# Central Valley Regional Water Quality Control Board

# Surface Water Ambient Monitoring Program

# FY 04-05 Work Plan

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## INTRODUCTION

The Central Valley covers 40% of the State and stretches from the Oregon border to the northern tip of Los Angeles County (60,000 square miles). This area, which includes all or part of 38 of the State's 53 counties, totals approximately 75% of the State's irrigable land. Three major watersheds have been delineated within this region, namely the Sacramento River, San Joaquin River, and Tulare Lake Basins. The Sacramento and San Joaquin Basins cover about one fourth of the total area of the State and furnish roughly 51 percent of the State's water supply. Surface water from these two basins meet and form the Delta, which ultimately drains to San Francisco Bay. The Tulare Lake Basin is essentially a closed basin comprised of roughly 50 percent valley floor with the remainder comprised of Kings Canyon and Sequoia National Parks and substantial portions of Sierra, Sequioia, Inyo, and Los Padres National Forests. The Kings, Kaweah, Tule, and Kern Rivers, which drain the west face of the Sierra Nevada Mountains, provide the bulk of native surface water supply, which is augmented with imported water from the San Luis Canal/California Aqueduct System, Friant-Kern Canal, and the Delta-Mendota Canal.

Comprehensive monitoring and assessment programs are critical for evaluating whether beneficial uses are being protected and for evaluating the success or failure of control programs. Over the years, the Regional Board and other agencies have focused limited resources on the mainstem rivers and water bodies that have the most obvious impairments. Because of this emphasis, limited data is now available for the Delta, the lower Sacramento River, the lower San Joaquin River and a few other water bodies that are located near significant pollutant sources (i.e., Iron Mountain Mine and Penn Mine). Many small tributaries to the mainstem rivers, streams upstream from the major reservoirs, and most of the lakes have received little attention.

A review of the monitoring requirements for surface water programs, with estimated staff and contract resources, shows an approximate annual need of 26 PYs and $5,707,000 in contract funds (WMI, 2001) plus an additional 30 PY's and $4,000,000 for the Ag Waiver Program. There are four specific areas of significant need for monitoring resources. These are: selenium monitoring on the San Joaquin River; an integrated dormant spray evaluation program; a comprehensive toxicity and TIE monitoring program on the San Joaquin River and it's major tributaries; and loading of methyl mercury to the Delta from upstream sources. Each of these four results from nonpoint sources.

A wide variety of agencies and stakeholders are involved in monitoring and assessment activities. An integral part of the Regional Board monitoring strategy is to cooperate with these other programs and stakeholders in implementing monitoring and assessment programs in order to achieve water quality improvement and promote restoration of water resources. All activities proposed in this SWAMP workplan are being coordinated with existing programs operated by local, state, and federal agencies, including but not limited to the TMDL effort, Sacramento River Watershed Program, National Water-Quality Assessment Program by USGS, pesticide evaluation by DPR, nutrient evaluation funded

by the US Fish and Wildlife Service, efforts being initiated under the Ag Waiver Policy, toxicity evaluation efforts by USEPA, and projects funded through CALFED and statewide water quality improvement project grants.

A regionwide effort that was identified during the triennial review and began during FY00/01 is the bioassessment and habitat evaluation of effluent and agriculturally dominated water bodies throughout the Central Valley. This effort is being coordinated with the OP TMDL effort, USGS, and DPR in order to identify appropriate water bodies to evaluate within each hydrologic regime of the basin and to maximize use of the resulting data. San Joaquin River bioassessment work is being conducted through the OP TMDL effort with specific details listed in the Central Valley Regional Water Quality Control Board SJR OP Pesticide TMDL Bioassessment Work Plan (2002). Details specific to the Sacramento bioassessment effort are described in the Sacramento River Basin section of this workplan.

SWAMP will be implemented slightly differently in each of the major watershed within the Central Valley due to the various approaches to monitoring that have been undertaken in the past. Since each watershed has both a unique set of stakeholders and unique water quality concerns that must be addressed, the management process and the accompanying monitoring program are somewhat watershed specific. Therefore this document is divided into three sections: Sacramento River Basin, San Joaquin River Basin, and Tulare Basin. A common element in all three watersheds is that monitoring programs are designed primarily to address potential nonpoint source impacts, since the most significant water quality problems in the Region result from nonpoint sources (see 1998 Clean Water Act Section 303d List and 1996 Water Quality Assessment).

