East San Joaquin
WATER QUALITY COALITION
1201 L Street Modesto, CA 95354
www.esjcoalition.org

June 16, 2010

The Honorable Jeff Grover
Stanislaus County Supervisor
1010 Tenth St., Suite 6500
Modesto, CA 95354

Dear Supervisor Grover,

Enclosed is the *2009 Status Report on the Watershed Approach*, a document describing the efforts of farmer Coalition members in the northern San Joaquin Valley to address water quality issues likely originating from irrigated agriculture.

The Coalition is a non-profit organization formed in 2003 to represent landowners who participate in the Irrigated Lands Regulatory Program (Central Valley Regional Water Quality Control Board) and operate east of the San Joaquin River. The Coalition region encompasses irrigated lands east of the San Joaquin River within Madera, Merced, Stanislaus, Tuolumne and Mariposa Counties and portions of Calaveras County. Current membership stands at 2,378 landowner/operators with 550,470 acres of irrigated farmland. The coalition is working with growers to coordinate water quality monitoring results and the implementation of best management practices where impacts from farm inputs are identified. The Coalition's goal is to improve water quality in our region.

The ESJWQC is part of a larger Central Valley agricultural effort that has collectively spent more than $15 million to assess the impacts of farm runoff on regional waterways since 2003. The Coalition considers the Irrigated Lands Regulatory Program and watershed coalition approach effective ways to improve water quality in the region. We actively participate with the Central Valley Regional Water Quality Control Board in development and implementation of the program.

Thank you for taking time to review this report and we look forward to any questions or suggestions you have. Learn more about the Coalition by visiting our website at www.esjcoalition.org or contact us at 209-522-7278. Coalition Board Members are also available for presentations to interested parties or groups.

Sincerely,

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2009 Status Report Watershed Approach

