sediment and Erosion Control Plan Template							
a. Sediment and Erosion Control Plan Template - Group Option				5	$100	$700	
b. Central Valley Water Board - Sediment and Erosion Control Plan Template			$0			$0	
VIII.D. Groundwater Quality Assessment Report and Evaluation/Monitoring Workplans							
1 Groundwater Quality Assessment Report (GAR), submitted 1 year after NOA (Attachment B, IV.A.)			$0			$0	Cost is included in MRP, Attachment B Sheet
2 Management Practice Evaluation Program (MPEP) Workplan (Attachment B, IV.B.)							
a. Management Practices Evaluation Program - Group Option			$0				Cost is included in MRP, Attachment B Sheet
b. Third Party Only - Management Practices Evaluation Program							
1 Objectives, Implementation, Report,							
2 Implementation			$0				Cost is included in MRP, Attachment B Sheet
3 Report							
4 Management Practices Evaluation Report - 6 years after implementation of MPEP							
3 Groundwater Quality Trend Monitoring Workplan - submit 1 year after approval of GAR (IV.E.)			$0				Cost is included in MRP, Attachment B Sheet
VIII.F. Sediment Discharge and Erosion Assessment Report							
1 Submit 1 year after receiving NOA (Attachment B, VI), notify impacted Members to prepare Plan	200	$70,000	$94,000				
VIII.H. Monitoring Report (Attachment B, V.C. by 1 May every year)							
1 Submit monitoring reports to State Board GeoTracker database, due May 1st of each year 2014			$0	800	$5,000	$101,000	Annually
VIII.I. Groundwater Quality Management Plans (GQMP)							
1 Newly triggered **GQMP**						$0	
a. Submit to Board within 60 days						$0	
b. Submit to CV-SALTS Chair if addresses salt or nitrate	Included in MRP-1					$0	
c. Implement outreach or monitoring before approval						$0	
2 Ensure compliance and continued implementation of management plans until completed			$0			$0	
3 Comprehensive Groundwater Quality Management (CGQM) Plan			$0			$0	Assuming comprehensive option
a. Third-Party may submit CGQM plan instead of GQMP			$0			$0	Submitted with GAR
b. CGQM must be updated at same time as Management Plan Progress Report			$0			$0	
VIII.J. Technical Reports - Where monitoring is not effective, provide technical reports			$0	350	$2,000	$44,000	1 report per year
VIII.K. Notice of Termination			$0			$0	Not applicable or expected.
VIII.L. Total Maximum Daily Load (TMDL) Requirements							
1 Approved TMDLs in the Basin Plan as applicable shall be implemented	300	$5,000	$41,000				
Totals	**1,260**	**$80,100**	**$231,300**	**1,295**	**$8,300**	**$163,700**	

WDRs - Member Requirements

Based on the March 2013 Tulare Lake Basin Area Tentative WDRs General Order

No. of Members	Small (<60 ac)		Other (60+ ac)		Total
	Low Vul	High Vul	Low Vul	High Vul	
Farm Evaluation	60	122	216	504	902
Nitrogen MP	60	122	216	504	902
Sediment & Erosion	10		40		50
Mitigation Monitoring	10				10