## WATER BOARD PRIORITIZATION EXERCISE

The SWAMP program must address certain elements of the Water Board's Strategic Plan, the California Clean Water Partnership Agreement, and the Governor's Environmental Action Plan as part of the Water Board's Prioritization Exercises. The Central Valley Region's workplan addresses each of these programs under the following areas.

> Water Board Strategic Plan – SWAMP monitoring in this 04/05 workplan provides information necessary for addressing Goals #2 (Surface waters are safe for drinking, fishing, swimming, and support healthy ecosystems and other beneficial uses) and # 6 (Water quality is comprehensively measured to evaluate protection and restoration efforts) of the Water Board Strategic Plan. Further, this workplan identifies several operating principles that are key to promoting and achieving the vision and mission of the Strategic Plan, including internal and external coordination/collaboration activities and collecting the best scientific data possible. Monitoring conducted will be coordinated, comprehensive, and non-duplicative. Water quality data collected will increase the amount of quantitative data and information about water quality conditions. Interpretive final reports will translate quantitative data into useful information regarding the status of water

quality into readable reports useful for decision makers and other interested stakeholders.

California Clean Water Partnership Agreement – A principal goal of the California Clean Water Partnership Agreement between the U.S. EPA and the State Water Resources Control Board is to ensure that surface waters support healthy ecosystems and are safe for drinking, fishing and swimming. Achievement of this goal is indicated as best reached by pursuing the four following goals: Implementation of the Clean Water Act and the California Porter-Cologne Water Quality Act; Development of more efficient methods to implement our regulatory programs; Target critical water quality problems, develop and implement solutions, and report results to the public; and Identify issues critical to the public, institute actions to address the highest priority issues, and report results to the public. However, the partnership agreement also recognizes that there are insufficient resources to address all water quality issues. Despite insufficient funding to address all water quality problems, this workplan includes generation of regionally –based water quality data that target critical regional water quality problems, including those identified as critical in the Partnership Agreement. These data will be useful for helping to achieve the goals of the Agreement and also in addressing the protection of California's water quality.

Governor's Environmental Action Plan - SWAMP monitoring in this 04/05 workplan will provide information and technical data necessary for implementation of the Governor's Environmental Action Plan. The Plan outlines key issues including protecting California's water supply and water quality; protecting, restoring and enhancing California's unique wetland and ocean habitats; and protecting and restoring California's parks, woodlands, open spaces, and farmland. Further, monitoring and reporting progress are a key issue outlined in the Governor's Environmental Action Plan. The combination of regionally coordinated monitoring designs, use of SWAMP QAPP and data quality objectives (DQO's), transfer and storage of technical data into SWAMP accessible database, and development of high quality monitoring reports are elements of this workplan that will be key to addressing issues of the Governor's Environmental Action Plan.

## REGION 5 DATA MANAGEMENT

Region 5 will appropriate 20% of it's FY04-05 funding towards SWAMP data management. This funding will be used for the creation of crosswalks to transfer SWAMP data from existing databases to the main SWAMP database and to continue data transfers from in-house data sets using the SWAMP database templates. The following is a list of objectives for Region 5 to achieve this goal.

- Continue to transfer data from excel files and other data formats by using the SWAMP database templates.
- Create a crosswalk to transfer data from CVRWQCB database to SWAMP database.
- Create a crosswalk to transfer existing bioassesement data to SWAMP database (this will be dependant upon the SWAMP database and it's readiness to house bioassessment data).

## SACRAMENTO RIVER WATERSHED

There are 10 hydrologic sub-regions in the Sacramento River Watershed Basin. Five sub-regions are located in the upper (Redding) watershed, and five sub-regions are located in the lower (Sacramento) watershed of the Basin:

### Redding Sub-Regions

1) Northeast (Pit River, McCloud River, Upper Sacramento R.).
2) Upper Feather River (North/Middle/South Forks Feather u/s Oroville).
3) Westside Sacramento Valley (Cottonwood, Redbank, Elder, Thomes, Stony Creeks).
4) North and East-side Sacramento Valley (Clear, Cow, Bear, Battle, Mill, Deer, Big Chico, Butte Creeks).
5) Sacramento River (Redding to Hamilton City).