East San Joaquin
WATER QUALITY COALITION

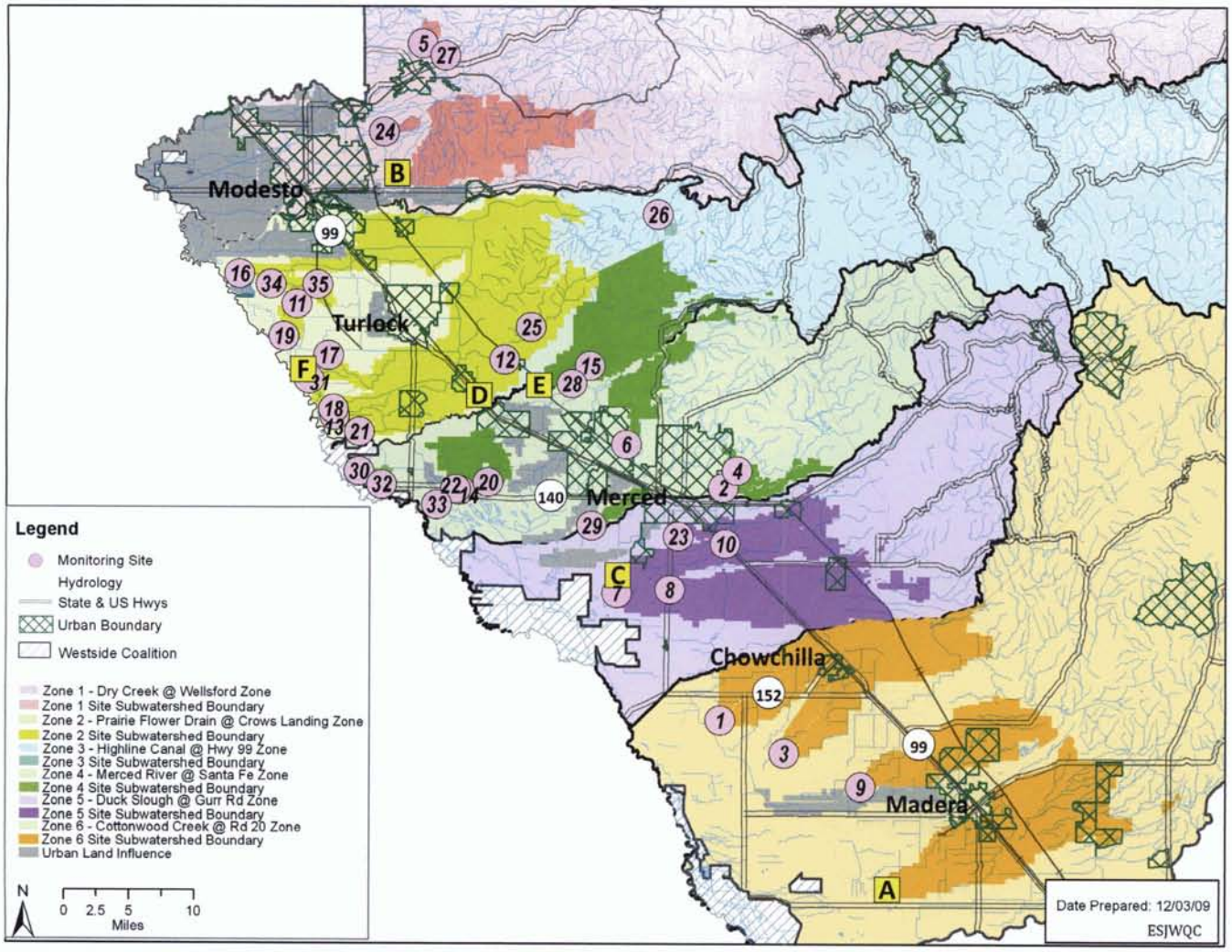
2009 Status Report Watershed Approach

Coalition Effort Leads to Progress

Since initiating water and sediment quality monitoring in 2004, the East San Joaquin Water Quality Coalition (ESJWQC or Coalition) has found numerous waterways where farm inputs are believed to have caused exceedances of State water quality goals. In winter 2008-09, the Coalition launched an aggressive effort to notify its member farmers in targeted watersheds about those problems and encourage adoption of practices that limit impacts of farm inputs on water quality.

This effort involved the Coalition staff meeting individually with farmers with irrigated land adjacent to three priority waterways in the Coalition region. During the visits, information was gathered on existing farming practices used on the fields next to the waterway. Discussions also covered

Figure 1. Monitoring within the ESJWQC six zones for core, assessment and management plan monitoring (2009).



practices to prevent future movement of farm inputs from fields into adjacent waterways.

Coalition water and sediment quality sampling results from summer and fall 2009 showed no exceedances of water quality standards except for a sample from one waterway which showed an exceedance of chlorpyrifos. Later investigation found that the insecticide was applied by a farmer who is in a separate Water Board program and was not informed of the Coalition's effort.

Two out of the three priority waterways had no exceedances of any farm inputs, in particular the targeted pesticides (chlorpyrifos, diuron and copper). While one year's results are not adequate to claim that water quality problems originating from irrigated fields are eliminated, it does provide evidence that the Coalition approach for addressing water quality can make a measurable difference to the impact of farm inputs on waterways.

Monitoring Encompasses Region

The ESJWQC region encompasses irrigated lands east of the San Joaquin River within Madera, Merced, Stanislaus, Tuolumne and Mariposa Counties and portions of Calaveras County. The Coalition started its water and sediment monitoring in 2004 in response to a regulatory program by the Central Valley Regional Water Quality Control (Water Board) called the Irrigated Lands Regulatory Program (ILRP). All monitoring occurs under a Water Board-approved Monitoring and Reporting Program (MRP) designed to characterize agricultural discharges within the Coalition region.

Since 2004, the Coalition has monitored water and sediment quality at 40 different locations within its region. Exceedances of the State's water quality goals have been recorded for a range of constituents including pesticides, metals, nutrients, physical parameters and bacteria.

A key component of the Coalition's monitoring strategy is dividing its geographic region into six zones based on hydrology, climate, soils and land use. In each zone, one site is monitored every year (Core monitoring location) and a second site is rotated every two years (Assessment monitoring location). Figure 1 shows the zones and watersheds within each zone along with 2009 monitoring sites.

Following this strategy, the Coalition will eventually assess all water bodies receiving agricultural drainage in its region. The zone approach also allows the Coalition to assess water quality on a larger scale without having to maintain sampling at the same location from year to year.

Management Plan Strategy

A management plan is required by the Water Board for a waterway when Coalition sampling finds any constituent exceeding a water quality goal two or more times within a three-year period. The ESJWQC developed an overall management plan for all 27 waterways it sampled between 2004 and 2008 and set priorities for both waterways and constituents to focus on in those waterways.

