



2014 SUMMARY ANNUAL REPORT

Table of Contents

Year in Review	2
Management Plan Update	3
Groundwater Program	11
Northern Vulnerability Area	13
Central Vulnerability Area	14
Southern Vulnerability Area.....	15
Coalition Overview	16
• Financial Report.....	18
Surface Water Program	19
Surface Water Monitoring Sites	20
Monitoring Results October 2013-September 2014	21
• Monitoring Constituents Definitions.....	28
Companies Providing Services to Test Wells for Nitrates	29

Year in Review

New Reporting Responsibilities With Waste Discharge Requirements

2014 will be remembered by members of ESJWQC as the year when the paperwork really started. In December, over 3600 Farm Evaluations arrived in member mailboxes carrying a May 31, 2014 deadline for completion.

The Farm Evaluation survey is the first of two, and for some members, three reports now required as part of the new coalition Waste Discharge Requirements (WDR) adopted in December 2012.

ESJWQC members were the first growers in the Central Valley to receive the Farm Evaluation survey, which is based on a template used by all coalitions in the region.

Information from the farm evaluations we received to date is painting a more accurate picture of our region than has ever been done before. As seen on the graphs on page 7, we are beginning to build a detailed inventory of practices that growers use to protect surface and groundwater from potential impacts of farming activities. The graphs also show how member's information is aggregated and illustrated in reports to the Regional Water Board.

While the survey results illustrate the advances in farm practices, some members have yet to complete the surveys even after multiple reminders by the coalition. Just how the Regional Water Board responds to that deficiency won't be known until after the annual membership roster is submitted on July 31, 2015. We continue to encourage members to turn in all reports needed so we show the Regional Water Board that we are serious about protecting our vital water resources.

In February 2015, members were sent their first Nitrogen Management Plan. This plan is to be completed by members and kept on the farm for reference.

Members with parcels located in areas of High Vulnerability to groundwater contamination must have a Certified Crop Advisors (CCA) or other agronomic professional sign off on the plan by March 15, 2016 (a one year extension from the original deadline).

After the 2015 crop is harvested, complete the sections called post production actuals (see page 30). ESJWQC will be contacting members in December 2015 about specific information in that plan that needs to be reported to the

coalition. Our technicians will take that individual information, compile it on a township basis then perform an analysis that will serve as the baseline for coming years.

While much attention is being paid to groundwater, the coalition surface water program continues to show sustained improvements with few pesticide exceedances in the 18 waterways sampled in 2014 (see page 21-27). Several waterways and individual constituents have been petitioned to the Regional Water Board for removal from waterway Management Plans due to lack of exceedances. Admittedly, waterways in Madera County are turning up dry due to the drought. However, most waterways sampled in 2014 in Merced and Stanislaus counties continued to flow albeit at lower levels.

The Sediment and Erosion Control Plan (SECP) is the third report that some members will need to complete. If a field is located on hilly terrain (the lower Sierra Nevadas) or is adjacent to a waterway, an SECP will need to be completed and kept on the farm. As we go to press, a meeting with the Regional Water Board and Central Valley coalition leads is being scheduled to discuss how to ensure only growers who have potential for sediment discharges are required to complete the plans. A SECP template is expected for approval later this year.

The ESJWQC Board of Directors recognizes there is additional effort needed by members to complete the new plans and surveys. Support staff has been added to the Coalition to lend assistance to members on any of the reporting requirements. Periodic workshops are being held at our County Farm Bureau offices and appointments can be made by contacting us at the phone number or email address below.

Thank you for your continued support of the East San Joaquin Water Quality Coalition.

Parry Klassen
Executive Director
209-846-6112 or
contactesj@esjcoalition.org



Management Plan Update

Tracking Farm Management Practices to Protect Water

The new Waste Discharge Requirements (WDR) mandate that all members of Central Valley water quality coalitions document the practices they use to protect surface and groundwater resources. The Farm Evaluation Survey contains sections focusing on pesticides, nutrients, sediment and well head protection. Growers are also required to complete Nitrogen Management Plans and in some instances, Sediment Discharge and Erosion Control Plans. Deadlines for completing the various plans are based on surface water and/or groundwater vulnerability (see box below). High vulnerability areas are the geographic regions within the Coalition area where there is a management plan resulting from surface or groundwater quality impairments, or where the area has been determined to be highly vulnerable to groundwater contamination in the Groundwater Assessment Report (GAR).

This is not the first time ESJWQC has documented its member's management practices. Over the last five years, information has been

gathered from members in subwatersheds with surface water quality management plans. Information is gathered at one-on-one meetings with coalition staff. Water monitoring in recent years shows that growers are changing farming practices, resulting in fewer watersheds needing management plans, particularly for pesticides. Some watersheds have not had pesticide exceedances for more than three years.

Farm Evaluations

Farm Evaluation Surveys collect information from members on practices including irrigation, pesticide, sediment and wellhead management. May 1, 2014 was the first deadline for members within high vulnerability areas to complete the survey for each enrolled parcel(s). In 2015 and in future years, the deadline to return the survey is March 1. Results are analyzed and aggregated by coalition staff and submitted to the Regional Water Board on May 1 of each year.

Documents that must be completed by Members to be compliant with Waste Discharge Requirements (WDR, Amended on March 27, 2014). Small Farming Operations refers to members operating less than 60 total acres of irrigated land. Members with high vulnerability parcels will be identified by the ESJWQC.

Due Date	Member Requirement	Small Farming Operations		All Other Members		Submitted To
		Low Vulnerability	High Vulnerability	Low Vulnerability	High Vulnerability	
May 11, 2013	Notice of Confirmation	Once				ESJWQC
March 1, 2014	Farm Evaluation Plan ¹		Annually		Annually	ESJWQC
October 1, 2015 ³	Sediment and Erosion Control Plan			As needed	As needed	Kept on farm
May 1, 2016	Sediment and Erosion Control Plan	As needed	As needed			Kept on farm
March 1, 2015	Farm Evaluation Plan ¹			Every 5 yrs		ESJWQC
	Nitrogen Management Plan ²				Annually	Kept on farm
March 1, 2016	Nitrogen Summary Report				Annually	ESJWQC
March 1, 2017	Nitrogen Management Plan ²	Annually	Annually	Annually		Kept on farm
	Farm Evaluation Plan ¹	Every 5 yrs				ESJWQC
March 1, 2018	Nitrogen Summary Report	Annually	Annually	Annually		ESJWQC

¹High Vulnerability – either surface or groundwater
²High Vulnerability – groundwater only
³Estimated date; 180 days from Regional Board approval of the ESJWQC Sediment Discharge and Erosion Assessment Report submitted on December 12, 2014.

Practices named in the Farm Evaluation can be viewed as a “check list” of management practices members can use to protect water quality. ESJWQC encourages its members to adopt the practices, if needed, particularly in areas designated as high vulnerability to surface or groundwater contamination. While the practices named in the Farm Evaluation is not an exhaustive list, it accounts for the majority of approaches that have shown to be effective through field testing and on farm use.

Measuring the effectiveness of practices on a regional scale is in part determined by water quality monitoring of both surface and groundwater. The effects of changes in practices are more readily apparent in surface water results while changes in groundwater quality occur more slowly. Beginning in 2016, the coalition will identify wells for use in the Long Term Trend Monitoring Network. Sampling will likely begin in late 2016 and continue into the future.

Because of this time lag between changes in practices and impacts to water quality, especially groundwater, the Regional Water Board is relying heavily on grower’s use and reporting of good management practices as a gauge of compliance with the WDR. In coming years, expect increased scrutiny of Coalition reports that track the participation and completion of the various reports described above. In particular, as noted in the following statistics, some members may force the Regional Water Board to act on non compliance of requirements for belonging to ESJWQC.

2014 Memberships: 3,881

Those who completed Farm Evaluations: 3,479

Membership acreage: 712,697

Acreage covered by completed farm evaluations: 644,522

Plans Used to Assist in Nitrogen Fertilizer Management

Nitrogen Management Plans (NMPs) were sent to all members in 2015 to assist with planning of nitrogen fertilizer applications. Members are required to complete the plan and keep it on the farm (in 2015, this applies only to growers in high vulnerability areas for groundwater and who have enrolled more than 60 acres; see adjacent chart for details). Workshops have been and will continue to be scheduled to

assist members in completing their NMP. In 2016, for fields in high vulnerability areas, the NMP will need to be approved by a Certified Crop Advisor or similarly qualified agronomist. No certification is required in 2015. A grower certification program is currently under development by the Central Valley coalitions, commodity groups, California Department of Food and Agriculture and University of California nutrient specialists. This program will enable a grower to certify their own nitrogen management plan. It’s expected to be available in late 2015 or 2016.

The Coalition is participating in a Technical Advisory Workgroup to identify what information on the Nitrogen Management Plans should be reported to better estimate the amount of nitrogen that may be transported to groundwater. Data gaps exist for various crops and the Technical Advisory Workgroup will identify what information needs to be gathered, how “Nitrogen Removed” can be calculated and what is reasonable for growers to report. Unless the deadline is changed, ESJWQC is required to submit a Nitrogen Management Plan Summary Report in May 2016 that aggregates member information by crop and at a township level. Member information will be collected for the report in winter 2015-16.

Sediment Discharge and Erosion Control Plan

The Coalition identified areas susceptible to erosion and discharge of sediment that could impact waterways in the region. Growers in these areas are required to complete Sediment and Erosion Control Plans (SECPs) that document practices implemented to control soil erosion and sediment discharges. The SECP must be certified and kept on farm. Members located in areas with high potential for erosion are required to complete and implement a SECP either within 180 days (farm operations greater than 60 irrigated acres) or within one year (small farm operations less than 60 irrigated acres) of the approval of the Sediment and Erosion Assessment Report; this approval is likely to occur in mid-2015.



Focused Management Practice Surveys

There are 31 subwatersheds in the ESJWQC region with water quality impairments and are included in the ESJWQC Surface Water Quality Management Plan. Once a waterway has been assigned a management plan, the Coalition has no more than 10 years to demonstrate improvements to the Regional Water Board. The Coalition continues to use documentation of management practices and water quality results to demonstrate that growers are implementing practices to protect water quality.

Members who have parcels in management plan areas must complete focused management plan surveys. In the past, this information has been gathered through one-on-one visits by coalition staff. Starting in 2015, additional information will be gathered in the Farm Evaluation Survey. Information from the surveys that show changes in management practices in areas of concern combined with water monitoring results can assist ESJWQC in documenting water quality improvements. If no exceedances of water quality standards occur for three years, ESJWQC can petition the Regional Water Board to remove the management plan designation. To date, ESJWQC is seeking removal of 10 such plans.