### Sacramento Sub-Regions

1) Southside of Sacramento Valley (Cache and Putah Watersheds).
2) Yuba and Bear River Watersheds.
3) American River Watershed.
4) Lower Sacramento Valley Floor (Sacramento River Hamilton City to I St Bridge).
5) Sacramento Delta.

The vision of the entire Sacramento River Watershed Basin SWAMP program is for a two-component monitoring program consisting of a combination of 1) rotational sub-regional monitoring and 2) limited special screening level studies (including better characterizing of known problems). The following is the long-term 5 year workplan and 2004/2005 annual workplan for the lower Sacramento River Watershed.

## I. Long Term 5-Year Workplan

### Goals and Objectives

The goals of the SWAMP funded program in the lower Sacramento River Basin of Region 5 are:

1) Conduct ambient monitoring program that addresses all 5 sub-regions of the lower Sacramento River Watershed using consistent and objective monitoring, sampling and analytical methods; consistent data quality assurance protocols; and centralized data management. This monitoring program will be an umbrella program that monitors and interprets data for each hydrologic sub-basin at least one time every five years. Monitoring will build upon and be coordinated with monitoring being conducted by other entities.
2) Document ambient water quality conditions in potentially clean and polluted areas. The scale of these assessments ranges from site-specific to watershed-wide (or sub-region).
3) Conduct special screening level studies as needed for emerging contaminant issues.
4) Identify specific water quality problems preventing the SWRCB, and RWQCB's, and the public from realizing beneficial uses of water in targeted watersheds.
5) Provide the data to assist in evaluation of the overall effectiveness of water quality regulatory programs in protecting beneficial uses of waters of the state.

The objectives of the SWAMP funded program in the lower Sacramento River Basin of Region 5 are:

1) Gather and conduct preliminary analysis of existing water quality data to identify data gaps and/or suspected problems needing better characterization.
2) Assess at least one hydrologic sub-basin in the lower Sacramento River Basin a year and rotate back through each sub-basin at least once every five years.
3) Identify beneficial uses in each sub-region and assess attainment and protection of those uses.
4) Incorporate and coordinate relevant and available monitoring data from other agencies and watershed groups in final interpretation of sub-regional assessments.

**Methods to Achieve Objectives**

The methods used to achieve objectives of the SWAMP funded program in the lower Sacramento River Basin of Region 5 are:

1) Monitoring may include chemical, physical, and/or biological analyses. The type of monitoring analyses used in each fiscal year of SWAMP monitoring will depend upon a preliminary analysis of available information.
2) Prior to any monitoring, the preliminary analysis of existing water quality data will be used to identify data gaps and/or suspected problems needing better characterization.
3) Other programs/groups collecting monitoring data, such as TMDL's, Ag Waiver, watershed groups (grant projects), and other will be valuable for identification of data gaps, identification of suspected problems needing better characterization, and for use in interpretation and final reporting of each rotational cycle of sub-

regional monitoring data. Such analysis will be used to focus rotational and/or screening level monitoring efforts each fiscal year.

4) Priority may be given to coordinating SWAMP monitoring with CVRWQCB programs as based upon data gaps, needs, and available funding.

Deliverables due date(s)

Deliverables due date(s) for the SWAMP funded program in the lower Sacramento River Basin of Region 5 are:

1) Deliverable due dates will depend on the types of monitoring conducted each fiscal year, the workload of the laboratory conducting the analyses, and the time frame to get the funds into an executed contract.
2) All SWAMP monitoring data will be reported in final reports. Final reports will summarize existing water quality data and data gaps, analyze and interpret new data, and include relationship of data to protection and attainment of beneficial uses.
3) Final reports will be due for each fiscal year of SWAMP funding within 1 year of receiving final copies of all raw data.
4) All SWAMP monitoring data will be entered into the SWAMP database.

