# Executive Summary

The CRC conducted Rice Pesticide Program (RPP or Program) activities for the calendar year 2006. Key RPP activities include:

- reporting of rice acreage information
- reporting of rice pesticide use information
- water quality monitoring
- laboratory coordination
- laboratory analysis and reporting
- data validation and review
- coordination of early-season data submittals between the County Agricultural Commissioners (CACs) and the California Department of Pesticide Regulation (DPR)
- pesticide use compliance inspections and enforcement
- communications with the Cities of Sacramento and West Sacramento, enhanced through the activities of the Storm Event Work Group
- interaction with pesticide registrants to support the development of reduced risk pesticides
- annual reporting and review.

## Purpose

This report fulfills the reporting requirements of the 2006 RPP, a conditional prohibition of discharge program of the Central Valley Regional Water Quality Control Board (CVRWQCB). The conditional prohibition of discharge is specified in the CVRWQCB's *Fourth Edition Water*

In 1983, California's pesticide regulatory agency (now the California Department of Pesticide Regulation (DPR), then a California Department of Food and Agriculture (CDFA) division), the county agricultural commissions (CACs), the Department of Fish and Game (DFG), State Water Resources Control Board (SWRCB), CVRWQCB and the rice industry worked together to develop and implement a plan to control pesticide discharges from rice fields. In 1990, the CVRWQCB amended the Basin Plan to establish a water quality objective based on the secondary Maximum Contaminant Level (MCL) for thiobencarb. The 1990 Basin Plan amendment established performance goals for molinate and thiobencarb, and a 1991 Basin Plan amendment established performance goals for carbofuran, malathion and methyl parathion.

*Quality Control Plan (Basin Plan), Central Valley Region, Sacramento River and San Joaquin River Basins*, and addresses five specific pesticides historically used by rice growers in the Sacramento Valley. The conditional prohibition of discharge applies to rice growers in the counties exclusively within the Sacramento Valley Basin, including Butte, Colusa, Glenn, Placer, Sacramento, Sutter, Tehama, Yolo and Yuba Counties. The purpose of this report is to inform interested stakeholders of RPP 2006 activities and to ultimately support a determination by the CVRWQCB that the conditional prohibition of discharge program is achieving its goal of protecting water quality.

## Regulatory Program

The current requirements of the RPP are specified in CVRWQCB Resolution R5-2006-0026. The CVRWQCB Basin Plan specifies performance goals for five historically used pesticides. The goals were established to be protective of the aquatic ecosystem. The established performance goals for the five pesticides regulated under the conditional prohibition of discharge are:

- Molinate, 10.0 ppb.
- Thiobencarb, 1.5 ppb.
- Malathion, 0.1 ppb
- Methyl parathion, 0.13 ppb
- Carbofuran, 0.4 ppb

Of these five pesticides, carbofuran is no longer registered for use on rice, and malathion and methyl parathion have little or no reportable use.

In addition to performance goals, molinate and thiobencarb levels in drinking water delivered to municipal customers must meet enforceable Maximum Contaminant Levels (MCLs). MCLs are enforceable drinking water standards set by the U.S. Environmental Protection Agency (USEPA) and/or California Department of Health Services (DHS). The primary MCL for thiobencarb is 70.0 ppb (toxicity) and the secondary MCL is 1.0 ppb (off-taste). The MCL for molinate is 20.0 ppb. Primary MCLs are health-based standards, and secondary MCLs are based on aesthetic properties such as taste, color, odor, and appearance.