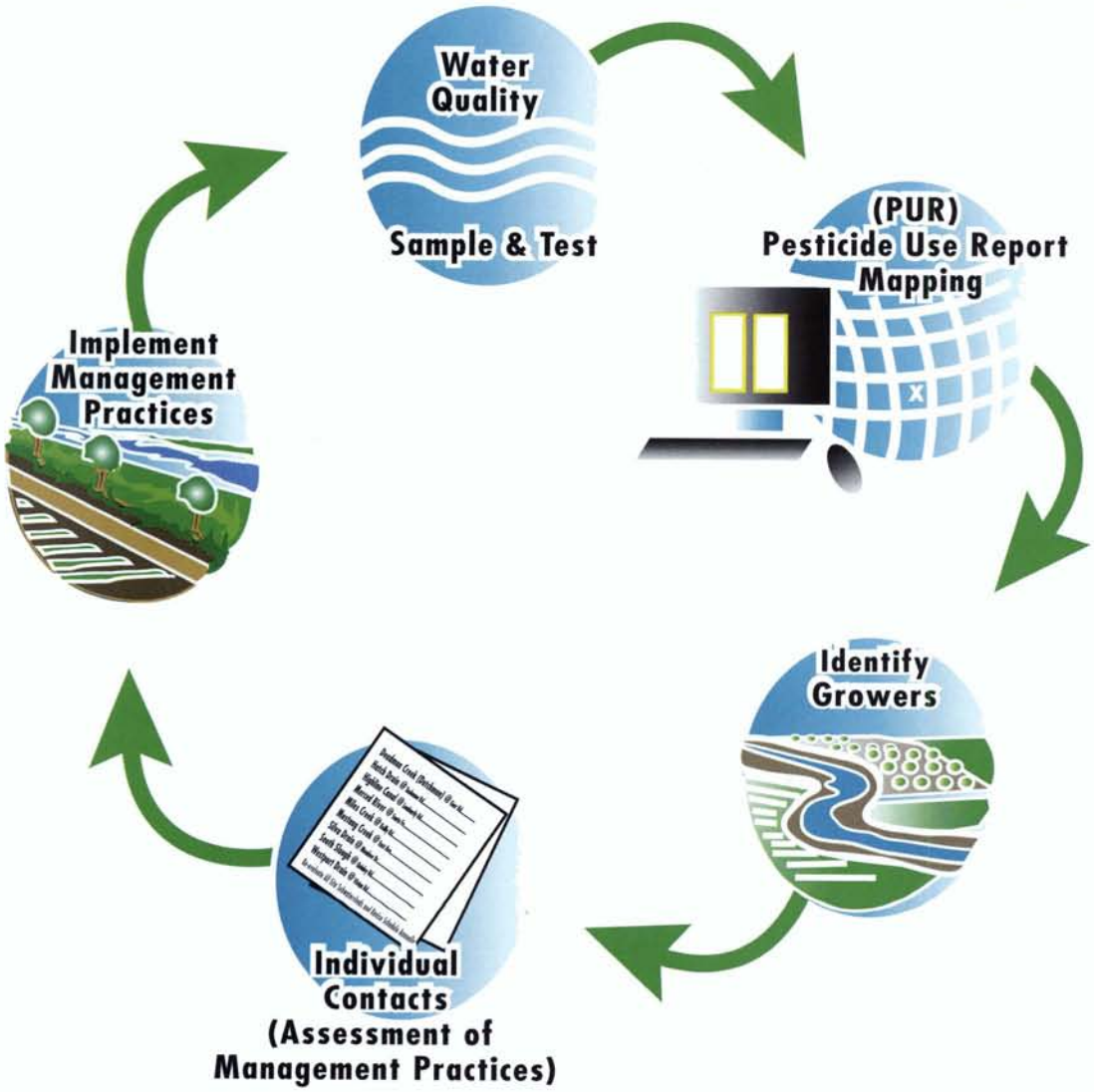
Sites with Management Plans

Constituent Category	# of plans
Physical Parameters	26
Pathogens	25
Nutrients	8
Metals	19
Pesticides	24
Water Column Toxicity	20
Sediment Toxicity	12

In setting priorities, the Coalition is focusing first on constituents likely originating from agriculture including pesticides and sediment. The Coalition also takes into account toxicity test results from three species (water flea, algae, fathead minnow) to determine if an association exists between organism toxicity and applied chemicals.