Member Hourly Costs $120

Member Requirement Costs WDR Section VII (Required Reports and Notices - Member)	Upfront Cost Member No. of Members	Hours/ Member	Total Hours	Expenses	Cost	Annual Cost Member No. of Members	Hours/ Member	Total Hours	Expenses	Cost	
VII.A. Notice of Confirmation (NOC) / Notice of Intent (NOI) / Membership Application											
1 NOC submitted to Third-Party within 120 days of Third-Party NOA by the Executive Officer (EO)											
a. If enrolled under Order R5-2006-00xx Southern San Joaquin Water Quality Coalition											Members in the 2006 Coalition (350 estimated)
b. Third-Party will provide NOC form to Member within 30 days of receiving NOA	350	2	700	$9,000	$93,000						
c. Provide certification written notice was provided of enrollment to other parties											
2 All other growers must become Members within 120 days of Third-Party NOA by EO											
a. Complete Third-Party membership application	500	4	2,000	$102,000	$342,000						Growers who were not in the Coalition (estimate 500 will join within 120 days). One time $200 fee
b. Provide certification, written notice was provided of enrollment to non-Member parties	500	0.5	250	$500	$30,500						
c. Third-Party will confirm membership	500	0.0	0	$0	$0						
3 121 days after the EO's issuance of the NOA to the Third-Party, Growers not yet members must											
a. Completed NOI application to Board	52	6	312	$11,000	$48,440						Growers who miss the 120 day deadline (estimate 52)
b. NOI processing fee	52	1.5	78	$600	$9,960						
c. Membership application to Third-Party	52	4	208	$800	$25,760						
4 Alternatively, a Grower may submit to the Board											
a. Report of Waste Discharge (RWD)	0	0	0	$0	$0						Costs for individual RWD (estimate $0)
b. NOI for coverage under applicable general waste discharge req for individuals	0	0	0	$0	$0						
VII.B. Farm Evaluation											
1 Members in Low Vulnerability Areas											
a. With Small Farming Operations (<60 ac) by 1 March 2017, update every 5 years	60	4.75	285	$1,526	$35,726	60	0.27	16	$0	$1,944	4.75 hrs per member plus 45 miles trip to meeting, recurring .27 hrs/yr annualized w/ no meeting.
b. Farming Operations not qualifying as Small by 1 March 2015, update every 5 years	216	6.25	1,350	$5,492	$167,492	216	0.27	58	$0	$6,998	6.25 hrs per member plus 45 miles trip to meeting, recurring .27 hrs/yr annualized w/ no meeting.
2 All Members in High Vulnerability Areas (Surface/Groundwater) by 1 March 2014											
a. Farm Evaluations and submit to Third-Party and update annually 1 March	626	6.25	3,913	$15,916	$485,416	626	1.35	845	$0	$101,412	6.25 hrs per member plus 45 miles trip to meeting, recurring 1.35 hrs/yr w/ no meeting.
VII.C. Sediment and Erosion Control Plan											
Required Members in areas potential to cause erosion & discharge sediment to surface waters											
a. With Small Farming Operations (<60 ac) within one year of SDEAR	20	1.25	25	$44,000	$47,000	20	1.0	20	$0	$2,400	Assume 1.25 hrs per member and $2160 consultant, 1 hr annually to review
b. Farming Operations not qualifying as Small within 180 days of SDEAR	30	1.25	38	$66,000	$70,500	30	1	30	$0	$3,600	Assume 1.25 hrs per member and $2160 consultant, 1 hr annually to review Does not include costs to fix identified problems
VII.D. Nitrogen Management Plan (NMP)											
1 All Members within a High Vulnerability Groundwater Area must prepare, certify, and implement an NMP											
a. With Small Farming Operations (<60 ac) by 1 March 2016, update annually thereafter						122	8.5	1,037	$172,386	$296,826	Estimate 122 members, 8.5 hrs + consultant $1,300 + testing $113, annual
b. Farming Operations not qualifying as Small by 1 March 2014, update annually thereafter						504	125.0	63,000	$2,174,256	$9,734,256	Estimate 504 members, 125 hrs + consultant $3,000 + testing $1,314, annual
2 Members in Low Vulnerability Groundwater Areas											
a. Small farming operations						60	14.3	855	$6,780	$109,380	Estimate 60 members, 14.25 hrs + consultant $0 + testing $113, annual
b Farming Operations not qualifying as small						216	120.5	26,028	$283,824	$3,407,184	Estimate 216 members, 120.5 hrs + consultant $0 + testing $1314, annual
VII.E. Mitigation Monitoring - Certain Members required to implement mitigation measures in Attachment C											
1 Submit mitigation monitoring by March 1 of each year to Third-Party	10	40	400	$300,000	$348,000	10	4	40	$10,000	$14,800	Estimate 10 members Year 1 (40 hrs+consultant $30,000), Annually (4 hrs + consultant $1,000)
2 Shall include information on:											
a. Implementation of CEQA mitigation measures (cultural resources, veg & wildlife, fisheries, ag resources, GHG emissions											
b. Measures implemented											
c. Potential environmental impact measures addressed											
d. Location of measures (parcel number, county)											
e. Steps taken to monitor success of measure											
VII.F. Notice of Termination						5	10	50	$200	$6,200	Estimate 5 terminations/year, mostly due to change in ownership
XI. Annual Fees - Paid by Member									$582,500	$582,500	Tier I - Water Board Fee $100 per group + $0.56/acre
Totals			**9,558**	**$556,833**	**$1,703,793**			**91,980**	**$3,229,946**	**$14,267,500**	