Farm Evaluation Plan

- Due March 1 annually
- Coalition report summary information
- Records farm wide practices including irrigation, pesticide and well protection practices



Nitrogen Management Plan

- Kept on farm
- Summary report to be determined by Technical Advisory Workgroup
- Summary Report due annually starting March 1, 2016



Sediment Discharge and Erosion Control Plan

- Pending approval by Regional Board
- Kept on farm
- Documents practices implemented to control sediment discharge and erosion

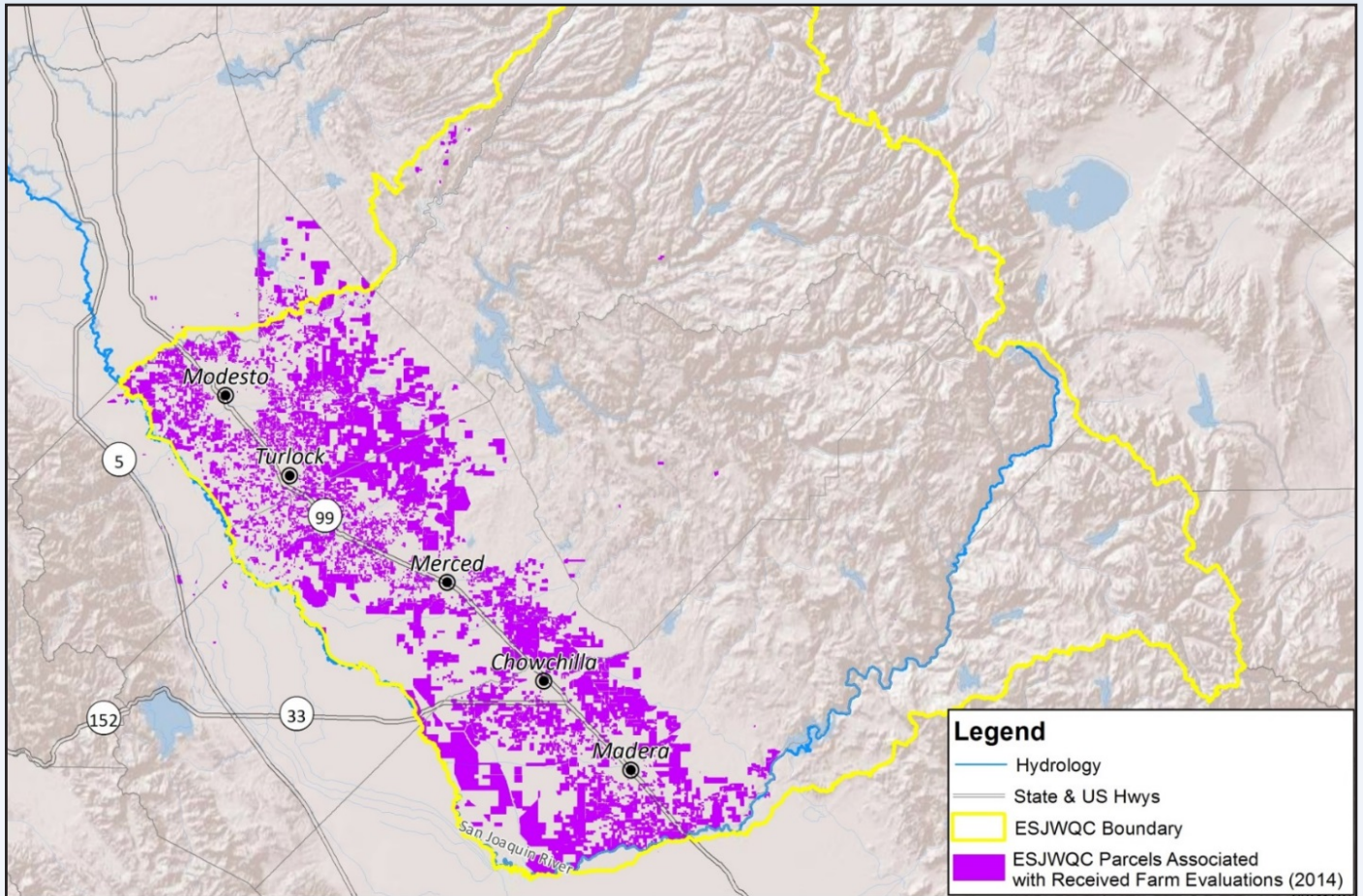


Focused Outreach Surveys

- More specific management practice survey to be filled out by growers with the potential for direct discharge to surface waters with a management plan
- Part of the Surface Water Quality Management Plan

Management Practice Documentation

ESJWQC member parcels associated with one or more returned farm evaluation



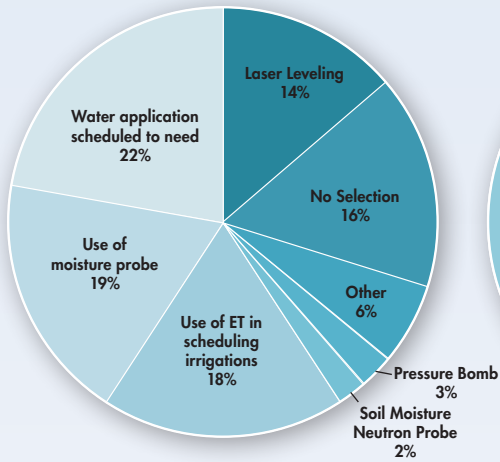
Source of Layers:
Hydrology - NHD hydrodata, 1:24,000-scale, <http://nhd.usgs.gov/>
Roads, highways, railroads, county boundary, city outlines - California Spatial Information Library
Basemap, World Imagery - ESRI
Datum - NAD1983

N
0 15 30
Miles

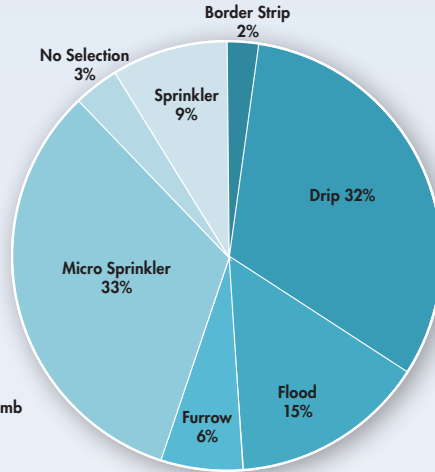


Percent of acreage for irrigation management practices

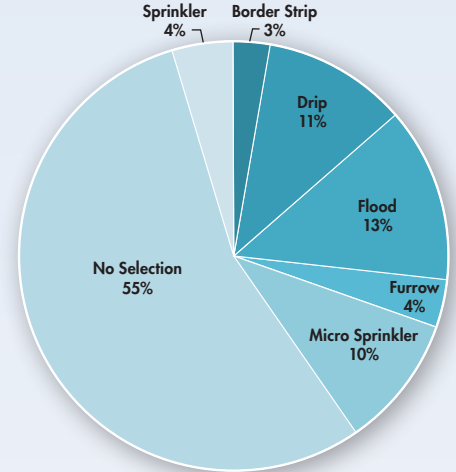
Irrigation Efficiency Practices



Primary Irrigation Practices

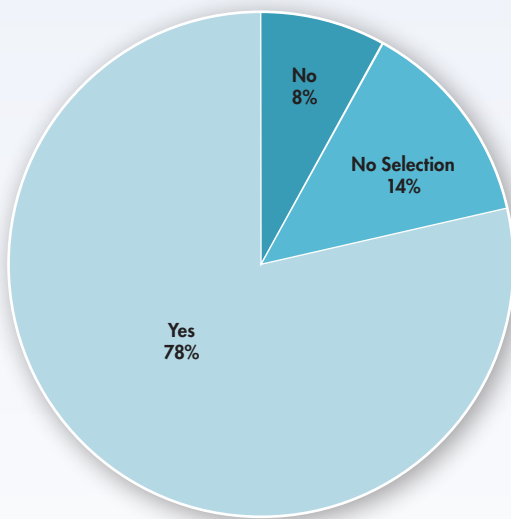


Secondary Irrigation Practices

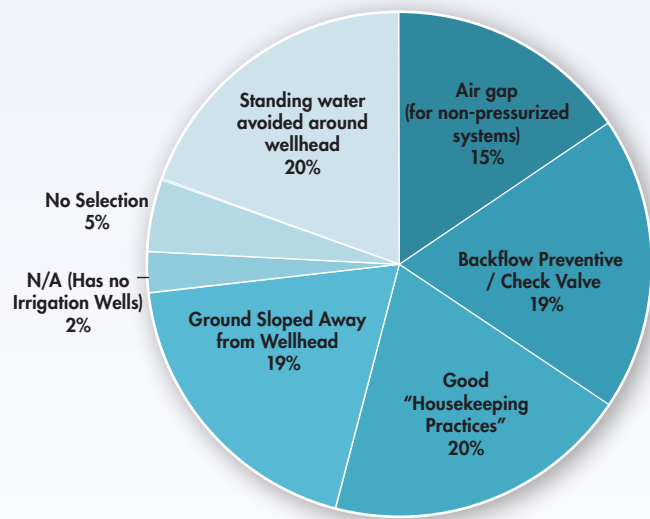


Percent acreage associated with members who have irrigation wells and percent acreage associated with members implementing wellhead protection practices

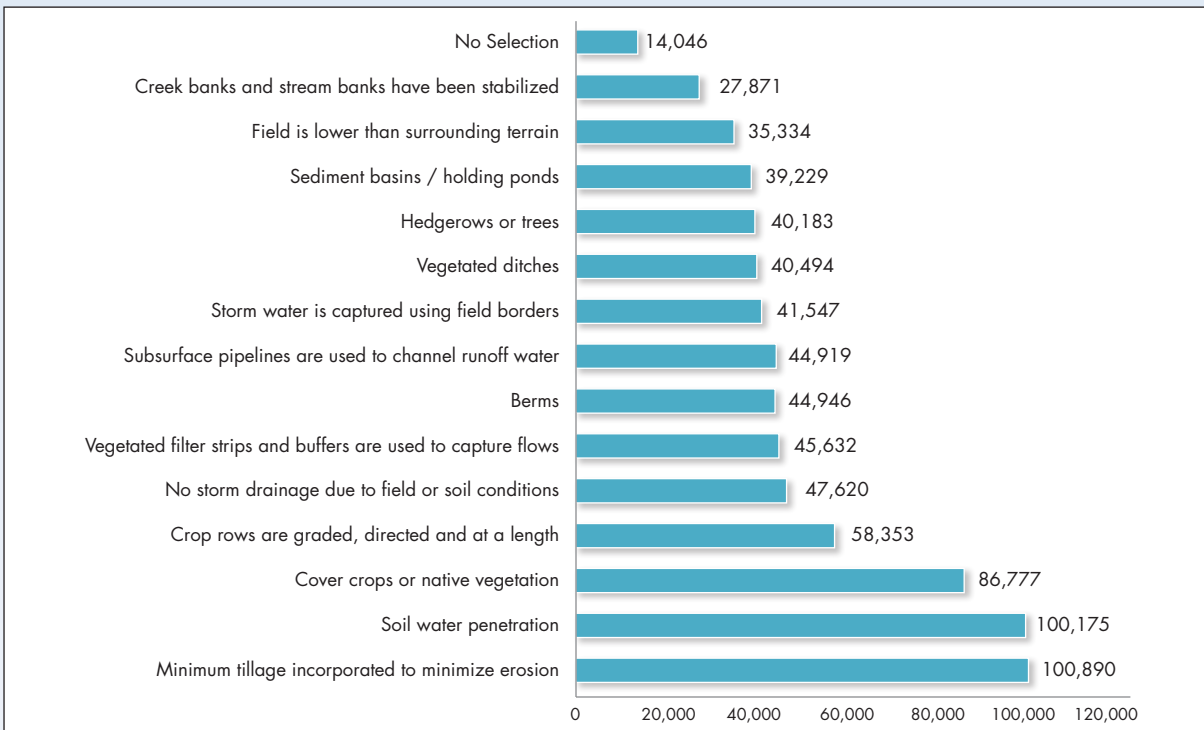
Do you have any irrigation wells?