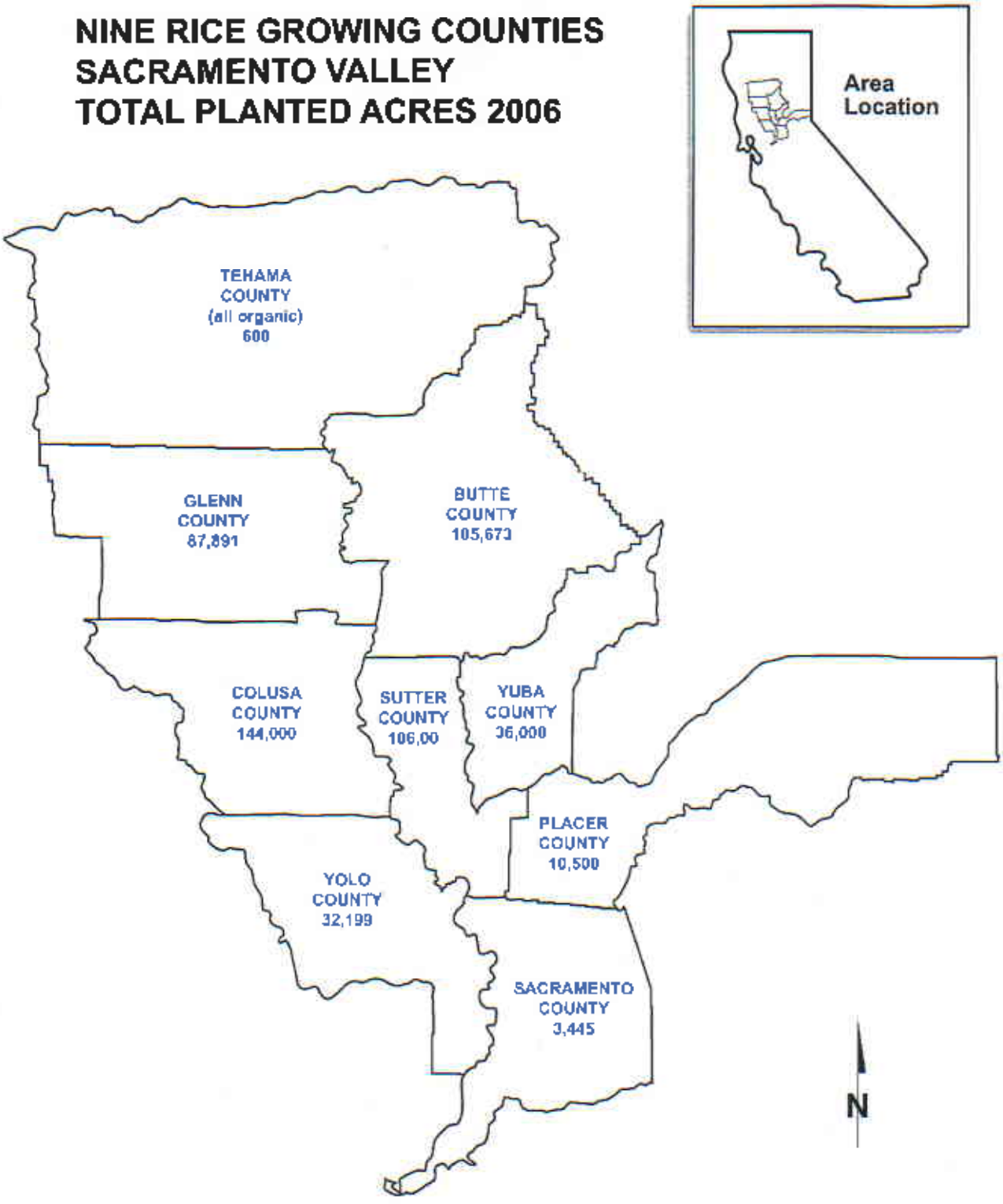


FIGURE ES-1
Rice Growing Region
*California Rice Commission*

## Program Authority

The CRC has long been recognized by the CVRWQCB as an entity with the authority and capacity to implement Program activities to achieve water quality protection. The CRC is a statutory organization with authorities and restrictions as established in the California Food and Agricultural Code.

## Water Quality

The sampling calendar, included in Section 3.2 of the main report, was developed based on historic data, pesticide use and drainage patterns, and actual 2006 conditions. The key events that occur during a rice season are shown in Figure ES-2. Water quality monitoring was implemented at five sites[1], as shown on Figure ES-3. These five sites have historically been sampled to monitor compliance with performance goals. This monitoring season, water quality sampling commenced on April 25, 2006 and concluded on July 11, 2006.