Attachment B - MRP - Monitoring & Reporting Program Section IV

These costs are totaled in WDR VIII.D. Hourly Costs $120

Based on the March 2013 Tulare Lake Basin Area Tentative WDRs General Order

Groundwater Quality Assessment Report (GAR) MRP, Attachment B (Monitoring and Reporting Program) Section IV	Third-Party - Upfront Hours	 Expenses	 Cost
IV.A. Groundwater Quality Assessment Report (GAR)			
- Submit proposed GAR outline within 3 months after receiving NOA	100	$1,000	$13,000
- Submit completed GAR within 1 year of receiving NOA	100	$49,000	$61,000
2 GAR components obtained by review of existing federal/state/county/local databases and documents:			
a Detailed land use information			
b Depth to groundwater map			
c Groundwater recharge information			
d Soil survey information	50	$53,500	$59,500
e Shallow groundwater constituent concentrations (potential COCs)			
f Existing groundwater data collection and analysis efforts			
g Discuss geological and hydrogeologic information			
3 GAR data review and analysis			
a Determine high vulnerability areas based on potential impacts from irrigated ag activities			
b Determine merit of incorporating existing data collection efforts to achieve objectives	50	$43,500	$49,500
c Prepare ranking of high vulnerability areas for prioritization of workplan activities			
d Utilize GIS mapping applications, graphics, tables to convey data, analysis and results			
4 Groundwater vulnerability designations			
a Designate high/low vulnerability areas	50	$21,500	$27,500
b Modify designations every five years after approval of GAR			
5 Prioritization of high vulnerability groundwater areas			
a Identify exceedances of water quality objectives			
b Proximity of high vulnerability area to areas contributing to recharge to urban and rural communities			
c Identify existing irrigated agriculture field or operational practices			
d Consider largest commodity types comprising up to at least 80% of irrigated ag acreage	100	$82,000	$94,000
e Consider legacy or ambient conditions of groundwater			
f Identify groundwater basins currently or proposed to be under review by CV-SALTS			
g Identify constituents of concern, e.g. relative toxicity, mobility			
Subtotal	**450**	**$250,500**	**$304,500**

Management Practice Evaluation Program (MPEP) MRP, Attachment B (Monitoring and Reporting Program) Section IV	Third-Party - Upfront Hours	 Expenses	 Cost
IV.B. Management Practice Evaluation Program (MPEP)			
- Determine effects, if any, irrigated ag have on groundwater quality			
- MPEP is required in high vulnerability areas and must address CoCs described in the GAR			
1 Objectives of the MPEP			
a Identify whether existing site and/or commodity specific practices are protective of GW quality		Use different approach	
b Determine if newly implemented management practices are improving or may improve GW quality			
c Develop an estimate of the effect Members' discharges of CoCs using a mass balance model		See MPEP high and low	
d Utilize results of evaluated to determine if management practices need to be improved			
2 Implementation - on a watershed or regional commodity basis with other third party groups			
a Prepare and submit a master schedule of the rank or priority for investigation of high-v areas			
3 Reports of the MPEP - Information to complete the MPEP schedule to meet deadline			
4 Management Practices Evaluation Report (MPER)			
- No later than 6 years after implementation of each phase			
a Identify management practices that are protective of GW quality			
b Identify management practices that are appropriate for site conditions on farms			
c Include maps and types of management practices that should be implemented			
d MPER to include adequate technical justification for identifying protective management practices			
e Propose and implement new/alternative management practices if existing are not protective			
f GQMPs are to be updated to be consistent with the findings of the MPER			
Subtotal	**0**	**$0**	**$0**

Groundwater Quality Trend Monitoring MRP, Attachment B (Monitoring and Reporting Program) Section IV	Third-Party - Upfront Hours	 Expenses	 Cost	Third-Party - Annual Hours	 Expenses	 Cost	
IV.C. Groundwater Quality Trend Monitoring							
1 Objectives							
a Determine baseline GW quality relevant to irrigated ag							
b Develop long-term GW quality info that can be used to evaluate regional effects of irrigated ag	120	$5,000	$19,400			$0	Board input to guide workplan.
2 Implementation							
a Develop a groundwater monitoring network over high & low vulnerability areas							
b Employ existing shallow wells but not necessarily wells in the upper zone of 1st encountered GW			$0	2,000	$10,000	$250,000	Estimate 130 existing wells to be monitored
c Submit proposed Trend Groundwater Monitoring Workplan (MRP IV.E)							
3 Reporting							
a Maps, tabulation of data, time of concentration charts, submitted electronically to GeoTracker			$0	300	$2,000	$38,000	
b Evaluate data for trends as proposed in MRP IV.E							
Subtotal	**120**	**$5,000**	**$19,400**	**2,300**	**$12,000**	**$288,000**	