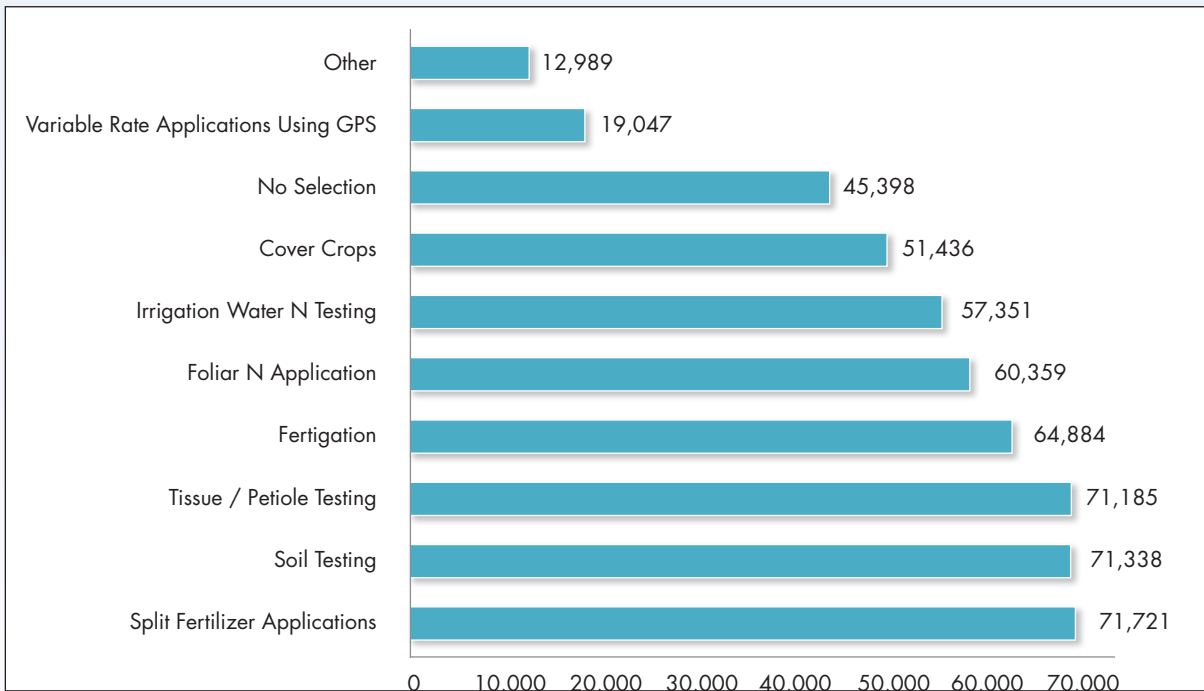
Wellhead Protection Practices



Acreage of cultural practices implemented to manage sediment and erosion

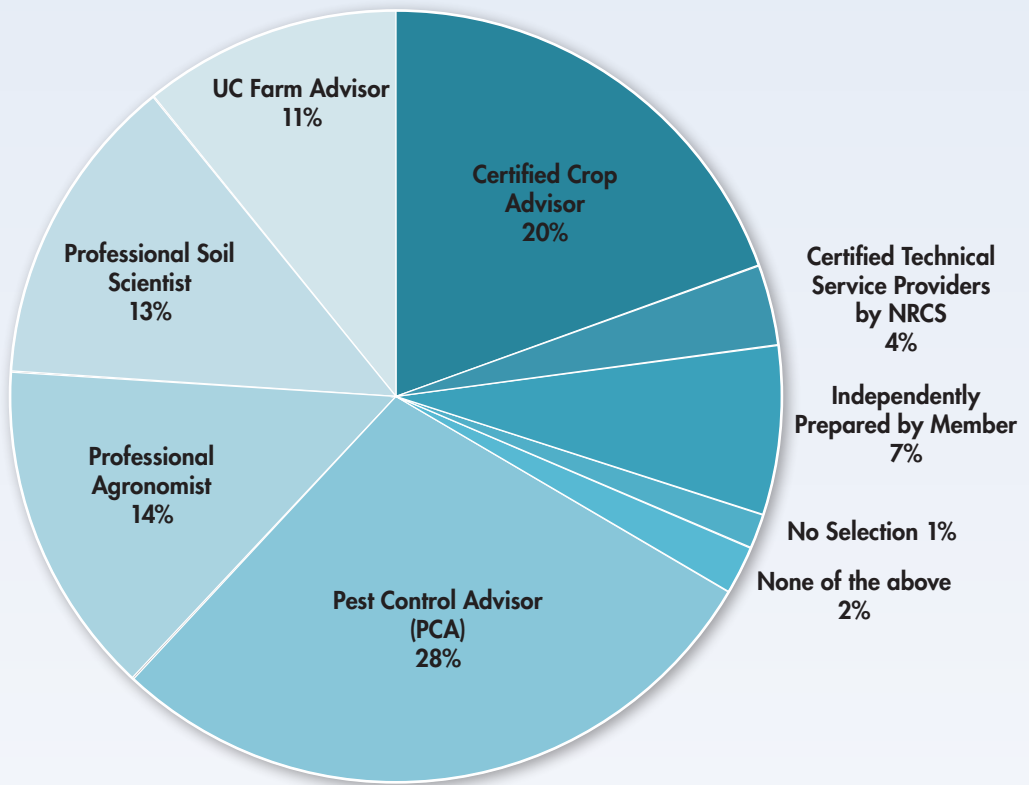


Acreage associated with nitrogen management methods



Percent acreage associated with different types of professionals qualified to develop crop fertility plans

Who do you have help develop your crop fertility plan?



Status of Management Plan Constituents for all Monitoring Sites

Management Plan Constituent	Total Removed 2012	Total Removed 2013	Petitioned to Remove 2014 (approval pending)
Field Parameters			
Dissolved Oxygen	2	0	6
pH	1	0	0
Specific Conductance	4	0	0
Metals			
Arsenic	0	0	0
Copper	2	1	1
Lead	1	1	2
Molybdenum	0	0	0
Physical Parameters			
Ammonia	1	0	0
<i>E. coli</i>	2	0	0
Nitrate	0	0	0
Total Dissolved Solids	2	0	0
Pesticides			
Chlorpyrifos	7	2	3
DDE	0	0	0
Diazinon	1	1	0
Dimethoate	0	0	0
Diuron	3	0	0
Simazine	1	0	0
Toxicity			
Invertebrate toxicity	1	1	3
Fish toxicity	0	0	0
Algae toxicity	2	2	0
Sediment toxicity	0	0	3
TOTAL	30	8	18

Priority Site Subwatershed Sets

High Priority Set	High Priority Subwatershed	Timeframe for Outreach
1 st Priority Subwatersheds	Dry Creek @ Wellsford Rd	2008-2010
	Duck Slough @ Hwy 99	
	Prairie Flower Drain @ Crows Landing Rd	
2 nd Priority Subwatersheds	Bear Creek @ Kibby Rd	2010-2012
	Cottonwood Creek @ Ave 20	
	Duck Slough @ Gurr Rd	
3 rd Priority Subwatersheds	Highline Canal @ Hwy 99	2011-2013
	Berenda Slough along Ave 18 ½	
	Dry Creek @ Rd 18	
4 th Priority Subwatersheds	Lateral 2 ½ near Keyes Rd	2012-2014
	Livingston Drain @ Robin Ave	
	Black Rascal Creek @ Yosemite Rd	
5 th Priority Subwatersheds	Deadman Creek @ Gurr Rd	2013-2015
	Deadman Creek @ Hwy 99	
	Hilmar Drain @ Central Ave	
6 th Priority Subwatersheds	Hatch Drain @ Tuolumne Rd	2014-2016
	Highline Canal @ Lombardy Rd	
	Merced River @ Santa Fe	
7 th Priority Subwatersheds	Miles Creek @ Reilly Rd	2015-2017
	Ash Slough @ Ave 21	
	Mustang Creek @ East Ave	
8 th Priority Subwatersheds	Westport Drain @ Vivian Rd	2016-2018
	Howard Lateral @ Hwy 140	
	Levee Drain @ Carpenter Rd	
9 th Priority Subwatersheds	Mootz Drain downstream of Langworth Pond	2017-2019
	McCoy Lateral @ Hwy 140	
	Rodden Creek @ Rodden Rd	
	Unnamed Drain @ Hwy 140	
	Lateral 5 ½ @ South Blaker Rd	
	Lateral 6 and 7 @ Central Ave	
	Lower Stevinson @ Faith Home Rd	
	Unnamed Drain @ Hogin Rd	

Groundwater Program

Progress Made With New Groundwater Program

Protecting groundwater quality is a high priority of the General Order, or Waste Discharge Requirements (WDR), adopted in December 2012. The WDRs for all Central Valley Coalitions require three separate reports and plans: the Groundwater Assessment Report (GAR), the Management Practices Assessment Program (MPEP) and Groundwater Quality Management Plans (GQMP).

In 2014, ESJWQC contracted with Lohdorff and Scalmanini, Inc. a hydrogeology consulting firm, to develop the Groundwater Assessment Report (GAR). The GAR is a foundational document that is a collection and analysis of information about the groundwater sub-basins encompassed by the ESJWQC region.

A major aspect of the GAR is proposing groundwater vulnerability designations, which describes the potential risk of farm inputs reaching the underground aquifers. These “high” or “low” rankings are based on three primary factors; soil type, depths to groundwater, and existing levels of nitrates that exceed the drinking water standard. Reviewed for the GAR were results from thousands of well tests taken over the last few decades, soil surveys and other existing groundwater data about the region.

The GAR estimates more than 70% of the ESJWQC region to be in high vulnerability areas. Most significant about this designation is that Nitrogen Management Plans (NMP) for parcels in these areas will need to be approved by a Certified Crop Advisor or equally qualified agronomist.

The report also proposes how the coalition will prioritize its efforts to address nitrate groundwater contamination in the highly vulnerable areas.

Another significant component of the WDR is the Groundwater Trend Monitoring Workplan. This plan proposes the location of wells to be sampled over the next 10-plus years to track trends in groundwater quality. Sampling is not expected to occur more than once annually or even less frequently, and will likely focus on the shallowest wells that are used for drinking water. The first draft of this plan is due to the Regional Water Board in June 2015.