*Figure ES-2. Typical Rice Year.*
*Source: UCCE, Grower input.*

Monitoring activities are conducted by consultant teams who provide field crews, coordinate with laboratories, and report data. Sample analysis is conducted by registrant laboratories, with additional samples collected and analyzed by a third-party laboratory.

In 2006, the RPP samples were analyzed to determine thiobencarb and molinate concentrations. Historically, sampling and analysis was conducted for all five RPP rice pesticides. On an annual basis when the CVRWQCB reviews the program, the list of pesticides to be

[1] The five sites monitoring under the 2006 program were: Colusa Basin Drain #5 (CBD5), Butte Slough #1 (BS1), Colusa Basin Drain #1 (CBD1), Sacramento Slough Bridge #1 (SSB), Sacramento River Village Marina (SR1).

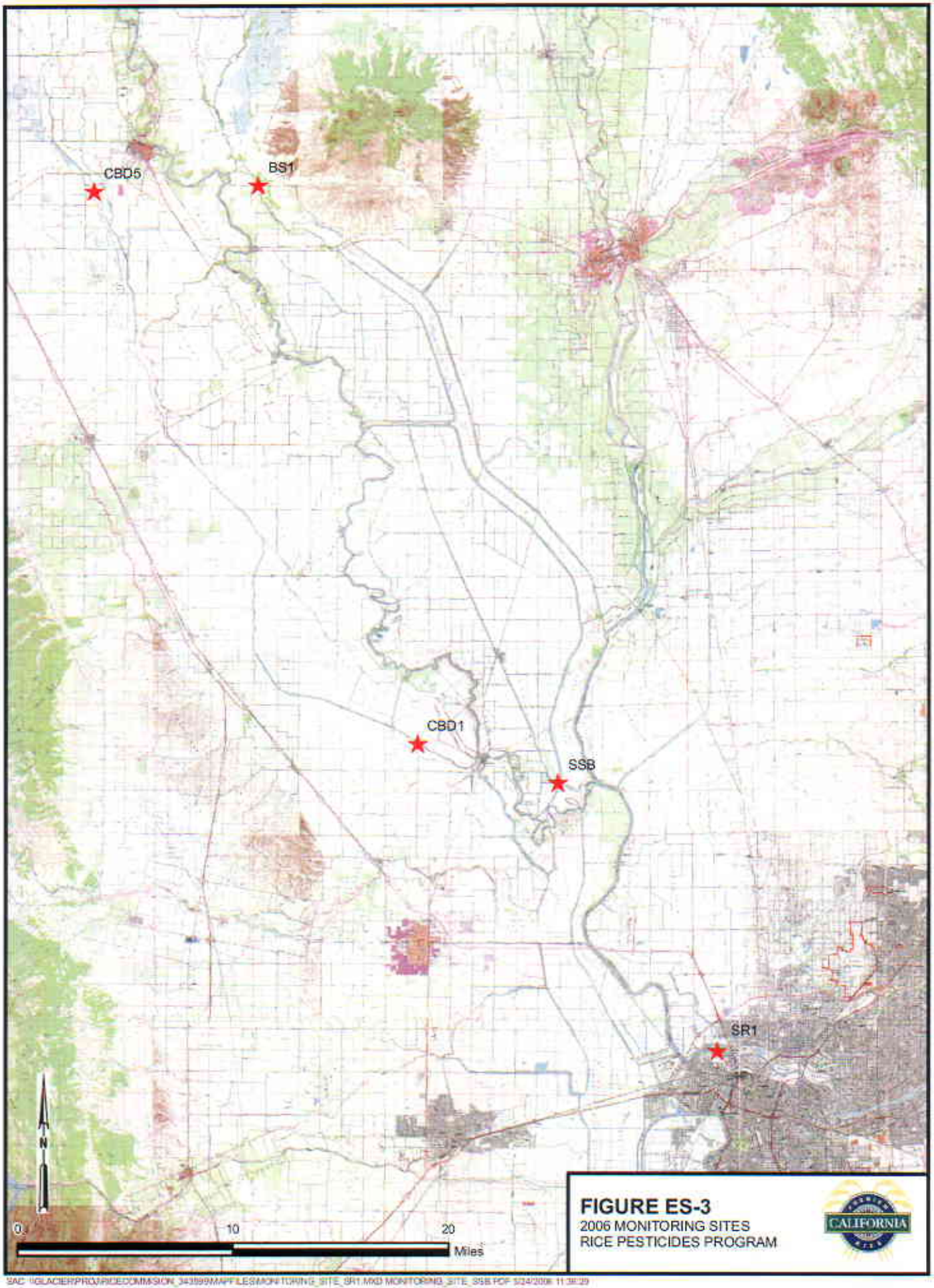


**FIGURE ES-3**
2006 MONITORING SITES
RICE PESTICIDES PROGRAM

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analyzed is reviewed. The monitoring program continued to not include analysis for carbofuran, malathion, and methyl-parathion because of registration cancellation, decrease in use, and no reportable applications to rice. Malathion and methyl-parathihion are not monitored because of little or no use on rice. Carbofuran was not included in the monitoring programs due to USEPA's decision to cancel the product's registration for use on rice with the last reported use in 2000.

Monitoring and analysis of molinate and thiobencarb by the City of Sacramento and City of West Sacramento at their respective drinking water intakes is conducted concurrently with the duration of the RPP monitoring (April through July). The cities noted that their 2006 rice season intake monitoring was conducted May through June 2006.