Management Practices Evaluation Workplan MRP, Attachment B (Monitoring and Reporting Program) Section IV	Third-Party - Upfront Hours	 Expenses	 Cost
IV.D. Management Practices Evaluation Workplan			
- Submit workplan within 2 years after GAR approval			
1 Workplan approach			
a Groundwater monitoring - must be first encountered GW			
b Modeling			
c Vadose zone sampling			
d Other scientifically sound and technically justifiable methods for meeting objects of the MPEP			
2 Groundwater quality monitoring - constituent selection (when GW monitoring is proposed)		Use different approach	
a Constituents to be assessed			
b Frequency of data collection for each constituent			
3 Workplan implementation and analysis		See MPEP high and low	
a Explain how data at evaluated farms will be used to assess GW impacts on farms not evaluated			
4 Master workplan - prioritization			
a If high vulnerability areas are ranked in GAR, prepare workplan timeline, priority, for areas/commodity			
b Submittal dates for addendums proposing the details of each area's investigation			
5 Installation of monitoring wells			
a Upon approval of workplan, prepare and submit a Monitoring Well Installation & Sampling Plan (MWISP) as described in MRP-2			
Subtotal	**0**	**$0**	**$0**

Trend Monitoring Workplan MRP, Attachment B (Monitoring and Reporting Program) Section IV	Third-Party - Upfront Hours	 Expenses	 Cost	
IV.E. Trend Monitoring Workplan - following MRP IV.C.				
- Submit workplan within 1 year after GAR approval				
1 Workplan approach				1.00E+06 acres
a Discussion of rationale for number of proposed monitoring wells and locations				43.402778 townships
b Consider variety of ag commodities produced	500	$5,000	$65,000	4 wells per township
c Consider conditions discussed/identified in GAR related to vulnerability prioritization				174 wells total at above density
d Areas identified as recharge to urban and rural communities				
2 Well details for wells included in trend monitoring				
a GPS coordinates				Estimate using data for 130 existing wells
b Physical address of property				
c CA State well number (if known)				
d Well depth				
e Top and bottom perforation depths	1200	$10,000	$154,000	
f A copy of the water well drillers log, if available				
g Depth of standing water (static), if available				
h Well seal information (type of material, length of seal)				
3 Proposed sampling schedule				
a Annual sampling (MRP Table 3)	100	$500	$12,500	
4 Workplan implementation and analysis				
a Proposed method(s) to be used to evaluate trends in the GW monitoring data over time	100	$500	$12,500	
Subtotal	**1,900**	**$16,000**	**$244,000**	

Total	**2,470**	**$271,500**	**$567,900**	**2,300**	**$12,000**	**$288,000**

Hourly Costs = $120 /hr

Table 3.1 Attachment B - MRP Section IV Low Estimate

Report Heading	MRP Section	Description	Third Party - Upfront			Third Party - Annual		
			Total Hours	Expenses	One Time Upfront Costs	Total Hours	Expenses	Annual Costs
1.	IV.A	Groundwater Quality Assessment Report (GAR)	450	$250,500	$304,500			
2.	IV.B	Management Practice Evaluation Program (MPEP)	**253**	**$141,028**	$171,429			
3.	IV.C	Groundwater Quality Trend Monitoring IV.C	**120**	$5,000	**$19,400**	2,300	$12,000	**$288,000**
4.	IV.D	Management Practices Evaluation Workplan IV.D	**253**	**$141,028**	$171,429			
5.	IV.E	Trend Monitoring Workplan - following MRP IV.E	1,900	$16,000	**$244,000**			
		Section IV Subtotal	**2,977**	**$553,556**	**$910,758**	**2,300**	**$12,000**	**$288,000**

Table 3.2 Attachment B - MRP Section IV High Estimate

Report Heading	MRP Section	Description	Third Party - Upfront			Third Party - Annual		
			Total Hours	Expenses	One Time Upfront Costs	Total Hours	Expenses	Annual Costs
1.	IV.A	Groundwater Quality Assessment Report (GAR)	**450**	**$250,500**	**$304,500**			
2.	IV.B	Management Practice Evaluation Program (MPEP)	**1,250**	**$1,350,000**	$1,500,000			
3.	IV.C	Groundwater Quality Trend Monitoring IV.C	**120**	$5,000	**$19,400**	2,300	$12,000	**$288,000**
4.	IV.D	Management Practices Evaluation Workplan IV.D	**1,250**	**$1,350,000**	$1,500,000			
5.	IV.E	Trend Monitoring Workplan - following MRP IV.E	1,900	$16,000	**$244,000**			
		Section IV Subtotal	**4,970**	**$2,971,500**	**$3,567,900**	**2,300**	**$12,000**	**$288,000**