**Lower Sacramento River Hydrologic Unit Matrix**

The completed hydrologic unit matrix for the SWAMP funded program in the lower Sacramento River Basin of Region 5 is below.

| Lower Sac SWAMP Basins | Hydrological Basin | Hydrologic Unit | Status |
|---|---|---|---|
| 1 | Sacramento Delta | 510.00 | Planned for 07/08 |
| 2 | Valley-Putah-Cache | 511.00 | 02/03 - underway |
| | Putah Creek | 512.00 | Planned for 06/07 |
| | Cache Creek | 513.00 | Planned for 06/07 |
| 3 | American River | 514.00 | 00/01 and 01/02 finished; Upper mainstem planned for 04/05 |
| | Valley-American | 519.00 | 00/01 and 01/02 select waterways finished; 02/03 underway |
| | Marysville | 515.00 | 00/01 and 01/02 select waterways finished; 02/03 underway |

| | | | |
|---|---|---|---|
| 4 | Bear River | 516.00 | Planned for 05/06 |
| | Yuba River | 517.00 | Planned for 05/06 |
| 5 | Colusa Basin | 520.00 | 00/01 and 01/02 select waterways finished; 02/03 underway |

## II. 2004/2005 Annual Workplan

### Goals and Objectives

The goals and objectives of the SWAMP funded program in the lower Sacramento River Basin of Region 5 are the same as for the 5-year plan except for goal #2 which only applies to the long-term rotational monitoring.

### Methods to Achieve Objectives

The methods used to achieve objectives of the SWAMP funded program in the lower Sacramento River Basin of Region 5 are the same as for the 5-year plan.

### Monitoring Plan

The plan for monitoring in the lower Sacramento River Basin for 2004/2005 includes two components: The first and largest component is a watershed-based assessment of water column toxicity in the American River Watershed (HU 514 American River). The focus of this assessment will include investigation of potential aquatic toxicity associated with various land uses in the American River Watershed above Lake Natoma, including urban, agriculture, and historical mining. The second component includes follow-up work in the Pleasant Grove and Kaseburg Creek Watersheds (HU 519 Valley-American). The focus of this work includes better characterization of sediment toxicity detected with 2003/2004 SWAMP monitoring. The sediment toxicity detected with 2003/2004 monitoring was associated with pyrethroid pesticides.

<u>Deliverables due date(s)</u>
Deliverables due date(s) for the SWAMP funded program in the lower Sacramento River Basin of Region 5 are the same as for the 5-year plan.

### Responsibility Matrix

The responsibility matrix for the 2004/2005 Annual Workplan for the SWAMP funded program in the lower Sacramento River Basin of Region 5 is below.

| Task | Responsible Organization | | |
|---|---|---|---|
| | SWRCB | RWQCBs | Contractors |
| Develop contract(s) for monitoring services. | ● | ● | ● |
| Identify water bodies or sites of concern and clean sites to be monitored. | | ● | |
| Identify site-specific locations with potential beneficial use impacts or unimpacted conditions that will be monitored. | | ● | |
| Decide if concern is related to objectives focused on location or trends of impacts. | | ● | |
| Select monitoring objective(s) based on potential beneficial use impact(s) or need to identify baseline conditions. | | ● | |
| Identify already-completed monitoring and research efforts focused on potential problem, monitoring objective, or clean conditions. | | ● | ● |
| Make decision on adequacy of available information. | | ● | ● |
| | ● | ● | ● |

| Task | Responsible Organization | | |
|---|---|---|---|
| | SWRCB | RWQCBs | Contractors |
| Prepare site-specific study design based on monitoring objectives, the assessment of available information, sampling design, and indicators. | (Work Plan Review Role) | | |
| Implement study design. (Collect and analyze samples.) | | | ● |
| Track study progress. Review quality assurance information and make assessments on data quality. Adapt study as needed. | ● (Review Role) | ● | ● |
| Report data through SWRCB web site. | ● | ● (Coordination Role) | ● |
| Prepare written report of data. | ● | ● | ● |

**III. Intra-agency Coordination Activities**

Intra-agency coordination activities for the lower Sacramento River SWAMP funded program for fiscal year 2004/2005 will include meetings and monitoring discussions with staff from the programs listed below. Efforts will be made to promote data consistency and comparability through use of the SWAMP QAPP.