Work Begins on Management Practice Effectiveness Program (MPEP)

A key question being asked by the Regional Water Board of all Central Valley agriculture is, are current farming practices for applying nitrogen fertilizers protective of groundwater quality? In the WDR, coalitions are given the option of combining efforts to perform the field studies necessary to gather the scientific information needed to show current farming practices are protective. The ESJWQC has combined efforts with four other coalitions to take the “Group” approach to fulfilling the “Management Practices Effectiveness Program” (MPEP) requirement.

The MPEP Group is:

- East San Joaquin Water Quality Coalition;
- Sacramento Valley Water Quality Coalition;
- San Joaquin County and Delta Water Quality Coalition;
- Westside San Joaquin River Watershed Coalition;
- Westlands Water Quality Coalition.

The five coalitions formed a Coordination Committee to direct the development, preparation, and implementation of the Group Workplan and subsequent reports. This committee includes the Executive Directors of each Coalition, a member of each Coalition’s Board of Directors, and an alternate for each board member. Parry Klassen, Executive Director for the ESJWQC, is chair of the committee.

The Committee is focused on meeting the objectives outlined in each Coalition’s WDR:

- Identify whether site-specific and/or community-specific management practices are protective of groundwater quality within high vulnerability groundwater areas;
- Determine if newly implemented management practices are improving or may result in improving groundwater quality;

- Develop an estimate of the effect of Member's discharges of constituents of concern on groundwater quality in high vulnerability areas. A mass balance and conceptual model of the transport, storage, and degradation/chemical transformation mechanisms for the constituents of concern, or equivalent method approved by the Executive Officer, must be provided;
- Utilize the results of evaluated management practices to determine whether practices implemented at represented member farms (i.e., those not specifically evaluated, but having similar site conditions), need to be improved.

The Coordination Committee recently formed an Advisory Group of technical experts and stakeholders to assist in developing a conceptual study outline which will then be utilized to develop the specific MPEP Work Plan for the crop studies. These technical experts and stakeholders come from the University of California Agriculture and Natural Resources, California Department of Food and Agriculture, the International Plant Nutrition Institute and commodity groups. The conceptual study outline will guide crop technical experts as they develop individual work plans; one for perennial crops and one for annual crops. The Coalition for Urban Rural Environmental Stewardship (CURES) was appointed to serve as MPEP Program Administrator. CURES will manage funding development, creating scopes of work, oversee work with contractors to develop budgets, and track progress of field studies.

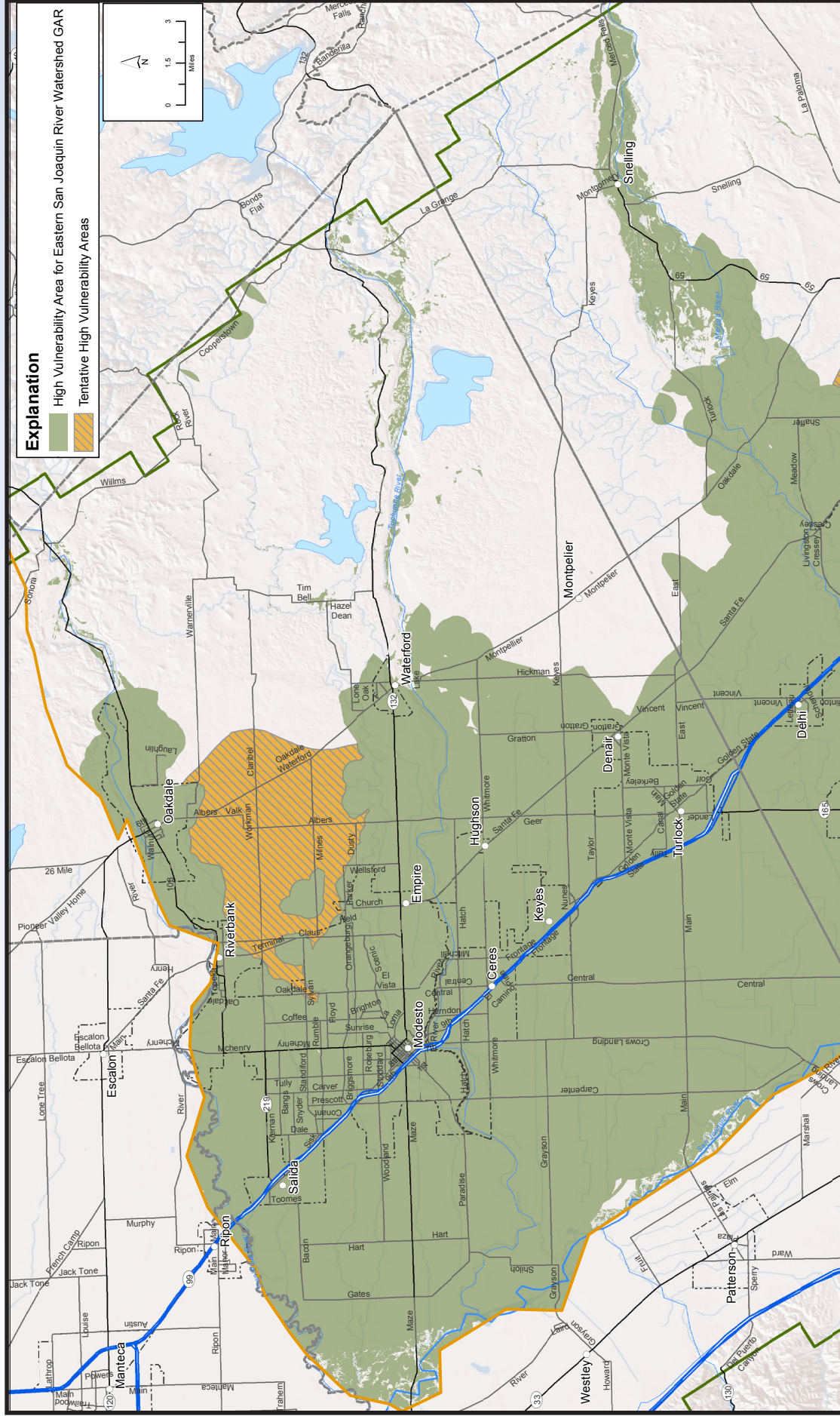
Once the conceptual study outline is approved by the Regional Water Board, experts in annual and perennial crops will be hired to oversee development of work plans. Researchers (university and private) will be hired as contractors to perform studies which will be supervised by the annual crop and perennial crop technical coordinators. A conceptual study design is due June 2015 with a final plan due March 1, 2016.

Drafting The Groundwater Quality Management Plans

Another component of the WDR is development of Groundwater Quality Management Plans. These plans will guide coalition outreach efforts in areas with high nitrates in groundwater. A first draft of the plan was submitted to the Regional Water Board on March 1, 2015.

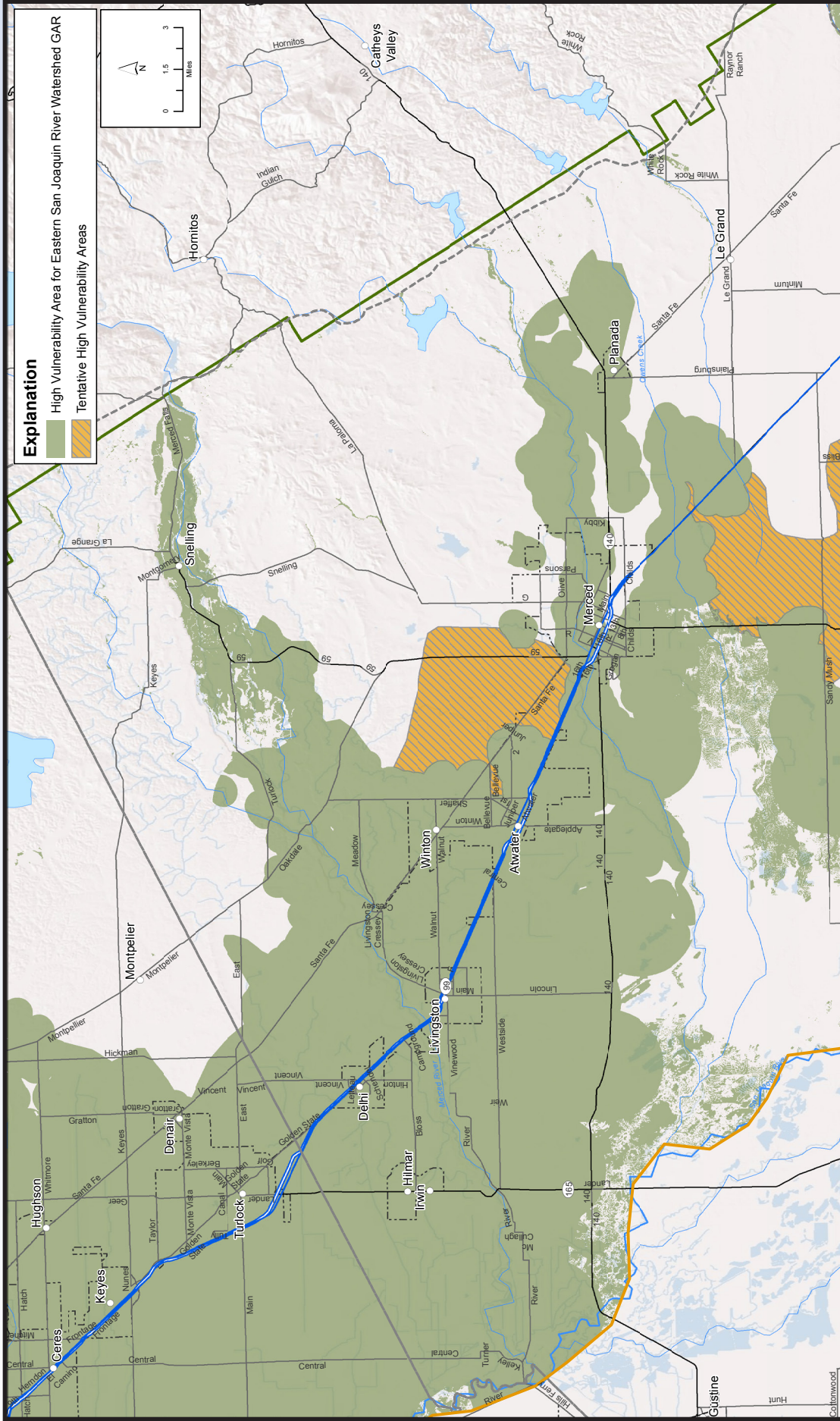
In 2015, ESJWQC will initiate outreach on management practices that can reduce the movement of nitrates and pesticides to groundwater. Coalition efforts will also focus on communicating about wellhead protection and general practices to manage nitrogen applications. Outreach in coming years will be informed by results of the MPEP studies which will provide information that is specific to crops, soils, and climatic conditions in the coalition region.