Indicates values match results from 'Att B MRP - IV' Sheet calculations

82% *Percentage of GAR that is accounted for in 'Expenses', assumed to be contract costs for consultants. Consultants are assumed to account for same percentage of IV.B & IV.D costs

[redacted]

90% *Using 82% as in the Low Estimate results in 2,250 hours, increased the percentage to 90% to account for the increased aggregation and complexity of the High Estimate

Low MPEP estimate (Group option, worst case per Clay Rodgers)

Crop groups	4			Workplan per crop	$300,000		
Management Practices	8			Analysis per crop	$300,000	More aggregation, higher cost per crop (or converse)	
Site Conditions	5						
Sites	160	0.5%	of 33,000 growers				
Wells per site	3						
Dairy RMP cost	$ 1,300,000	per year					
				One time cost (front or back end)		**Annual cost**	
				Central Valley Coalitions	**Kern Share (1/7th)**	**Central Valley Coalitions**	**Kern Share (1/7th)**
MWISP	$ 5,400	per site		$ 864,000	$ 123,429		
MWICR	$ 3,480	per site		$ 556,800	$ 79,543		
Survey	$ 1,680	per site		$ 268,800	$ 38,400		
Wells	$ 4,000	per well		$ 1,920,000	$ 274,286		
Monthly sampling	$ 2,100	per site per instance				$ 4,032,000	$ 576,000
Quarterly reporting	$ 4,000	per site per report				$ 2,560,000	$ 365,714
Workplan				$1,200,000	$ 171,429		
Analysis / MPEPR				$1,200,000	$ 171,429		
				$ 6,009,600	$ 858,514	$ 6,592,000	$ 941,714
						$ 0.94	per acre
						507%	of dairy RMP cost
						5.1	times dairy RMP cost

High MPEP estimate (Kern only option)

Crop groups	6		Workplan per crop	$250,000	More aggregation, higher		
Management Practices	8		Analysis per crop	$250,000	cost per crop (or converse)		
Site Conditions	3						
Sites	144	16.0% of 902 growers					
Wells per site	3						
Dairy RMP cost	$ 1,300,000	per year					
			One time cost (front or back end)		Annual cost		
			Kern Coalition		Kern Coalition		
MWISP	$ 5,400	per site	$ 777,600				
MWICR	$ 3,480	per site	$ 501,120				
Survey	$ 1,680	per site	$ 241,920				
Wells	$ 17,000	per well	$ 7,344,000				
Monthly sampling	$ 2,100	per site per instance			$ 3,628,800		
Quarterly reporting	$ 4,000	per site per report			$ 2,304,000		
Workplan			$1,500,000				
Analysis / MPEPR			$1,500,000				
			$ 11,864,640		$ 5,932,800		
					$ 5.70	per acre	
					456%	of dairy RMP cost	
					4.6	times dairy RMP cost	

Attachment B - MRP - Monitoring & Reporting Program Section V

Based on the March 2013 Tulare Lake Basin Area Tentative WDRs General Order Hourly Costs $120

Groundwater Monitoring Report (GWMR) MRP, Attachment B (Monitoring and Reporting Program) Section V		Third-Party - Upfront			Third-Party - Annual		
		Hours	Expenses	Cost	Hours	Expenses	Cost
V.B.	**Annual Groundwater Monitoring Results - Annually by May 1**						
1	Submit prior year's GW monitoring results in Excel and/or export into GeoTracker			$0	40	$15,000	$19,800
2	Explanation of why some data is missing			$0	4	$1,000	$1,480
V.C.	**Monitoring Report - Annually by May 1**						
1	Signed transmittal letter			$0	4		$80,480
2	Title page			$0	2		$240
3	Table of contents			$0	4		$480
4	Executive Summary			$0	16		$1,920
5	Description of third-party geographical area			$0	16		$1,920
6	Monitoring objectives and design			$0	16		$1,920
7	Sampling site / monitoring well descriptions and rainfall records			$0	16		$1,920
8	Location map(s) of sampling sites/monitoring wells, crops and land uses			$0	16		$1,920
9	Tabulated results summary of analyses			$0	40		$4,800
10	Discussion of data relative to water quality objectives and water quality management plan milestones			$0	40		$4,800
11	Sampling and analytical methods used			$0	16	$80,000	$1,920
12	Summary of Quality Assurance Evaluation results (from QAPP)			$0	24		$2,880
13	Specification of the method(s) used to obtain estimated surface water flow estimation, at each monitoring site during each monitoring event			$0	16		$1,920
14	Summary of water quality objectives exceedances			$0	24		$2,880
15	Actions taken to address water quality exceedances			$0	24		$2,880
16	Evaluation of monitoring data to identify spatial trends and patterns			$0	24		$2,880
17	Summary of Nitrogen Management Plan information			$0	32		$3,840
18	Summary of management practice information collected as part of Farm Evaluations			$0	24		$2,880
19	Summary of Mitigation Monitoring			$0	16		$1,920
20	Summary of education and outreach activities			$0	16		$1,920
21	Conclusions and recommendations			$0	24		$2,880
VIII.	**Water Quality Triggers for Development of Management Plans**			$0	0	$0	$0
XI.	**Quality Assurance Project Plan (QAPP)**	0	$0	$0			$5,000
	Totals	**0**	**$0**	**$0**	**454**	**$96,000**	**$155,480**