The 2006 RPP water quality results and City results are summarized in Table ES-1. Figures ES-3 and ES-4 are scatter plots of the 2006 data compared against performance goals. In 2006, there were no measured exceedances of thiobencarb or molinate performance goals or MCLs at either the five primary monitoring locations or the City drinking water intakes.

**TABLE ES-1**
Rice Pesticide Program and City Intake Water Quality Monitoring Results
*2006 Rice Pesticide Program Annual Report*

| Site | MOLINATE | | | THIOBENCARB | | |
|---|---|---|---|---|---|---|
| | No. of Detections | No. of Detections Greater than the Performance Goal | Range of Detected Concentrations | No. of Detections | No. of Detections Greater than the Performance Goal | Range of Detected Concentrations |
| CBD5 [a] | 1 | 0 | 1.39 ppb | 12 | 0 | 0.06 ppb to 0.97 ppb |
| BS1 [a] | 10 | 0 | 1.62 ppb to 6.34 ppb | 12 | 0 | 0.09 ppb to 0.70 ppb |
| CBD1 [a] | 1 | 0 | 0.79 ppb | 12 | 0 | 0.09 ppb to 0.90 ppb |
| SSB [a] | 8 | 0 | 1.04 ppb to 3.12 ppb | 11 | 0 | 0.09 ppb to 0.40 ppb |
| SR1 [a] | 0 | 0 | Not detected | 6 | 0 | ND |
| SRR [b] | 2 | 0 | 0.10 ppb to 0.13 ppb | 0 | 0 | ND |
| WSR [c] | 4 | 0 | 0.11 ppb and 0.24 ppb | 2 | 0 | 0.16 ppb |
| **Totals** | **26** | **0** | **--** | **55** | **0** | **--** |

[a] RPP Site
[b] City of Sacramento intake site
[c] City of West Sacramento intake site
ND = non-detect

Note: Due to the delayed planting season, thiobencarb analyses were not performed on the April. Thiobencarb use had not commenced by the April sampling date.