Northern Region

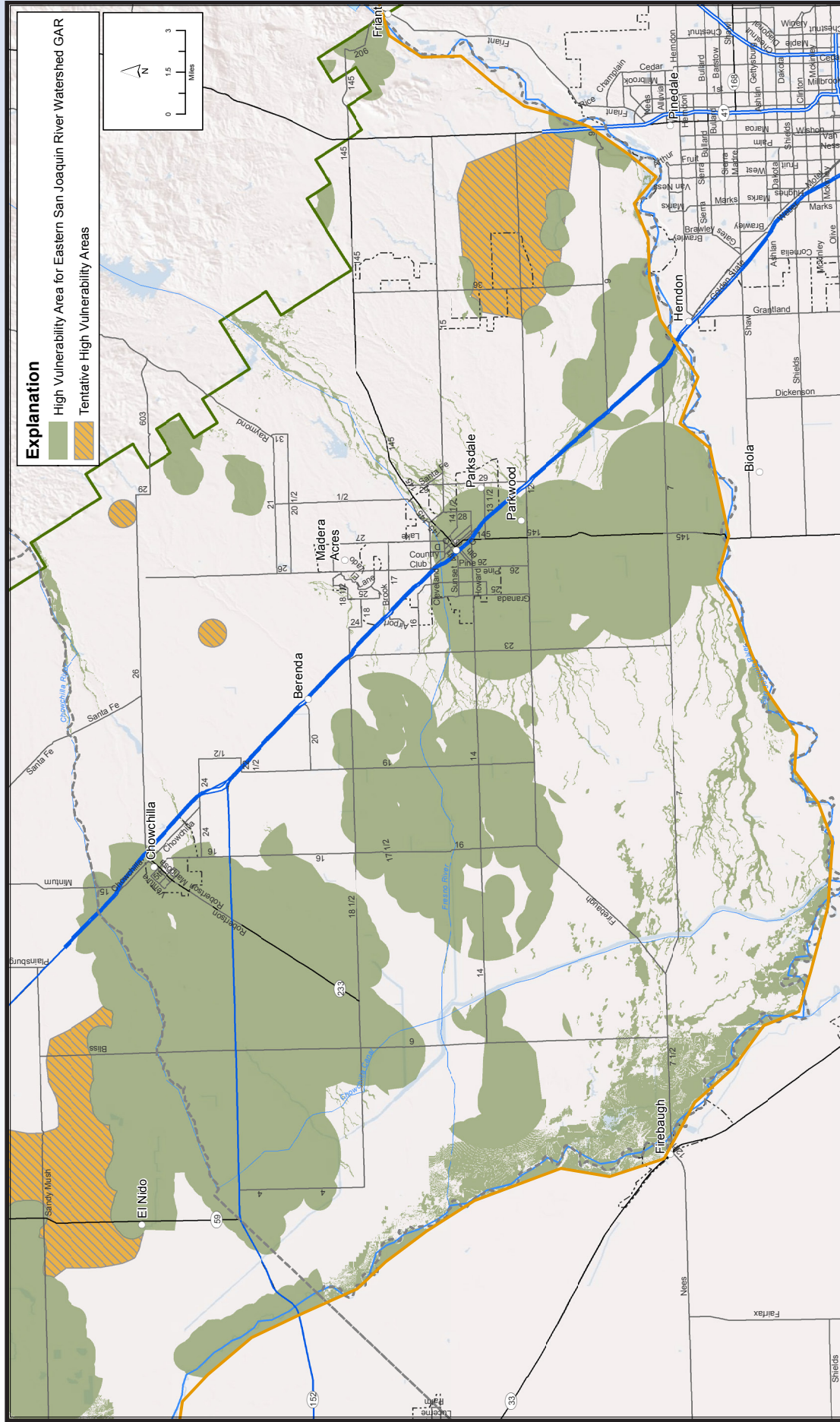
Proposed High Vulnerability Area for the East San Joaquin Water Quality Coalition
With Additional Extensions for Well Nitrate Exceedances



Central Region

Proposed High Vulnerability Area for the East San Joaquin Water Quality Coalition
With Additional Extensions for Well Nitrate Exceedances





Southern Region

Proposed High Vulnerability Area for the East San Joaquin Water Quality Coalition
 With Additional Extensions for Well Nitrate Exceedances

Coalition Overview

Membership

As of December 20, 2014:

- 3,881 landowner/operators
- 712,697 irrigated acres

Boundaries

The coalition includes Madera County and portions of Stanislaus, Merced, Tuolumne, Mariposa, and Calaveras counties. Coalition borders are the crest of the Sierra Nevada on the east, the San Joaquin River on the west and south, and the Stanislaus River on the north. There are four major tributaries in the watershed: Chowchilla River, Merced River, Tuolumne River and Stanislaus River. (Note: a limited number of landowners have opted to join adjacent water quality coalition to obtain ILRP coverage.)

Structure

The Coalition was formed in 2003 in compliance with the Irrigated Lands Regulatory Program (ILRP) adopted by the Central Valley Regional Water Quality Control Board. A volunteer board of Directors oversees this organization, which is structured as a public benefit, non-profit entity, to perform tasks required under the ILRP. In November 2005, the Coalition was granted non-profit status as a 501c5 organization by the Internal Revenue Service. The Coalition is managed by a Board of Directors and administered by an Executive Director. Water monitoring, membership management and outreach are performed by entities contracted to ESJWQC.

Board Officers

- Alan Reynolds, (Chairman) Gallo Vineyards, Inc.
- Amanda Priest, (Secretary) Merced County Farm Bureau
- Bill McKinney, (Treasurer); almond grower

Board Members

- Bill Bush, B&B Consulting, grower
- Mike Niemi, Turlock Irrigation District
- Anja Raudabaugh, Madera County Farm Bureau
- Al Rossini, Albertoni Land Co Ltd., grape grower
- Lonnie Slaton, Simplot Soil Builders

Non-voting Board Members

- Milton O’Haire, Stanislaus County Agricultural Commissioner
- Diana Waller, District Conservationist, USDA-NRCS – Modesto Field Office
- David Robinson, Merced County Agricultural Commissioner
- Stephanie McNeil, Madera County Agricultural Commissioner
- Dennis Westcot, San Joaquin River Tributaries Group

Coalition Staff

- Parry Klassen (Executive Director); also Executive Director for Urban/Rural Environmental Stewardship (CURES)
- Wayne Zipser, Grower Relations Manager; also Manager, Stanislaus County Farm Bureau
- Caitie Campodonico, Grower Relations
- Jennifer Sanchez, Membership Manager
- Clint Phelps, Executive Assistant

ESJWQC Goals

- To operate an efficient, economical program that enables members to comply with the Irrigated Lands Regulatory Program
- File required reports with the Central Valley Regional Water Quality Control Board to maintain ILRP coverage for Coalition members.
- Implement an economical and scientifically valid water monitoring program for rivers and agricultural drains (as required by the ILRP).
- Spread costs equitably among owners/operators who are Coalition members.
- Communicate to landowners where water monitoring indicates problems and work to solve those issues.



Member Outreach and Best Management Practices

The Coalition is continuing its efforts to work with landowners in watersheds where monitoring indicates problems. Central to this effort will be promoting Best Management Practices (BMPs) with the best potential for solving the problem. When a problem is identified, the Coalition will:

- Contact landowners upstream of the monitoring site and inform them of the constituent(s) identified.
- Distribute BMP information through mailings and individual visits and local grower and crop advisor meetings.
- Give educational presentations on monitoring results and potential BMPs at commodity and farm group meetings in the coalition region.

Monitoring Program Objectives

- Characterize discharge from irrigated agriculture in the Coalition region
- Identify locations where water quality objectives are violated
- Identify potential source(s) of the exceedances
- Promote to landowners the implementation of management practices to eliminate water quality problems

Fees Assessed by the State Water Resources Control Board

In 2014, the Coalition paid the 75 cents per acre fee for its members to cover State Water Resources Control Board cost for implementing the ILRP, primarily for Regional Board staff. All members of agricultural coalitions throughout the state pay this annual fee. The per acre fee is included as part of Coalition membership dues.

Surface and Groundwater Program Management

Michael L. Johnson LLC, Davis, CA

Staff: Mike Johnson – President
Francisca Johnson – Vice President
Melissa Turner – Vice President

Luhdorff & Scalmanini Consulting Engineers, Woodland, CA
Groundwater consulting firm

Analytical Laboratories

- AQUA-Science, Davis, CA (water column toxicity)
- APPL Inc., Fresno, CA (pesticide analysis)
- North Coast Laboratories Ltd., Arcata, CA (glyphosate and paraquat analysis)
- Caltest Analytical Laboratory, Napa, CA (Sediment chemistry analysis, physical parameters, metals and nutrient analysis)
- Nautilus Environmental, San Diego, CA (sediment toxicity)

Questions, Comments, Changes in Membership

Members are welcome to contact the Coalition Board of Directors or management with questions or to update membership information. The most efficient way to contact us is through the Coalition's website www.esjcoalition.org. Go to "Contact Us."

Outreach meeting dates and locations will be posted on the Coalition website and periodic announcements will be mailed to members.

Changes to membership information can be submitted to:

ESJWQC
1201 L Street
Modesto, CA 95354

Or call: **209-846-6112**

Be sure to use your membership ID number in any correspondence.



Financial Report

Financial Overview

Reported below is a financial overview comparing the ESJWQC 2014 budget with the actual 2014 expenditures. As shown in Net Income, the coalition ended 2014 with net income and adequate reserves, enabling the annual dues to remain at \$3.75 per acre for 2015. As indicated in the footnote “*Balance Available,” there was approximately \$2.7 million in ESJWQC banking accounts which reflects carryover from 2013 and a portion of 2015 member dues collected in 2014. Invoices are mailed in November each year for the following year dues. The overview also records income from sales to several Central Valley coalitions of the Membership Data Base developed for the ESJWQC. The sales offset the ESJWQC’s investment in developing the data base. A complete financial review of 2014 expenditures is available upon request.

In 2014, the ESJWQC contracted the services of Grombleby Coleman Certified Public Accountants, Inc., Modesto to perform an audit of our financial statement for calendar year 2013. The firm reported that the ESJWQC financial statements are “fairly presented in conformity with U.S. general accepted accounting principles.” Several additional invoice review procedures were recommended by the auditor and initiated by the Board of Directors in 2014. The full text of the audit report is available on the “Members Only” section of website: www.esjcoalition.org/member/ESJLogin.asp.

An analysis of ESJWQC budget expenditures since its formation in 2004 through 2014 shows the following breakdown of expenditures:

- 23% Organizational expenses
- 13% Acreage Fees to State Water Resources Control Board
- 7% Executive Director
- 2% Legal Fees
- 76% Program Expenses (Water monitoring and Reporting)

All funds collected as membership dues go to pay for the cost of administering the Irrigated Lands Regulatory Program for the ESJWQC region.

Many regional and state regulatory processes are participated in by Parry Klassen, executive director of ESJWQC. His representation gives the coalition an active voice in these water quality regulatory processes that directly impact agriculture in the coalition region and Central Valley as a whole.