The outreach and education strategy in each of the management plans focuses on informing growers of problems in their watershed and providing information on effective management practices (below). The steps taken within a management plan strategy include:

1. Evaluation of water quality data
2. Review of pesticide use in a watershed
3. Identify member parcels with the highest potential to affect downstream water quality
4. Hold individual member meetings to discuss water quality issues, current management practices and additional practices that may be implemented
5. Evaluate water quality to determine the effectiveness of newly implemented practices



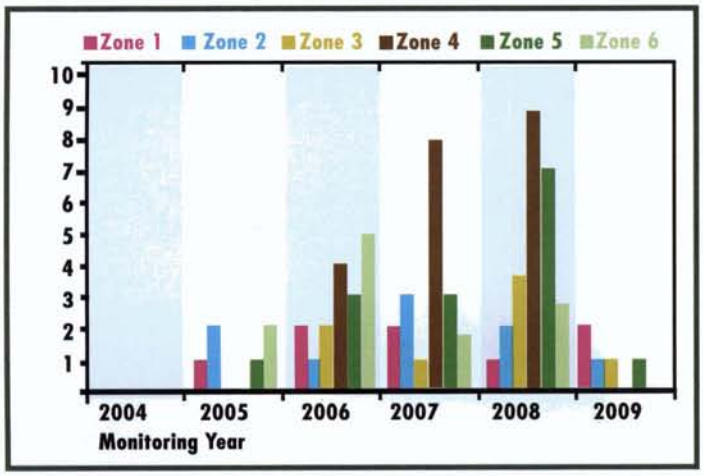
Coalition is focusing first on constituents used in agriculture including insecticides and copper.

Monitoring Finds Problems

Twenty-four of the Coalition's sample sites have management plans that include up to several pesticides, with each site recording an exceedance of chlorpyrifos water quality goals. As a result, the initial management plans focus on chlorpyrifos, an insecticide widely used in the Coalition region due to its cost effective control of invertebrate pests on many crops, particularly almonds, walnuts and alfalfa. California Department of Pesticides (DPR) ranked chlorpyrifos 11th in its summary list of top 100 pesticides by acres treated in California in 2008. There is currently a Total Maximum Daily Load (TMDL) for chlorpyrifos in the San Joaquin River of 0.015 µg/L. After December 2010, this concentration is not to be exceeded in the river or upstream tributaries.

Figure 3 illustrates where concentrations of chlorpyrifos exceeded the TMDL within each of the ESJWQC zones. Water quality results are only from continuously flowing water bodies. Only one monitoring event occurred in 2004 (late September).

Figure 3. Number of chlorpyrifos exceedances per monitoring year for ESJWQC Zone 1-6.



The Coalition recorded an increasing number of chlorpyrifos exceedances between 2004 to 2008 as monitoring site locations were expanded in scope and frequency. The weather also varied throughout the period with 2006 being an average wet year, 2008 having late spring storms and drought conditions persisting in 2007, 2008 and 2009. Each year, pest pressures varied in major crops where chlorpyrifos is commonly used and are dependent on weather, annual cropping patterns and various unknown factors.

Focused Outreach

A key component of the Coalition's management plan was to hold individual member meetings to discuss farm management practices and water quality issues. The Coalition based its decision to hold these individual interviews in priority watersheds on a number of factors. It was apparent that chlorpyrifos exceedances were continuing to occur and in fact appeared to be occurring more frequently. Also, information from management practice surveys of ESJWQC members taken in 2006 and 2007 showed that most growers were already implementing a range of management practices including those required by DPR on product labels.

In 2009, the Coalition selected three watersheds as priorities based on the following: waterway monitored for at least three consecutive years; found multiple chlorpyrifos exceedances; and represented a range of conditions in the Coalition region. The watersheds and sample sites selected were:

1. Dry Creek @ Wellsford Road (Zone 1)
2. Prairie Flower Drain @ Crows Landing Rd (Zone 2)
3. Duck Slough/Mariposa Creek @ Hwy 99 (Zone 5)

In its initial effort, the Coalition focused on members with the potential to drain directly to the three waterways. This included fields immediately adjacent to the waterway with the potential to drain during normal irrigations or winter storms. Also fields where spray drift could reach adjacent waterways.

Each member was contacted through registered mail to schedule individual interviews. Coalition representatives traveled to the member's farms and discussed downstream

water quality issues, their current management practices, pest pressures and potential new practices that could be implemented.