| Agency Group | Program | Coordination | Using SWAMP QAPP | Data SWAMP compatible | Data used for 303(d) & 305(b) |
|---|---|---|---|---|---|
| Agricultural Waiver Discharge Program | Ag Waiver Program | Site and sample analysis coordination. | X | X | |
| Agricultural Drainage Program | Rice Pesticide Program | Site and sample analysis coordination. | | X | |
| Stormwater Program | Stormwater Program | Site and sample analysis coordination. | | X | |
| Organophosphate Total Maximum Daily Load (OP TMDL) | Sacramento and Feather River Dormant Spray Evaluation Program | Site and sample analysis coordination. QAPP in review. | | X | X |
| NPDES Permit Program | NPDES Permit Program | Site and sample analysis coordination. | | X | |
| Grant Projects | Multiple programs being conducted in the Sacramento Basin. | Site and sample analysis coordination. | X | X | |

## IV. Inter-agency Coordination Activities

| Federal | Program | Coordination |
|---|---|---|
| U.S.G.S. | National Ambient Water Quality Monitoring (NAWQA) Program | Sample Site and Analysis Coordination |
| U.S. EPA | Office of Research and Development | Method Development Consistency and Analysis Coordination |
| CALFED | Drinking Water Quality Program (DWQP) and Ecosystem Restoration Program (ERP) | Sample Site and Analysis Coordination |
| **State** | **Program** | **Coordination** |
| Department of Pesticide Regulation | Dormant Spray Evaluation Program | Sample Site and Analysis Coordination (through OP TMDL) |
| **Local** | **Program** | **Coordination** |

| | | |
|---|---|---|
| Sacramento River Watershed Program (SRWP) | SRWP Monitoring | Sample Site and Analysis Coordination |
| El Dorado Resource Conservation District | South Fork American River Watershed Group | Sample Site and Analysis Coordination |
| American River Watershed Group | Monitoring | Sample Site and Analysis Coordination |
| Dry Creek Conservancy | Monitoring | Sample Site and Analysis Coordination |

Other relevant monitoring will be evaluated as part of the inter-agency coordination activities for the lower Sacramento River SWAMP funded program for fiscal year 2004/2005. The level of coordination will depend upon available resources. At minimum, contact with relevant agencies will be made and review of existing monitoring approach and framework will be conducted to ensure a coordinated monitoring approach that will best meet the needs of the CVRWQCB and stakeholders.

## SAN JOAQUIN RIVER WATERSHED

### 1.0 Introduction

The San Joaquin River flows northward and drains the portion of the Central Valley south of the Sacramento-San Joaquin Delta and north of the Tulare Lake Basin. The San Joaquin River Basin covers 15,880 square miles and yields an average annual surface runoff of about 1.6 million acre feet. The Basin includes the entire area drained by the San Joaquin River and all watersheds tributary to the river. The principal streams in the basin are the San Joaquin River and its larger tributaries: the Cosumnes, Mokelumne, Calaveras, Stanislaus, Tuolumne, Merced, Chowchilla, and Fresno Rivers. Major reservoirs and lakes include Camanche, Pardee, New Hogan, New Melones, Don Pedro, McClure, and Millerton.

The lower Basin (below Millerton Reservoir) has had a highly managed hydrology since implementation of the Central Valley Project (CVP) in 1951. Most of the San Joaquin River flow is diverted into the Friant-Kern Canal, leaving the river channel upstream of the Mendota Pool dry except during periods of wet weather flow and major snow melt. Poorer quality (higher salinity) water is imported from the Delta for irrigation along the west side of the river to replace water lost through diversion of the upper San Joaquin River flows. During the irrigation season, the flows in the river between the Mendota Pool and Salt Slough consist largely of groundwater accretions. Salt Slough and Mud Slough are the principal drainage arteries for the Grassland Sub-Watershed and add significantly to the flows and waste loads in the San Joaquin River upstream of its confluence with the Merced River. Discharges from three major river systems, the Merced, Tuolumne, and Stanislaus Rivers, which drain the Sierra Nevada, dominate flow and quality of discharges from the east side of the Lower San Joaquin River Basin. Flows from the west side of the river basin are dominated by agricultural return flows since west

side streams are ephemeral and their downstream channels are used to transport agricultural return flows to the main river channel.

Major land use along the San Joaquin Valley floor is agricultural, with over 2.1 million irrigated acres, representing 22% of the irrigated acreage in California. Urban growth along the I-5 corridor between Fresno and Stockton is rapidly converting historical agricultural lands to urban areas as more and more people choose to commute from the Central Valley to the Bay Area. This rapid conversion of rural areas is leading to increased potential for stormwater and urban impacts to local waterways.