CV SALTS Executive Committee: Mr. Klassen serves as Chair of this collaborative stakeholder process that is developing a comprehensive salt and nitrate plan for the Central Valley farm and urban sectors. <http://www.cvsalinity.org/>

The Coalition for Urban Rural Environmental Stewardship (CURES) is a non-profit organization that supports educational efforts for agricultural and urban communities on pesticides and nutrients. Under a separate employment arrangement, Mr. Klassen is executive director of CURES, which brings BMP projects and funding to irrigated agriculture operations in the Central Valley, complimenting ESJWQC mission and goals. www.curesworks.org

Statement of Financial Activities January 1, 2014 thru December 31, 2014 vs. Budget

	ACTUAL* 2014 \$ K, (Thousands)	BUDGET 2014 \$ K, (Thousands)	DESCRIPTION
INCOME			
TOTAL INCOME	3,068	3,123	Membership dues plus sales of membership software, interest on bank accounts in 2014.
EXPENSES			
Organizational**	793	857	Executive director, legal, accounting, State Ag Waiver fees, management of membership records and related communications, and miscellaneous business costs.
Program***	1,814	2,206	Program manager, site monitoring/special studies, quality control/assurance, data management, BMP assessments, communications with Coalition members regarding monitoring results, and reports to RWQCB.
Travel and Meeting	16	15	Expenses for executive director, program manager and contractors doing work for the Coalition.
TOTAL EXPENSES	2,623	3,078	
NET INCOME	445	45	Difference between TOTAL INCOME and TOTAL EXPENSES.

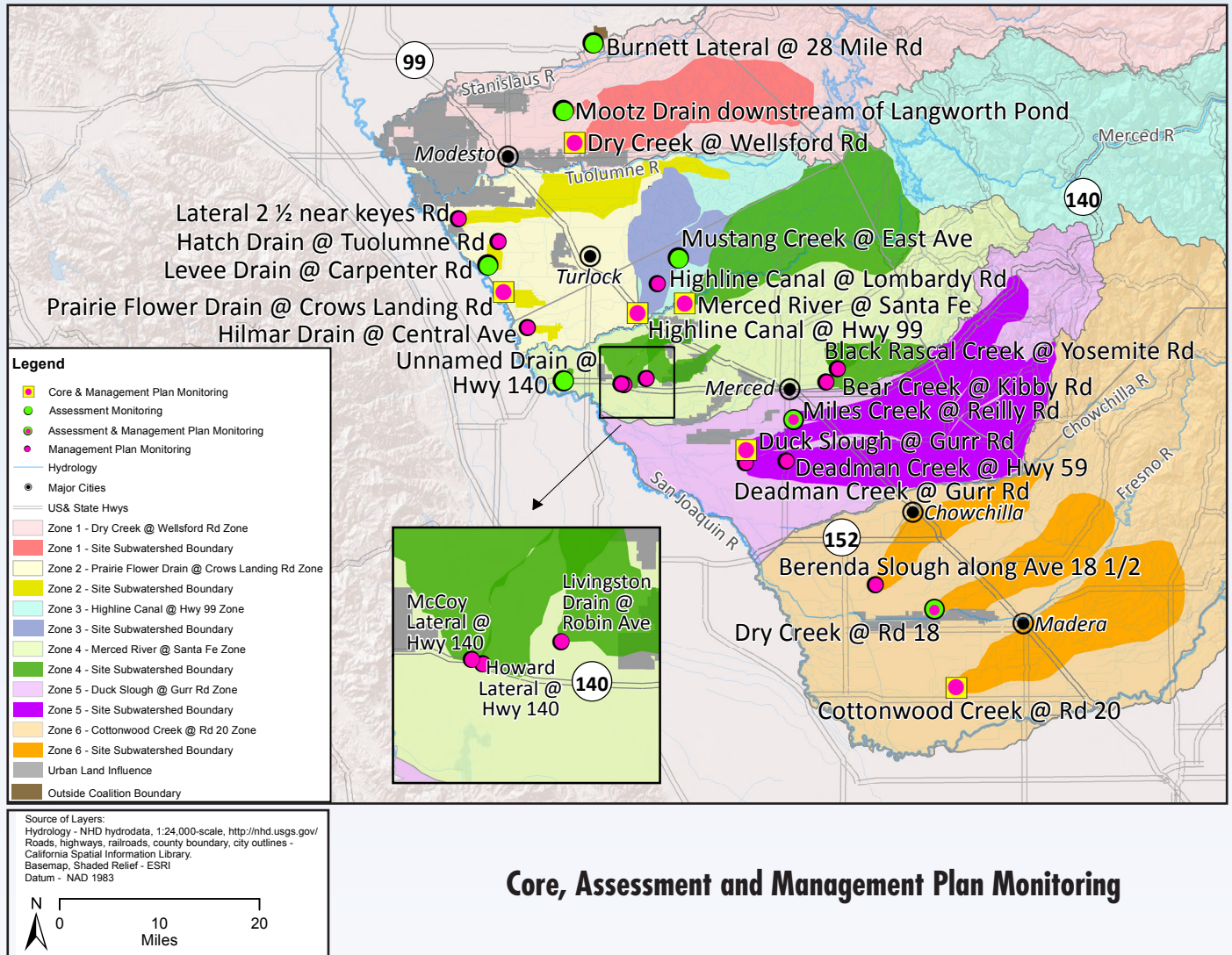
* At the end of December balances in the checking and savings accounts totaled \$2,771 K.

** Includes anticipated State Water Board Waiver fees attributed to 2014 acreage.

*** Difference due to lower than anticipated costs for surface water program (approx. \$100K) and ground water program (approx. \$250k)

Surface Water Program

ESJWQC January through September 2014 Monitoring Sites



Core, Assessment and Management Plan Monitoring



East San Joaquin Water Quality Coalition – Monitoring Sites (2004 – September 2014)

'X' indicates sampling occurred during the years specified.

MONITORING SITE	COUNTY	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013 ²	2014 wy ³
Ash Slough @ Ave 21	Madera		X	X	X	X	X	X				X
Bear Creek @ Kibby Rd	Merced		X	X	X	X		X	X	X	X	X
Berenda Slough along Ave 18 1/2	Madera			X	X	X			X	X	X	X
Black Rascal Creek @ Yosemite Rd	Merced			X	X						X	X
Canal Creek @ West Bellevue Rd	Merced											X
Cottonwood Creek @ Rd 20	Madera		X	X	X	X	X	X	X	X	X	X
Deadman Creek @ Gurr Rd	Merced	X		X	X	X	X	X		X	X	X
Deadman Creek @ Hwy 59	Merced			X	X	X			X	X	X	X
Dry Creek @ Rd 18	Madera		X	X	X	X			X	X	X	X
Dry Creek @ Wellsford Rd	Stanislaus/Merced		X	X	X	X	X	X	X	X	X	X
Duck Slough @ Gurr Rd	Merced	X	X	X	X	X	X	X	X	X	X	X
Duck Slough @ Hwy 99	Merced		X	X	X	X	X	X	X	X		
Hatch Drain @ Tuolumne Rd	Stanislaus				X	X					X	X
Highline Canal @ Hwy 99	Merced		X	X	X	X	X	X	X	X	X	X
Highline Canal @ Lombardy Rd	Merced		X	X	X	X	X	X	X	X	X	X
Hilmar Drain @ Central Ave	Merced		X	X	X	X	X			X	X	X
Howard Lateral @ Hwy 140	Merced						X	X	X		X	X
Lateral 2 ½ near Keyes Rd	Stanislaus					X	X	X	X		X	X
Lateral 5 ½ @ South Blaker Rd	Stanislaus											X
Lateral 7 and 7 @ Central Ave	Stanislaus											X
Levee Drain @ Carpenter Rd	Stanislaus									X	X	X
Livingston Drain @ Robin Ave	Merced				X	X			X	X	X	X
Lower Stevenson @ Faith Home Rd	Stanislaus											X
McCoy Lateral @ Hwy 140	Merced								X	X	X	
Merced River @ Santa Fe Rd	Merced	X	X	X	X	X	X	X	X	X	X	X
Miles Creek @ Reilly Rd	Merced				X	X	X	X			X	X
Mootz Drain ¹	Stanislaus						X	X			X	X
Mustang Creek @ East Ave	Merced			X	X	X	X	X			X	X
Prairie Flower Drain @ Crows Landing Rd	Stanislaus		X	X	X	X	X	X	X	X	X	X
Rodden Creek @ Rodden Rd	Stanislaus								X	X		
Silva Drain @ Meadow Drive	Merced			X	X	X						
Unnamed Drain @ Hogin Rd	Stanislaus											X
Unnamed Drain @ Hwy 140	Merced										X	X
Westport Drain @ Vivian Rd	Stanislaus				X	X						X

¹ Years associated with monitoring combine sampling years for both Mootz Drain @ Langworth Rd and Mootz Drain downstream of Langworth Pond locations.

² Monitoring during 2013 was from January through September 2013.

³ Monitoring during the 2014 Water Year (WY) was from October 2013 through September 2014.



Coalition Monitoring Results (October 2013 through September 2014) cont.

Monitoring Location	Constituent ¹	DO	pH	SC	Ammonia	Nitrate + Nitrite	E. coli	Arsenic	Copper	Molybdenum	Chlorpyrifos	Diuron	HCH	Malathion	Water Flea	Fathead Minnow	Algae	Sediment	Discharge
	Water Quality Goal	7 mg/L	<6.5 or >8.5	700 µmhos/cm	1.5 mg/L (variable)	10 mg/L	235 MPN /100 ml	10 µg/L	µg/L (variable)	10 µg/L	0.015 µg/L	2 µg/L	0.0039 µg/L	>0 µg/L	Toxicity	Toxicity	Toxicity	Toxicity	Cubic Feet Per Second
	Sample Date																		
	4/8/2014																		Dry
	5/13/2014																		Dry
	6/10/2014																		Dry
	7/8/2014																		Dry
	8/12/2014																		Dry
	9/9/2014																		Dry
	11/12/2013	2.42		1073											Toxic				**
	11/13/2013	2.67		1109												Toxic			NM
	12/10/2013	5.98		1308												Toxic			NM
	1/14/2014		9.61																**
	2/10/2014		9.31																NM
Deadman Creek @ Gurr Rd	3/5/2014																		1.16
	4/8/2014																		0.49
	5/13/2014	6.71																	NM
	6/10/2014	6.38																	NM
	7/8/2014	4.88																	NM
	8/12/2014	4.30																	**
	9/9/2014	6.09																	**
	4/8/2014																		**
Deadman Creek @ Hwy 59	8/12/2014																		Dry
	9/9/2014																		Dry
	10/15/2013																		**
	11/12/2013																		**
	12/10/2013																		Dry
	1/14/2014																		Dry
	2/10/2014		8.98						12 (11.21)										**
	3/5/2014		9.16																**
Dry Creek @ Rd 18	4/8/2014																		Dry ¹
	5/13/2014																		**
	6/10/2014																		**
	7/8/2014																		Dry
	8/12/2014																		Dry
	9/9/2014	6.57																	**
	10/15/2013										0.016								14.57
	10/21/2013																		NM
	11/12/2013	2.08																	**
	11/13/2013	1.22																	NM
	12/10/2013	0.39					>2419.6												**
	1/14/2014	3.98																	**
Dry Creek @ Wellford Rd	2/10/2014	3.35											0.049						**
	3/3/2014																		**
	3/4/2014																		**
	4/8/2014	2.36					>2419.6												NM-Sed
	5/13/2014	5.76																	0.10
	6/10/2014	4.20					435.2												39.06
																			12.93

Coalition Monitoring Results (October 2013 through September 2014) cont.