Conditions Vary in Each Watershed

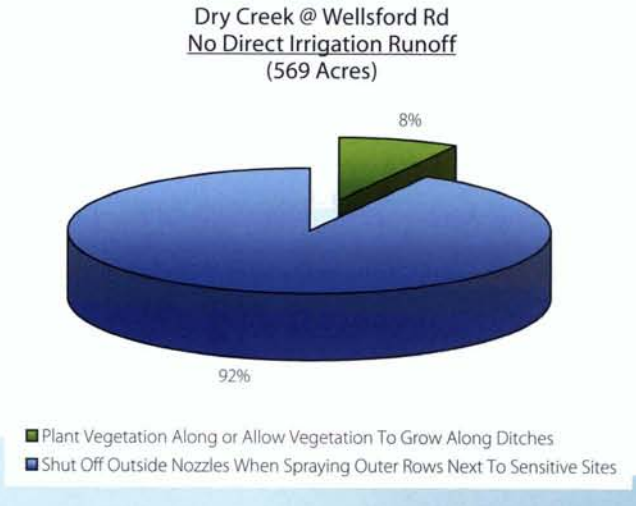
Each of the three priority watersheds was unique in the number of irrigated acreage, types of crops grown and management practices used on the fields. For example, growers along Prairie Flower Drain have the highest percentage of acreage with irrigation drainage, about half the acreage along Duck Slough/Mariposa Creek has irrigation drainage and Dry Creek has less than 15% of its acreage with irrigation drainage.

The type of crop grown in each watershed tended to determine the amount of irrigation drainage. Orchard crops dominate the Dry Creek region while row and field crops are the majority in the Prairie Flower Drain watershed. Duck Slough watershed is a mixture of orchards, row and field crops.

Dry Creek Watershed
(Stanislaus County)

With growers along Dry Creek, preventing spray drift was the focus of discussions. This was based on analysis of chlorpyrifos concentrations (very low) and its total use in watershed (substantial), which showed no relationship.

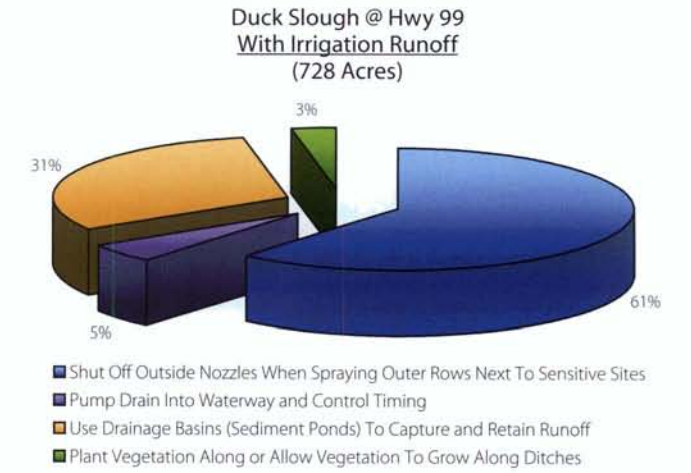
Figure 4. Percentage of acreage represented by recommended management practices for Dry Creek @ Wellsford.

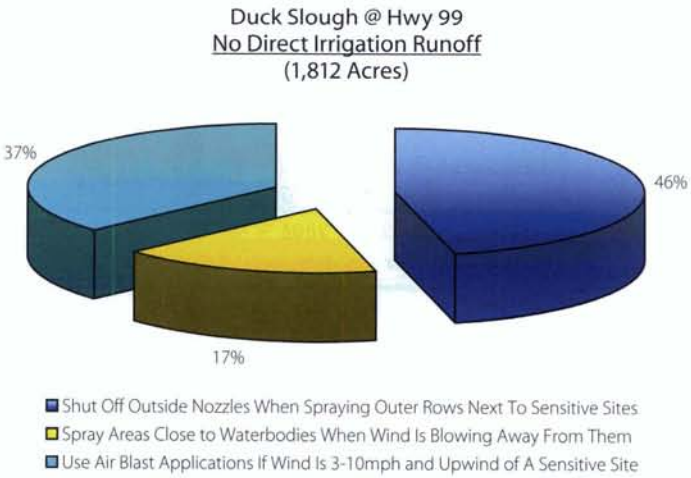


Duck Slough/Mariposa Creek Watershed
(Merced County)

For acreages with irrigation drainage to Duck Slough/ Mariposa Creek, east of Highway 99, discussions with members focused on a combination of spray drift management, control of storm drainage, allowing vegetation to grow in ditches and adding drainage basins/sediment ponds where needed.

Figure 5. Percentage of acreage represented by management practices for Duck Slough @ Hwy 99 for members with irrigation drainage or without irrigation drainage.