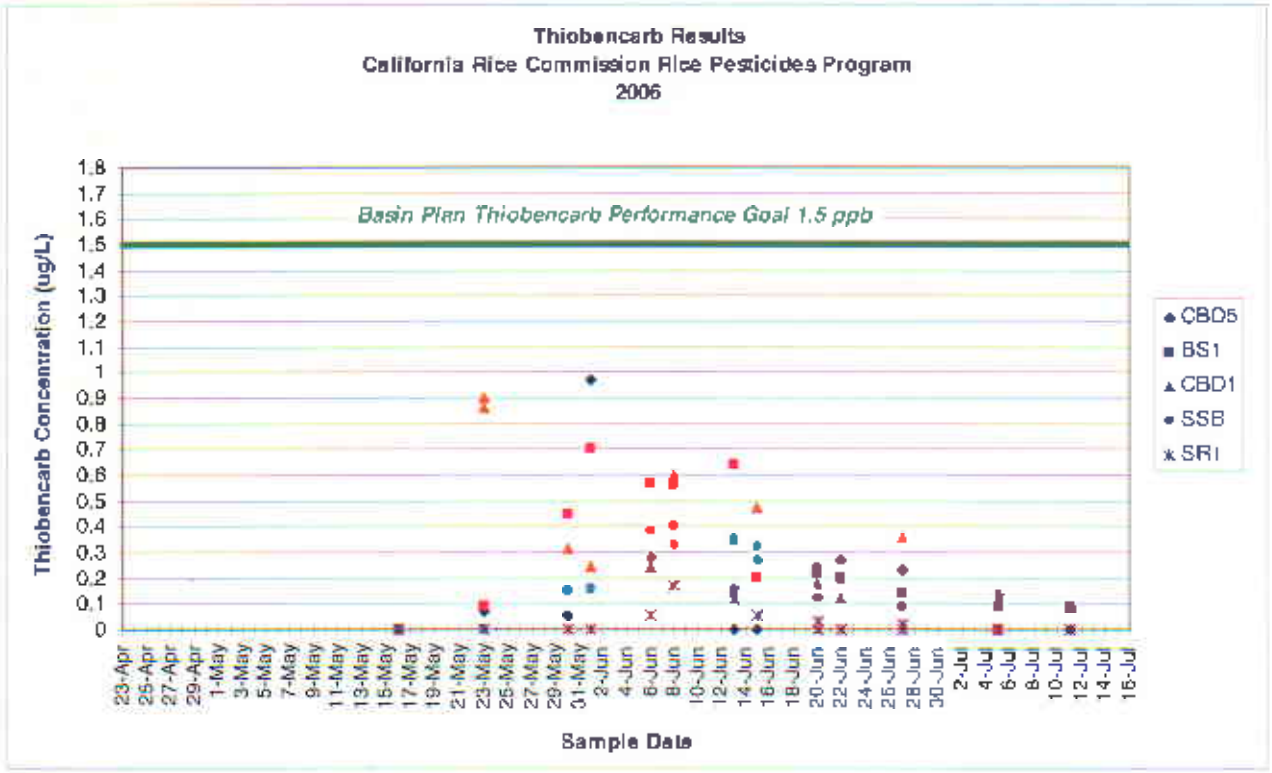


*Figure ES-3. Thiobencarb Results, Rice Pesticides Program, 2006*

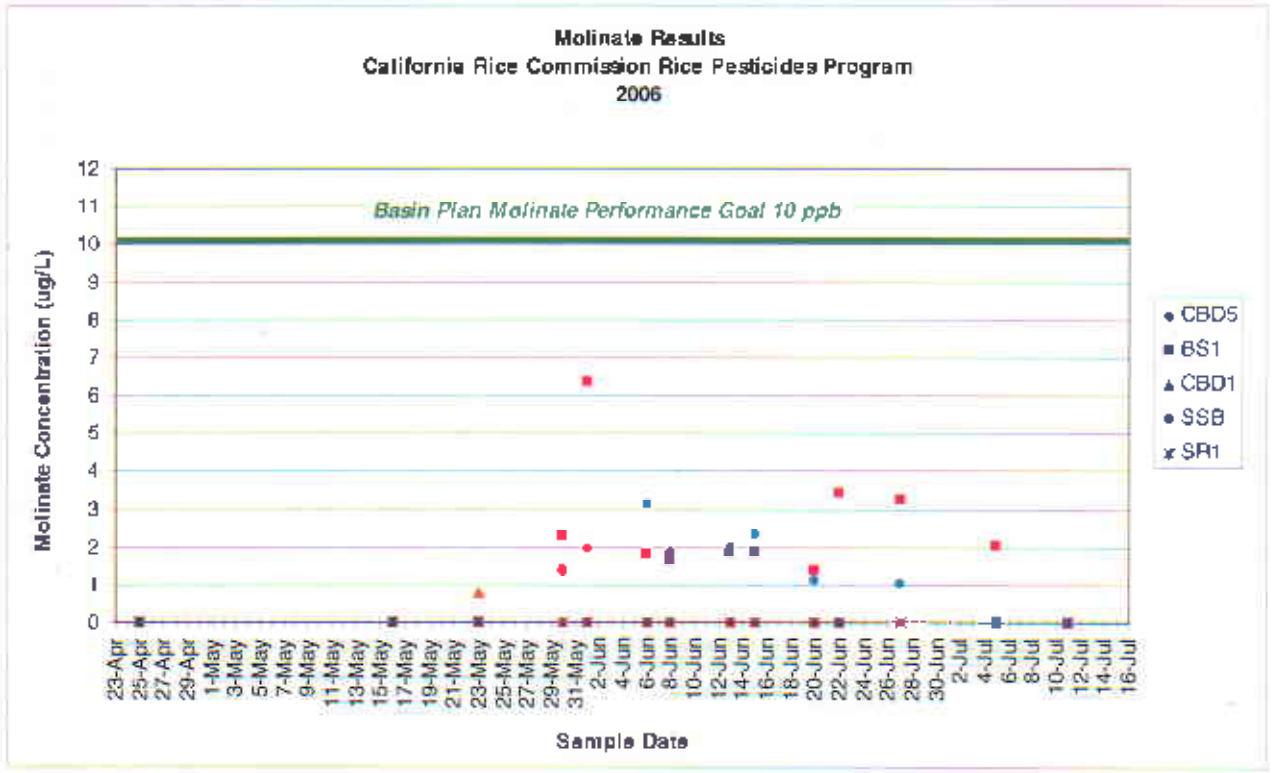


*Figure ES-4. Molinate Results, Rice Pesticides Program, 2006*

## Acreage and Planting Season

Growers in the Sacramento Valley planted over 526,000 acres of rice during calendar year 2006. This is a reduction in 2,000 acres from 2005. The planting date this year was substantially delayed due to notable hydrologic conditions that included late season rains and runoff that left many rice lands inundated until early May. The Sutter and Yolo Bypasses remained inundated late into the spring. With respect to the season's effects on rice yield, record high temperatures in July caused yield decreases in the early-planted rice.