Monitoring Location	Constituent ¹	DO	pH	SC	Ammonia	Nitrate + Nitrite	E. coli	Arsenic	Copper	Molybdenum	Chlorpyrifos	Diuron	HCH	Malathion	Water Flea	Fathead Minnow	Algae	Sediment	Discharge
	Water Quality Goal Sample Date	7 mg/L	<6.5 or >8.5	700 µmhos/cm	1.5 mg/L (variable)	10 mg/L	235 MPN /100 ml	10 µg/L	µg/L (variable)	10 µg/L	0.015 µg/L	2 µg/L	0.0039 µg/L	>0 µg/L	Toxicity	Toxicity	Toxicity	Toxicity	Cubic Feet Per Second
Duck Slough @ Gurr Rd	7/8/2014	4.69					770.1												28.64
	8/12/2014	5.95					285.1												35.78
	9/9/2014	5.27					248.1												23.03
	10/15/2013																		**
	10/21/2013		8.73																NM
	11/12/2013																		**
	11/13/2013																		NM
	12/10/2013	6.83																	**
	1/14/2014																		Dry
	2/10/2014		8.66																**
	3/3/2014		8.79					16			0.053					Toxic			**
	3/5/2014		9.38																NM
4/8/2014				726									0.12					**	
5/13/2014		8.55																0.18	
6/10/2014	6.82																	**	
7/8/2014	5.37						>2419.6											**	
8/12/2014																		**	
9/9/2014																		0.22	
10/15/2013			9.26															**	
10/21/2013																		NM	
11/12/2013																		Dry	
12/10/2013																		Dry	
1/14/2014																		Dry	
2/10/2014																		Dry	
3/3/2014									7.1 (6.76)									2.01	
3/4/2014																		NM-Sed	
4/8/2014																		Dry	
5/13/2014							686.7											145.72	
6/10/2014	5.98						248.1										Toxic	37.03	
7/8/2014																	Toxic	91.67	
8/12/2014	6.92																	57.48	
9/9/2014			8.86															17.67	
1/14/2014																		**	
2/10/2014			9.07															**	
3/5/2014			8.55						14 (8.34)									0.31	
4/8/2014	4.13																	NM	

Hatch Drain @ Tuolumne Rd

Highline Canal @ Hwy 99

Highline Canal @ Lombardy Rd

Coalition Monitoring Results (October 2013 through September 2014) cont.

Monitoring Location	Constituent†	DO	pH	SC	Ammonia	Nitrate + Nitrite	E. coli	Arsenic	Copper	Molybdenum	Chlorpyrifos	Diuron	HCH	Malathion	Water Flea	Fathead Minnow	Algae	Sediment	Discharge
Hilmar Drain @ Central Ave	5/13/2014																		288.31
	6/10/2014																		100.86
	8/12/2014																		106.92
	9/9/2014		8.70																33.07
	12/10/2013			801															9.98
	1/14/2014			1122															**
	2/10/2014			764															**
	3/5/2014			972															1.09
	4/8/2014			1125															**
	6/10/2014	4.72		1616															0.17
7/8/2014	4.45																	5.39	
8/12/2014	5.08		854															12.66	
9/9/2014	5.85		1119															NM	
11/12/2013																		Dry	
1/14/2014																		Dry	
10/15/2013			752															NM	
12/10/2013																		NM	
1/14/2014																		Dry	
2/10/2014		8.58																Dry	
3/4/2014		8.75																NM	
4/8/2014																		NM-Sed	
5/13/2014																		**	
6/10/2014																		18.06	
7/8/2014											0.16							14.30	
8/12/2014																		2.79	
9/9/2014																		1.64	
10/15/2013				1418													Toxic	NM	
12/10/2013			8.54	897													Toxic	NM	
1/14/2014				1025														NM	
2/10/2014																		NM	
3/5/2014		8.84		707													Toxic	NM	
4/8/2014				1102													Toxic	NM	
5/13/2014				880														NM	
6/10/2014				1035														**	
7/8/2014				702														198.67	
8/12/2014				1436														84.45	
9/9/2014				2127														NM	
10/15/2013				1129														NM	
12/10/2013				778													Toxic	NM	
1/14/2014	4.54			1138														NM	
2/10/2014				1317														NM	
3/5/2014				1213														NM	
4/8/2014		8.57		1037														NM	
5/13/2014				963														NM	
6/10/2014				827														**	

Coalition Monitoring Results (October 2013 through September 2014) cont.

Monitoring Location	Constituent [†]	DO	pH	SC	Ammonia	Nitrate + Nitrite	E. coli	Arsenic	Copper	Molybdenum	Chlorpyrifos	Diuron	HCH	Malathion	Water Flea	Fathead Minnow	Algae	Sediment	Discharge
	Water Quality Goal Sample Date	7 mg/L	<6.5 or >8.5	700 μmhos/cm	1.5 mg/L (variable)	10 mg/L	235 MPN /100 ml	10 μg/L	μg/L (variable)	10 μg/L	0.015 μg/L	2 μg/L	0.0039 μg/L	>0 μg/L	Toxicity	Toxicity	Toxicity	Toxicity	Cubic Feet Per Second
Miles Creek @ Reilly Rd	6/10/2014																		56.00
	7/8/2014																		75.00
	8/12/2014					816.4													34.00
	9/9/2014																		67.00
	1/14/2013																		0.7
	2/10/2014																		**
	3/5/2014	9.38																	0
	4/8/2014																		**
	5/13/2014																		**
	6/10/2014	3.55																	**
7/8/2014	4.05																	**	
8/12/2014	5.57																	**	
9/9/2014																		1.25	
Mootz Drain downstream of Langworth Pond	3/4/2014	3.97																Toxic	NM-Sed
	9/9/2014	6.85																	NM
Mustang Creek @ East Ave	10/15/2013																		
	11/12/2013																		
	12/10/2013	4.66							42 (10.47)										Dry
	1/14/2014																		**
	2/10/2014																		Dry ¹
	3/5/2014								14 (9.72)										Dry ¹
	4/8/2014	2.93																	0.14
	9/9/2014																		**
	10/15/2013			2136						14								Toxic	**
	10/21/2013	5.83		2245		26													NM
11/12/2013			2129		41				18									**	
11/13/2013			2135															NM	
12/10/2013			2006		46				15								Toxic	**	
1/14/2014			1555	4	35				13									NM	
2/10/2014			1520															**	
3/3/2014	2.85	8.67	2061		23				15								Toxic	**	
3/4/2014	3.39		2199									2.1						NM-Sed	
4/8/2014			2670		33					17								**	
5/13/2014			2160		31					13								**	
6/10/2014		8.58	999				648.8											**	
7/8/2014			1821				648.8			14								**	
8/12/2014	1.38		1745															**	
9/9/2014	5.15		1199															**	
10/15/2013	4.15		942															NM	
12/10/2013			1080															NM	
1/14/2014																		NM	
2/10/2014	5.06		1417															NM	
3/4/2014	1.85		1978															NM-Sed	
6/10/2014	1.32		1632															NM	
Prairie Flower Drain @ Crows Landing Rd	10/15/2013																		
	10/21/2013																		
	11/12/2013																		
	11/13/2013																		
	12/10/2013																		
	1/14/2014																		
	2/10/2014																		
	3/3/2014	2.85	8.67	2061		23				15								Toxic	**
	3/4/2014	3.39		2199															NM-Sed
	4/8/2014			2670		33				17									**
5/13/2014			2160		31				13									**	
6/10/2014		8.58	999				648.8											**	
7/8/2014			1821				648.8			14								**	
8/12/2014	1.38		1745															**	
9/9/2014	5.15		1199															**	
10/15/2013	4.15		942															NM	
12/10/2013			1080															NM	
1/14/2014																		NM	
2/10/2014	5.06		1417															NM	
3/4/2014	1.85		1978															NM-Sed	
6/10/2014	1.32		1632															NM	
Unnamed Drain @ Hogin Rd	10/15/2013																		
	10/21/2013																		
	11/12/2013																		
	11/13/2013																		
	12/10/2013																		
	1/14/2014																		
	2/10/2014	5.06		1417															
	3/4/2014	1.85		1978															NM-Sed
	6/10/2014	1.32		1632															NM

Coalition Monitoring Results (October 2013 through September 2014) cont.

Monitoring Location	Constituent†	DO	pH	SC	Ammonia	Nitrate + Nitrite	<i>E. coli</i>	Arsenic	Copper	Molybdenum	Chlorpyrifos	Diuron	HCH	Malathion	Water Flea	Fathead Minnow	Algae	Sediment	Discharge
	Water Quality Goal Sample Date	7 mg/L	<6.5 or >8.5	700 µmhos/cm	1.5 mg/L (variable)	10 mg/L	235 MPN /100 ml	10 µg/L	µg/L (variable)	10 µg/L	0.015 µg/L	2 µg/L	0.0039 µg/L	>0 µg/L	Toxicity	Toxicity	Toxicity	Toxicity	Cubic Feet Per Second
Monitoring Location	7/8/2014	4.17		984															**
	8/12/2014	5.15		2226															**
	9/9/2014	1.74		1233															NM
Unnamed Drain @ Hwy 140	11/12/2013	6.86																	**
	1/14/2014			1686															**
	2/10/2014	2.77		800															6.55
Westport Drain @ Vivian Rd	3/5/2014	0.05																	NM
	4/8/2014																		**
	5/13/2014	1.25																	Dry
	7/8/2014	4.55		837															NM
	8/12/2014	4.91																	**
	9/9/2014			872															**

*All data are preliminary and will undergo additional review prior to being finalized.

0* Discharge recorded as zero due to water flowing from west to east in an upstream direction.

**No measurable flow.

Dry-No water at site; no samples collected.

Dry[†]-Water too shallow to sample; no samples collected.

NM-No measurement: Too deep to measure flow or water column toxicity monitoring only.

NM-Sed -No measurement: Discharge not measured due to sediment monitoring only.

MONITORING CONSTITUENTS DEFINITIONS

Dissolved Oxygen (DO): DO criterion is protective of aquatic life: (min. of 7 mg/L). DO levels are affected by water temperature, photosynthesis & respiration. Added nutrients can stimulate algae production which dies and breaks down by microbial activity. The activity requires oxygen, depleting DO and resulting in an inability to support aquatic communities.

pH: Power of Hydrogen (pH) measures acidic or basic levels in a solution. Acceptable range = 6.5-8.5. Water temperature, photosynthesis & respiration can affect levels. Fertilizers & pesticides can affect pH of water/soil.

Specific Conductance (SC): A measure of salt and is measured in $\mu\text{S}/\text{cm}$. SC is an indirect measure of the presence of ions such as chloride, nitrate, sulfate, phosphate, sodium, magnesium, calcium and iron. The SC standard (700 $\mu\text{S}/\text{cm}$) is protective of sensitive agricultural crops such as beans.