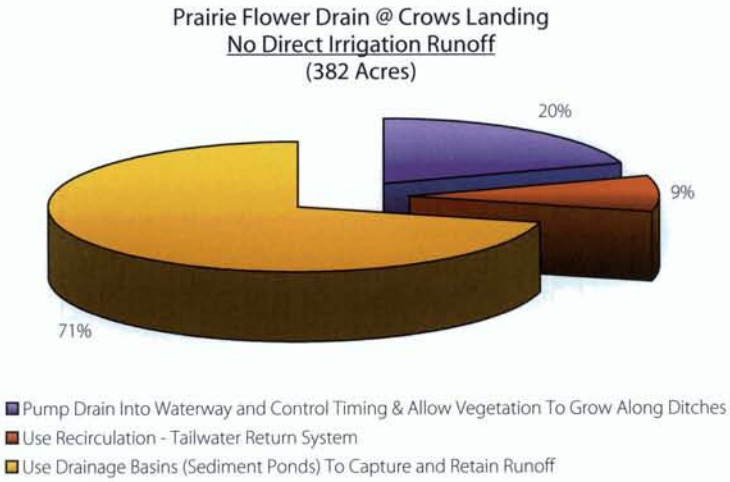




Prairie Flower Drain Watershed
(Stanislaus County)

Fields adjacent to Prairie Flower Drain with irrigation drainage were predominantly field and row crops. Landowners were encouraged to adopt management practices such as controlling the timing of pumping or draining into the waterway (following pesticide applications), allowing some vegetation growth in drainage ditches and constructing drainage basins/ sediment ponds to hold field runoff.

Figure 6. Percentage of acreage represented by management practices for Prairie Flower Drain.



Attention to Spray Drift Management

Because of the potential for spray drift from any field adjacent to a waterway, growers in all watersheds were encouraged to closely follow spray drift management practices including:

1. On outer two rows, shut off outside nozzles and spray inward only;
2. Spray areas close to water bodies when the wind is blowing away from them;
3. Make air blast applications when the wind is between 3-10 mph and downwind of a sensitive site.

Measuring Success

Measuring the effectiveness of Coalition efforts in reducing the impact of agricultural practices on water quality is difficult for many reasons including:

- Not all landowners along a waterway are coalition members;
- A field may be enrolled and regulated under the Regional Water Board "Dairy Program" and not contacted by the Coalition;
- Direct source and "cause and effect" of a single exceedance is often difficult if not impossible to confirm.

The Coalition represents approximately 60% of the irrigated agriculture in its region. The other 40% does not receive information from the Coalition about water quality issues, management practices or funding sources to help finance management practice implementation (although other information sources are available to landowners).

In many San Joaquin River watersheds, particularly Dry Creek and Prairie Flower Drain watersheds, considerable acreage is enrolled in the Regional Water Board's "Dairy Program." Landowners with fields covered by this program are not required to monitor runoff that could carry pesticides used for production of feed crops. This complicates the task of assessing the contribution of water quality impairments due to fields regulated under the Dairy Program versus fields regulated under the ILRP.

Sources Difficult to Identify

The Coalition uses numerous resources to identify potential sources of water quality impairments in a watershed including:

1. Pesticide Use Reports;
2. Crop and parcel information;
3. Upstream and temporal monitoring;
4. Grower interviews;
5. Analysis of pesticide concentrations and pounds of chemical applied to crops in a watershed.

However, it is difficult to know with certainty whether water quality issues are a result of a single pesticide application (lack of management practices) or a pest outbreak and a high amount of use (even with good management practices followed).

Even more difficult to determine are sources outside the influence of Coalition efforts. This includes:

- Nonmembers with irrigated crop land;
- Dairy operations with irrigated lands;
- Non irrigated crop land;
- Non-commercial farming areas (one- to five-acre ranchettes);
- Rural residences and septic systems;
- Other rural land uses such as industrial, rights-of-way or non-irrigated open lands.

Watershed Approach Shows Progress

Whether Coalition efforts can be credited with the absence of pesticide exceedances in priority watershed cannot be said with 100% certainty. However, the Coalition considers the significant decrease in chlorpyrifos exceedances in 2009 an important step in demonstrating the effectiveness of its management plan strategy. In addition, member feedback on this strategy has been positive and encouraging. In all cases the growers have appreciated the individual visits and are much more aware of downstream water quality concerns as a result.

The ESJWQC members are continuing efforts to ensure that water quality within the region is not impaired by sources related to agricultural production. The Coalition is a resource to its members for information on management practices, references to grant funding for installing structural management practices (i.e. sediment ponds) and updates of local water quality monitoring results. Its Annual Report provides an overview of Coalition programs and a review of past and current water monitoring results.

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