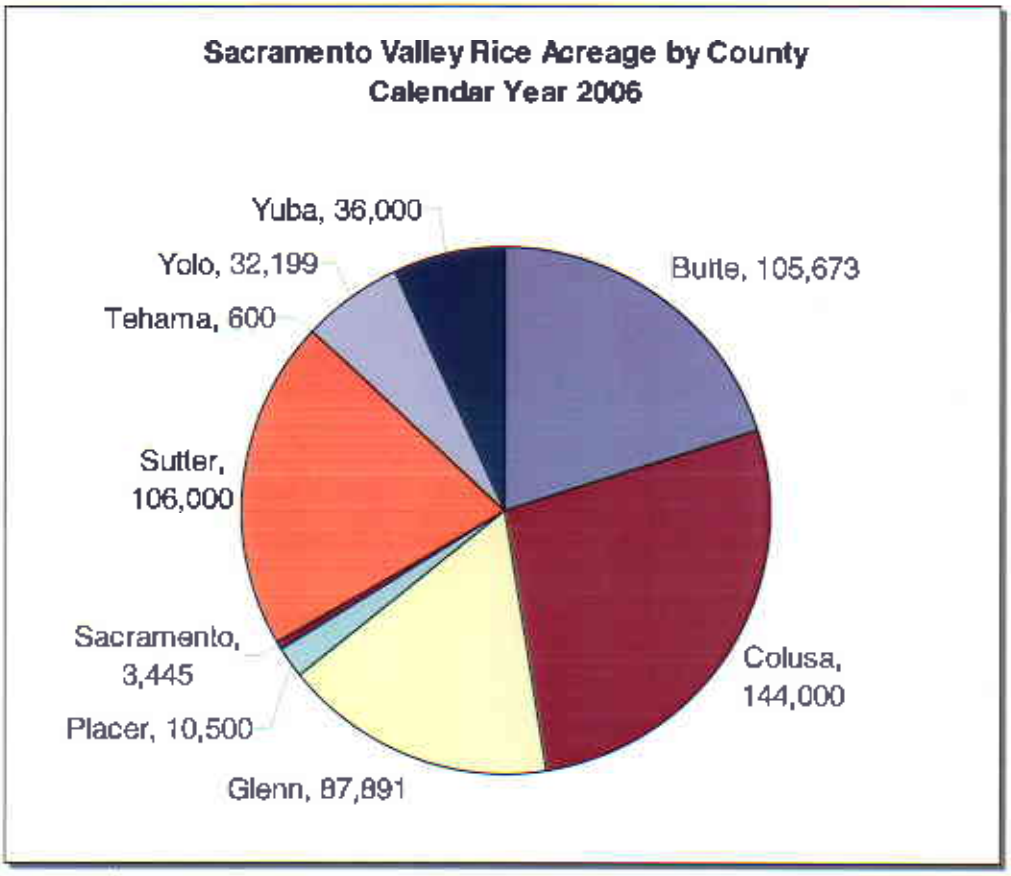


*Figure ES-5. Sacramento Valley Rice Acreage by County, 2006*

## Pesticide Use

Growers, pesticide applicators and pest control advisors report pesticide use to the CACs for inclusion in the DPR Pesticide Use Report (PUR). DPR provides the CRC with early-review/draft PUR and enforcement data for inclusion in the CRC's annual report. A list of pesticides were used on rice within the Sacramento Valley. Of these, there was a reported increase

in use of seven (7) pesticides and a decrease in use of nine (9) pesticides. The two monitored rice pesticides were among the products for which a reduction in use was reported, and this year saw no reported usages of malathion or methyl-parathion supplies. Usage data by county are provided in section 2.3 of the main report.

On November 14, 2006, DPR issued a press release announcing the availability of the 2005 PUR. DPR reported "Major crops or sites with decreased pounds applied included rice (1.5 million pounds), fresh tomatoes (700,000 pounds), strawberries (420,000 pounds), and lemons (370,000 pounds)". Based on the draft PUR data, in 2006, rice pesticides usage went up 118,955 treated acres, but the total pounds applied were down 66,624. The shift in less pounds of active ingredient applied to rice is the result of the industry's efforts to pursue reduced-risk pesticides. These newer pesticides are highly active, low use rate products with a shorter half-life, designed to have less total impact on the environment.

## Pesticide Use Compliance Inspections and Enforcement

Compliance with pesticide use restrictions is a critical component of the ability of the RPP to achieve water quality protection. A range of label restrictions and permit conditions apply to the use of rice pesticides, including mix/load, application, and water hold requirements. County agricultural commissioners perform inspections to enhance compliance with each type of label or permit restriction. Mix/load inspections are performed primarily for worker protection, but to also evaluate proper handling and containment of pesticides is being implemented to prevent releases to the environment. Application inspections are performed to evaluate label and permit application restrictions such as buffer zones; adherence to rate and wind speed and other local requirements; and water management. Seepage inspections evaluate the efficacy of farm water management levees to hold water in-field throughout the duration of water holds.

The CRC continues to contract with and fund CAC "off duty" inspections for rice growing activities in 2006. As a result, the CACs increase seepage and pre-flood inspections in 2006, including weekends and Memorial Day. In addition, DPR and the CACs implemented both a Prioritization Plan and a Negotiated Work Plan in 1998. One component of both plans was to

negotiate a number of water hold inspections. The plans allow the counties to set priorities within the standard enforcement guidelines. All rice pesticide water holding requirements are ranked high priority inspections when rice pesticides are used as restricted materials.

In 2006, the CACs performed 1,222 thiobencarb and molinate water-hold inspections, resulting in the issuance of one (1) enforcement action. The CACs conducted 22 mix/load inspections and 67 application inspections for thiobencarb and molinate. The inspections resulted in no compliance actions for mix/load, and the issuance of four compliance actions for applications. The CACs performed 1,222 water hold inspections, resulting in the issuance of five agricultural civil penalties.