MRP-1 - Groundwater Management Plan Requirements

Assumptions:
The average hourly rate is meant to cover district staff time and consultant time in addressing management plan issues. Ther e are many inherent uncertainties, most significant of which are details on what wil actually be found to be in exceedance of water quality standards, and the areal extent of those exceedances. This assumes that Kern will submit a Comprehensive GW Management Plan with our GAR.

Average Hourly Costs $120

MRP-1 Groundwater Management Plan Requirements Monitoring and Reporting Program R5-2013-XXXX	Groundwater Mgmt Plan								Notes
	Third Party				Member				
	Up-front		Annual		Up-front		Annual		
	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	
A Introduction and Background Section									
1 Discussion of COCs, water quality objective(s) or trigger(s)	8	$960							Draw from GAR on a lot of this.
2 Identification (narrative & map format) of boundaries to be covered by the management plan	8	$960							
Can include all areas or separate management plans for each area where plans are req	0	$0							
3 Discussion how boundaries were delineated	8	$960							
B Physical Setting and Information									
1 General Requirements									
a. Land use maps - partially satisfied in GAR	20	$2,400							
i. Crop information by square-mile section (TRS) level	8	$960							
ii. Maps in electronic format using ArcGIS format	8	$960							
b. Identification of potential irrigated ag sources of COCs	20	$2,400							
i. If potential sources unknown, conduct source identification study - Triggers G	0	$0							See below under implementation
ii. or Develop management plan for COCs - Triggers C									
c. List of designated beneficial uses for impacted water	12	$1,440							
d. Baseline inventory of existing management practices	20	$2,400							Draw from Farm Evaluation.
i. Location of practices to TRS level	40	$4,800							
e. Available surface and/or groundwater quality data - partially satisfied in GAR									
i. Summary, discussion, and compilation of available data	20	$2,400							While groundwater is a bigger job, assume that much of this information is available from the GAR.
ii. For COCs in the management plan	20	$2,400							
iii. Acceptable sources of quality data:	0	$0							
CA State Water Board Groundwater Ambient Monitoring Assessment (GAMA) program	20	$2,400							
US Geological Survey (USGS)	20	$2,400							
CA Department of Public Health (DPH)	20	$2,400							
CA Department of Pesticide Regulation (DPR)	16	$1,920							
CA Department of Water Resources (DWR)	16	$1,920							
Local groundwater management programs	0	$0							
Groundwater Assessment Report (GAR) developed by Third-Party	40	$4,800							
3 Groundwater - Additional Requirements									
a. Soil types and soils data as described by NRCS soil survey	20	$2,400							
b. Description of geology and hydrogeology for area	20	$2,400							
i. Regional and area specific geology	8	$960							
ii. Groundwater basin and sub-basins in the area	16	$1,920							
1 General water chemistry known	16	$1,920							
2 Concentrations of major anions, cations, nutrients, TDS, pH, DO, and hardness	16	$1,920							
3 Provide Piper (tri-linear), Stiff, and/or Durov diagrams for the area	16	$1,920							
iii. Hydrogeology, including	8	$960							
1 Known water bearing zones	8	$960							
2 Areas of shallow and/or perched groundwater	8	$960							
3 Areas of discharge and recharge to basin	8	$960							
iv. Identify water bearing zones utilized for domestic, irrigation, and municipal water	8	$960							