Ammonia: Total ammonia consists of the unionized (NH_3) form plus the ionized (NH_4^+) form also called ammonium. Ammonium can enter a water body through direct discharge from agricultural fertilizers or animal waste, discharges from waste water treatment plants, or from the breakdown of organic matter in the stream. In soils, ammonium from fertilizers is typically converted to nitrite and then to nitrate over a short period of time. Exceedances of the ammonia standard are based on water temperature and pH which affect the level at which ammonia is toxic to aquatic life. Regardless of the water temperature or pH, all ammonia concentrations above 1.5 mg/L are exceedances of the drinking water standard.

Nitrate + Nitrite: Potential sources include runoff of fertilizers or organic matter from irrigated pasture, leaking septic systems, waste water treatment plant effluent and animal waste. Nitrate and nitrite are very soluble and can enter surface or groundwater with irrigation and/or storm water. Animal waste can be converted to nitrate by nitrifying bacteria. Sources of animal waste include dairies, poultry, pasture and/or wildlife.

E. coli: Common bacterium in intestinal tracts and voided in fecal matter. E. coli in water is compared to the water quality standard protective of recreational activities (235 MPN/100mL). E. coli may persist in presence of oxygen for periods of time after being voided. Any feces voiding species of vertebrate can contribute E. coli to surface waters. Potential sources: leaky septic systems or sewer lines, waste water treatment plant discharge, application of biosolids to ag land, defecation in or near waterbodies, dairies, manure or poultry operations.

Arsenic: Arsenic is found in sodium cacodylate which is applied by agriculture for broad-leaf weed control and as a cotton defoliant. California Department of Pesticide Regulation records indicate no agricultural use of sodium cacodylate across the Coalition region between 1998 and 2010. Exceedances of the Arsenic WQTL can be attributed to legacy pesticide use.

Copper: Dissolved or sediment bound in water. Measurement of dissolved copper=dissolved form only measurement of total copper= both dissolved & bound. Dissolved copper is adjusted for the hardness (CaCO_3) in water to determine concentrations that would be toxic to aquatic species. Total copper is also evaluated based on the criteria protective of the drinking water beneficial use.

Molybdenum: Products containing molybdenum are rarely if ever used in the Coalition area. Molybdenum can be a byproduct in copper and tungsten mining and is used in alloys due to its ability to withstand high temperatures, resistance to corrosion, and weldability. The westside region is naturally elevated in molybdenum and tends to be flushed into surface waters during periods of high rainfall. Drains such as Prairie Flower Drain which were constructed to drain shallow ground water and allow agriculture can develop elevated

concentrations of molybdenum when the ground water is driven into the channel. In living organisms, molybdenum acts as a metal heteroatom and is present in various enzymes including aldehyde oxidase, sulfite oxidase and xanthine oxidase. Molybdenum can also be found in green beans, eggs, sunflower seeds, wheat flour, lentils and cereal grains. In animal studies chronic ingestion of 10 mg/kg of molybdenum can cause diarrhea, growth retardation, sterility, low birth weight, and gout.

Chlorpyrifos: An organophosphate insecticide used in alfalfa, grapes & orchards (among other crops). Trademarked names include: Govern™, Lock-On™, Lorsban™, NuPhos™, etc. Chlorpyrifos can bind to sediment or remain in water column. The 0.015 $\mu\text{g}/\text{L}$ objective is protective of aquatic life.

Diuron: Diuron is a broad-spectrum herbicide used for weed control on agriculture and highway shoulders. It acts by inhibiting photosynthesis and can also affect seed germination. Diuron has a half-life (in soil) of about 90 days and is relatively mobile. It inhibits growth of *Selenastrum* with an EC50 of 2.4 $\mu\text{g}/\text{L}$.

HCH: Lindane, one of the hexachlorocyclohexane isomers, is an organochlorine insecticide that is not currently registered for agricultural use. Lindane was used in the past as a pesticide and a pharmaceutical treatment for lice and scabies. Isomers of lindane include alpha-HCH, beta-HCH and delta-HCH. Lindane is not produced in the US (since 1970), but has been imported from other nations. In 2006 the United States Environmental Protection Agency (US EPA) called for a voluntary withdraw of all agricultural uses of lindane. Lindane is still used for its pharmaceutical application but has been banned for use on agriculture in the US. All products containing Lindane are currently banned in California.

Malathion: Malathion is an organophosphate insecticide applied to over 100 crops in the United States including alfalfa, rice, cotton, sorghum, wheat, and walnuts. It is also used for structural pest control (mosquito and fruit fly eradication, and home settings). Malathion is easily mixed with water and can be found in both urban and agricultural runoff. Malathion is a prohibited discharge pesticide except under the Rice Coalition Management Plan and any detection of the constituent is considered an exceedance. Malathion is known to be toxic to *C. dubia* ($\text{LC}_{50} = 3.35 \mu\text{g}/\text{L}$).

Algae toxicity: algae (aquatic plants) are sensitive to herbicides and fungicides. Algae toxicity is measured as percent growth in the sample water compared to the growth in a control treatment.

Fathead minnow toxicity: fathead minnows (fish) are sensitive to ammonia toxicity. At high concentrations pesticides and metals can also cause fish mortality. Fathead minnow toxicity is measured as percent survival within the sample water compared to survival in a control treatment.

Water flea toxicity: water fleas (invertebrates) are especially sensitive to water soluble pesticides such as chlorpyrifos & diazinon. Toxicity is measured as % survival in sample compared to survival in control treatment.

Sediment Toxicity: One species (*Hyalella azteca* – amphipod) is used in sediment analysis to determine toxicity that may occur to pelagic organisms. Amphipods are sensitive to pyrethroids and other pesticides that are not highly water soluble including some herbicides, fungicides and insecticides. Amphipod toxicity is measured as percent survival within the sediment sample as compared to the survival in a control treatment.



Companies Providing Services to Test Wells for Nitrates

The information below is a compilation provided by ESJWQC. The list of companies is not exhaustive and will be updated periodically. The companies offer water analysis services in the Central Valley.

Types of companies who provide this service:

- Specialize in agricultural consulting and nitrogen budgeting; plant tissue testing and soil nutrient management
- Specialize in geology or engineering; also offer groundwater mapping services
- Specialize in water quality analysis (laboratory only)

Lab	Ag Specialist	Sampling Service	Lab Name	Street	City	Zip	Phone	Website
X	X		A & L Western Agricultural Laboratories, Inc.	1311 Woodland Ave., Ste. 1	Modesto	95351	(209) 529-4080	al-labs-west.com
X		X	Apex Envirotech, Inc.	11244 Pyrites Way	Gold River	95670	(916) 851-0174	apexenvirotech.com
X			APPL	908 N. Temperance Ave.	Clovis	93611	(559) 275-2175	applinc.com
X			Argon Analytical Services, Inc. DBA Argon Laboratories	2905 Railroad Ave.	Ceres	95307	(209) 581-9280	argonlabs.com
X		X	Blaine Tech Services Inc.	4731 Pell Dr., Ste. 5	Sacramento	95838	(916) 925-2913	blainetech.com
X		X	BSK Associates	550 W. Locust Ave.	Fresno	93650	(559) 497-2880	bskassociates.com
X	X	X	California AgQuest Consulting, Inc.	4545 N. Brawley Ave., Ste. 101	Fresno	93722	(559) 275-8095	calagquest.com
X	X		California Growers Laboratory Inc.	4630 W. Jennifer, Ste. 104	Fresno	93722	(559) 275-3377	cagrowlab.com
X	X	X	California Laboratory Services	3249 Fitzgerald Rd.	Rancho Cordova	95742	(916) 638-7301	californialab.com
X	X	X	Dellavalle Laboratory, Inc.	1910 W. McKinley Ave., Ste 110	Fresno	93728	(559) 351-2741	dellavallelab.com
X		X	Dudek	980 9th Street, Ste. 1750	Sacramento	95814	(760) 479-4127	dudek.com
X	X		Fruit Grower Laboratory	853 Corporation St.	Santa Paula	93060	(805) 392-2032	fglinc.com
X		X	Geoanalytical Laboratories, Inc.	2300 Maryann Dr.	Turlock	95380	(209) 669-0100	
X			IEH-JL Analytical Services	217 Primo Way	Modesto	95358	(209) 538-8111	iehinc.com
X	X	X	JM Lord, Inc.	267 N. Fulton St.	Fresno	93701	(559) 268-9755	jmlordinc.com
		X	MLJ-LLC	1480 Drew Ave., Ste. 130	Davis	95618	(530) 756-5200	mlj-llc.com
X	X	X	Pacific Agronomics	3402 W. Holland Ave., Ste. 101	Fresno	93722	(559) 276-0401	pacificagronomics.com
	X	X	Perry Laboratory	424 Airport Blvd.	Watsonville	95076	(831) 722-7606	perrylaboratory.com
X		X	Precision Enviro-Tech	3935 Coronado Ave.	Stockton	95204	(209) 477-8105	
X	X	X	Soil and Plant Laboratory, Inc.	1101 S. Winchester Blvd., Ste. G-173	San Jose	95128	(408) 727-0330	soilandplantlaboratory.com
X	X		Soil Control Lab	42 Hangar Way	Watsonville	95076	(831) 724-5422	biocharlab.com
X			VPN Laboratory	3402 W. Holland Ave., Ste. 101	Fresno	93711	(559) 276-0403	pacificagronomics.com

ADDITIONAL RESOURCES:

California Department of Health – Certified Laboratories: <http://www.cdph.ca.gov/certlic/drinkingwater/Pages/Nitrate.aspx>



NITROGEN MANAGEMENT PLAN WORKSHEET

NMP Management Unit: _____

1. Crop Year (Harvested): _____	4. APN(s):	5. Field(s) ID	Acres
2. Member ID# _____			
3. Name: _____			

CROP NITROGEN MANAGEMENT PLANNING		N APPLICATIONS/CREDITS	15. Recommended/ Planned N	16. Actual N
6. Crop		17. Nitrogen Fertilizers		
7. Production Unit		18. Dry/Liquid N (lbs/ac)		
8. Projected Yield (Units/Acre)		19. Foliar N (lbs/ac)		
9. N Recommended (lbs/ac)		20. Organic Material N		
10. Total Irrigated Acres		21. Available N in Manure/Compost (lbs/ac estimate)		
Post Production Actuals				
11. Actual Yield (Units/Acre)		22. Total Available N Applied (lbs per acre)		
12. Total N Applied (lbs/ac)		23. Nitrogen Credits (est)		
13. ** N Removed (lbs N/ac)		24. Available N carryover in soil; (annualized lbs/acre)		
14. Notes:		25. N in Irrigation water (annualized, lbs/ac)		
		26. Total N Credits (lbs per acre)		
		27. Total N Applied & Available		
PLAN CERTIFICATION				
28. CERTIFIED BY:		29. CERTIFICATION METHOD		
		30. Low Vulnerability Area, No Certification Needed		
		31. Self-Certified, approved training program attended		
DATE:		32. Self-Certified, UC or NRCS site recommendation		
		33. Nitrogen Management Plan Specialist		

v.2

**Your Coalition will provide the method to be used to estimate N Removed.

Approved by the Central Valley Water Board 23 December 2014.



Denny Design ©2014



1201 L Street, Modesto, CA 95354
209-846-6112
www.esjcoalition.org