In 2006, there were no release inquiries and no reported emergency releases.

## Storm Event Work Group

A Storm Event Work Group is in place to respond to field conditions and communication actions that should be taken in the event of a storm-triggered release. This Work Group was convened in 2003, as a result of CVRWQCB Resolution R5-2003-0036, which incorporated the recommendations developed collaboratively by CVRWQCB, DPR, and CRC staff. The impetus for formation of the Work Group was a 2002 event that resulted in storm-triggered drainage management activities that released un-degraded pesticides to downstream waterways resulting in an exceedance of the secondary MCL at the City of West Sacramento's intake.

Per the CVRWQCB Resolution, the Storm Event Work Group was convened "to identify and recommend mitigation measures to improve compliance in the event of severe storm events." The Storm Event Work Group is comprised of stakeholders from the CVRWQCB, DPR, CAC, UCD, Natomas Central Mutual Water Company (NCMWC), RD 1000 and the CRC. As a result of the Work Group's effort, information was shared and reviewed and a communications plan was developed.

The CRC maintained communications with each of the Storm Event Work Group members. Through this communication process, the NCMWC informed the CRC that it would not operate its system as a closed system, expect for during the month of July when it had scheduled

routine maintenance. This change of operation resulted in conditions that reduced the risk of a storm event release. Due to this reason, the group did not formally meet in 2006. The communications plan remains in place should a storm event result in RPP water quality concerns.

## Highlights

Notable highlights of the 2006 rice-growing season were:

- Planted acreage decreased only 2,000 acres from 2005.
- The acres treated for the pesticides in this report went up 118,955 acres.
- The total pounds of active ingredient for the pesticides in this report went down 65,624.
- Herbicide resistance continues to be a problem with a limited number of herbicides registered in California and an even more limited selection due to similar modes of action.
- Surveillance and seepage inspections continue to increase.
- Late spring storms and cool weather were responsible for delays in planting and decreases in yields.
- Record high temperatures in July caused yield decreases in the early-planted rice.
- There were no exceedances of drinking water MCLs or performance goals.
- Operations of the NCMWC/RD 1000 system were altered so that it is no longer managed as a closed system.

## Program Recommendations for the 2007 Program

On an annual basis, staff of the CVRWQCB and DPR collaborate with the CRC to develop program recommendations. Specific recommendations were developed for thiobencarb in 2003, 2004, 2005 and 2006. The CRC proposes that the conditions of approval specified in CVRWQCB Resolution No. R5-2006-0026 be continued for the 2007 program. The conditions are:

- Prior to making thiobencarb applications, the permittee or his/her authorized representative shall attend a 2007 Thiobencarb Stewardship meeting sponsored by the California Rice Commission.

- Use of Bolero® 10 G formulation is prohibited in the Sacramento Valley rice growing counties of Butte, Colusa, Glenn, Placer, Sacramento, Sutter, Tehama, Yolo and Yuba.
- All counties within 1/2 mile of the Sacramento and Feather Rivers: Aerial applications shall occur only when the wind speed is seven miles per hour or less and wind direction is away from the river.
- In the Sacramento and Yolo Counties only, no aerial applications shall be made within 1/4 mile of the Sacramento River unless:
    1. Ground applications are allowed within the buffer zone; OR
    2. All applications are made under the direct supervision of the commissioner's representative; OR
    3. No more than 33 percent of the total average applied (from the 2002 daily average) in Sacramento and Yolo Counties within the buffer zone.
- Continued coordination of a Storm Event Work Group.
- The CRC contracts with the CACs to increase off-duty inspections.

The CRC will continue to work collaboratively with staff from the CVRWQCB and DPR to ensure a successful future for the RPP. Over the years, program success can also be attributed the to continual relationships with the California Department of Fish and Game (DFG), Rice Research Board (RRB), Rice Experiment Station (RES), University of California Cooperative Extension (UCCE), University of California Davis (UCD) researchers, CACs, pesticide registrants and rice growers. At this time, the CRC does not propose any changes to the RPP permit conditions for 2007. The CRC supports changing the RPP review and approval from an annual to triennial process in 2007.