v. Aquifer characteristics known from existing information	8	$960							
1 Depth to groundwater	8	$960							
2 Groundwater flow direction	8	$960							
3 Hydraulic gradient and conductivity	8	$960							
c. Identification of irrigation water sources and general water chemistry	8	$960							
C Management Plan Strategy - this is probably the norm but can be short-circuited by performing a source ID study (G)									
1 Description of approach and prioritization	4	$480							
2 Goals and Objectives	4	$480							
a. compliance with water quality objectives	2	$240							
b. Education and outreach	2	$240							
c. Identify, validate, and implement management practices	2	$240							
3 Identify duties and responsibilities of individuals/groups	8	$960							
a. Identification of key individuals	8	$960							
b. Discussion of each individual's responsibilities	8	$960							
c. Organizational chart with identified lines of authority	8	$960							
4 Strategies to implement Management Plan tasks	8	$960							
a. Identify entities/agencies contacted to obtain data and assistance	8	$960							
b. Identify management practices used to control COC that are	32	$3,840							
i. Technically feasible	8	$960							
ii. Economically feasible	8	$960							
iii. Proven to be effective at protecting water quality	8	$960							
iv. Complies with Sections III.A. and B. of the Order	8	$960							
v. Practices to be implemented by Members	16	$1,920							NMP, outreach on accounting for N in well water
vi. Estimation of effectiveness and know limitation of implemented measures	16	$1,920							
c. Identify outreach to participants	8	$960							
i. Strategy for informing growers of water quality problems	8	$960							
ii. Method for disseminating information on management practices	4	$480							Websites, district correspondence, etc.
iii. Description of how effectiveness of outreach to be evaluated	8	$960							Monitor ratios
d. Schedule and milestones for implementation of management practices and tasks	8	$960							
i. time estimated to identify new management practices	4	$480							
ii. Timetable for implementation of identified management practices	4	$480							
e. Establish measurable performance goals	8	$960							
D Monitoring Methods		$0							
1 General Requirements	8	$960							
a. Designed to measure effectiveness at achieving goals and objectives	4	$480							
b. Capable of determining management practice made in response to plan are effective	4	$480							
2 Surface Water - Additional Requirements									
a. Location(s) of monitoring site and schedule representative of COC discharges									
b. Monitoring data submitted electronically									
3 Groundwater - Additional Requirements									
a. May include commodity-based representative monitoring	40	$4,800							Rely on MPEP efforts
b. Conducted to determine effectiveness of management practices implemented	20	$2,400							
E Data Evaluation									
1 Methods utilized to perform data analysis	4	$480							
2 Identify information necessary to quantify program effectiveness	4	$480							
i. Tracking of management practice implementation	4	$480							
ii. Describe approach used to determining effectiveness of management practices	12	$1,440							
iii. Describe process for tracking implementation of management practices	12	$1,440							
iv. Description of how information is collected from growers	12	$1,440							
v. Type of information collected	8	$960							
vi. How information will be verified	8	$960							
vii. How information will be reported	8	$960							

	Groundwater Mgmt Plan								
	Third Party				Member				
MRP-1 Groundwater Management Plan Requirements	Up-front		Annual		Up-front		Annual		
Monitoring and Reporting Program R5-2013-XXXX	**Hours**	**Cost**	**Hours**	**Cost**	**Hours**	**Cost**	**Hours**	**Cost**	**Notes**
F Records and Reporting - Management Plan Progress Report - this is annual once a Mgmt Plan is implemented.									
1 Front Pages			1	$120					
2 Executive Summary			20	$2,400					
3 Location map(s) and brief summary			14	$1,680					
4 Table with exceedances for the management plans			20	$2,400					
5 New management plans triggered since previous report			0	$0					Assume that we will use a comprehensive plan.
6 Status update on preparation of the new management plans			0	$0					
7 Summary and assessment of data collected during reporting period			40	$4,800					
8 Summary of grower outreach conducted			30	$3,600					
9 Summary of implementation of management practices			60	$7,200					
10 Results of evaluation of management practice effectiveness			60	$7,200					
11 Evaluation of progress in meeting performance goals and schedules			20	$2,400					
12 Recommendations for changes			20	$2,400					
G Source Identification Study Requirements - this is a triggered report - not always included									
1 Evaluation of types of practices, commodities, and locations that may be a source	32	$3,840							Use NHI for this.
2 Continued monitoring at site/area and increased monitoring, if appropriate	8	$960							Monitor mostly nitrogen ratios.
3 Assessment of potential pathways through waste discharge can occur	8	$960							
4 Schedule for conducting study	16	$1,920							
5 Field Studies									
a. Evaluate feasibility of field studies as part of their source identification study proposal	0	$0							Rely on MPEP work.
b. Identify a reasonable number and variety of field study sites that are representative	0	$0							
6 Alternative Source Identification - if not performing a source ID study									
a. Demonstrate how method will produce data/information	16	$1,920							Reference MPEP work.
b. Determine contributions from irrigated ag operations	16	$1,920							
Subtotal - Documentation of the plans	970	$ 116,400	285	$ 34,200	0	$ -	0	$ -	
IMPLEMENTATION ESTIMATE									
Registered pesticides									
Source ID	80	$9,600							We have minimal GWPA's in Kern. Might have some follow-up, depending on what data looks like.
Identification of potential management practices	40	$4,800							
Management practice implementation	50	$6,000							
Effectiveness evaluation	80	$9,600							
Toxicity									
Source ID									
Identification of potential management practices									
Management practice implementation									
Effectiveness evaluation									
Contingency / As-required phase on high priority items (covers first two years of implementation)								$0	
Legacy pesticides and trace metals									
Source ID									
Identification of potential management practices									
Management practice implementation									
Effectiveness evaluation									
DO and pH									
Source ID									
Identification of potential management practices									
Management practice implementation									
Effectiveness evaluation									
Salinity and pathogens									
Source ID									
Identification of potential management practices									
Management practice implementation									
Effectiveness evaluation									
Contingency / As-required phase on lower priority items (covers last three years of 5 year plan)								$0	
Nitrates - groundwater management plan items (KRWCA staff time)			2000	$240,000					Assumed to require one person-year to monitor grower nitrogen ratios, research acceptable values, meet with growers, do outreach, interact with and support MPEP work, and provide support for growers and answer questions. This is uncertain.
Nitrates - grower attendance at outreaches.							1800	$216,000	Assume 600 high vulnerability growers/personnel. Each grower would attend one outreach for their crop. 3 hours per outreach plus travel expenses. This doesn not include grower time to implement practices.
Subtotal - Implementation	250	$ 30,000	2000	$ 240,000	0	$ -	1800	$ 216,000	These costs do not include farm level management practices that may be required. For example, pressurized irrigation systems, etc.
GRAND TOTAL	**1,220**	**$ 146,400**	**2,285**	**$ 274,200**	**0**	**$ -**	**1,800**	**$ 216,000**	

MRP-2 - Monitoring Well Installation, Sampling Plan, and Completion Report

Crop groups	6
Management practices	8
Site conditions	3
Sites	144

Based on the March 2013 Tulare Lake Basin Area Tentative WDRs General Order

Hourly Costs $120

MRP-2 Monitoring Well Installation, Sampling Plan, and Completion Report Monitoring and Reporting Program R5-2013-XXXX	Third-Party (up-front costs)		Third-Party (annual costs)		Notes
	Hours	Phase Cost	Hours	Phase Cost	
II. Per Phase Monitoring Well Installation and Sampling Plan (MWISP)	6480	$777,600			This includes all of the below.
A Stipulations					Approximately $5,400 per site.
B MWISP Required Elements					
1 General Information					
a. Topographic map					
b. Site plan					
c. Rationale for number of monitoring wells proposed					
d. Local permitting information					
e. Drilling details					
f. Health & Safety plan					
2 Proposed Drilling Details					
a. Drilling techniques					
b. Well / soil sample collection and logging method(s)					
3 Proposed Monitoring Well Design					
4 Proposed Monitoring Well Development					
5 Proposed Surveying					
6 Monitoring according to QAPP					
III. Monitoring Well Installation Completion Report (MWICR)	4176	$501,120			Includes A-C below.
A General Information					Approximately $3,480/site
a. Brief overview of field activities					
b. Site Plan					
c. Period of field activities and milestone events					
B Monitoring Well Construction					
C Monitoring Well Development					
D Monitoring Well Survey	2016	$241,920			Approximately $1,680 per site
Implementation costs					
Well construction, project management and oversight		$7,344,000			Direct rotary, approximately $17k per well with e-log, project mgmt and oversight.
Sampling and analysis cost, assuming monthly sampling.				$3,628,800	$1000/site for sampling. $200/site for normal analysis. $900/site for pesticide analysis.
Quarterly reporting of results to RWQCB				$2,304,000	$4000/site for reporting event
Totals		**$8,864,640**		**$5,932,800**	