The San Joaquin River Watershed can be broken into smaller units to address specific problems. One such area is the Grassland Watershed, a 370,000-acre area west of the San Joaquin River between the Tulare Lake Basin and the Orestimba Creek alluvial fan. The watershed contains managed wetlands, irrigated agriculture and a 97,000-acre drainage project area, which is the primary source of selenium to the San Joaquin River. Mud Slough (north) and Salt Slough are tributary to the river and serve as the only drainage outlets for the Grassland Watershed. In 1985, an extensive water quality survey to evaluate the impacts of agricultural drainage on the lower San Joaquin River was initiated. Although a number of issues of concern were identified, salt, boron and selenium impacts were the priority and the resulting multi-agency water quality monitoring program focused its limited resources on evaluating these constituents The area has since been the focus of the Region's subsurface agricultural drainage program and considerable staff effort and resources have been directed to the effort of developing a comprehensive monitoring program, insuring stakeholder involvement, and adopting Basin Plan Amendments and Waste Discharge Requirements in order to develop a workable and comprehensive selenium control program. Maintaining the existing program and expanding it to facilitate real-time monitoring activities are priorities in the basin. Other issues of concern include: aquatic toxicity from water born pesticides; aquatic life impacts from pesticides in bed sediment; habitat impacts from sedimentation; elevated nutrient and BOD levels; pathogens; elevated temperatures; impacts from abandoned mines, timber harvesting and grazing; and establishing baseline condition in rural coast range streams in areas slated for future urban development. The proposed comprehensive SWAMP program builds upon this established framework. Table **SJR-1** lists the projects within the basin by priority and provides a summary of anticipated costs. A general description of each project is listed in the overview of the general approach (SJR 3.2.1).

## 2.0 5 Year Plan

The SJR SWAMP program continues to work toward the objectives set forward in this workplan and is heavily dependant upon future funding. Annual assessment of data and changes in resource allocations may affect the future priority of the listed objective(s).

### 2.1 Objectives

- Continue baseline monitoring of the Main Stem SJR and Drainage Basin sites.

- Complete the first 5-yr cycle of the Intensive Rotational Basin Program.
- Continue assessment of data to produce bi-annual reports and help reevaluate program priorities.
- Create a crosswalk that will transfer all existing SWAMP data within the CVRWQCB database to the SWAMP database.
- Finalize report on the first phase of the 5-yr cycle of the Intensive Rotational Basin Program.
- Compile data to produce draft report on second phase of the 5-yr cycle of the Intensive Rotational Basin Program.
- Maintain web page on CVRWQCB web site for more timely dissemination of program objectives and WQ data to the public until final transfer of existing CVRWQCB data to SWAMP database.

| Objectives | Anticipated Time Line | | | | |
|---|---|---|---|---|---|
| | FY04-05 | FY05-06 | FY06-07 | FY07-08 | FY08-09 |
| Continue Main Stem and Drainage Basin monitoring | • | • | • | • | • |
| Complete 1st cycle of 5 yr Rotational Basin Monitoring Program | | • | | | |
| Assessment of SWAMP Data | • | • | • | • | • |
| Draft Bi-Annual Reports<br>Transfer existing data from CVRWQCB database to SWAMP database | • | • | | | |
| Draft Report of 1st cycle (5-yr) Rotational Basin Program | | | • | • | • |

## 3.0 Annual Plan

### 3.1Objectives

There are two main objectives in the SJR SWAMP program. The first objective is to evaluate whether the most limiting beneficial uses in a specific water body are being protected and help identify sources of potential impairment. The most limiting beneficial uses identified for the water bodies in the San Joaquin River Basin (Table **SJR-6**) are drinking water, aquatic life, irrigation water supply, recreation, and in the case of selenium, wildlife (specifically waterfowl). To evaluate beneficial use protection, results obtained from this program will be evaluated against narrative and numeric water quality objectives in *The Water Quality Control Plan (*Bruns, 1998), [which includes specific numeric objectives for selenium, boron and molybdenum that were adopted as part of the selenium control program, numeric electrical conductivity objective adopted as part of the

Bay/Delta program, and narrative criteria for toxicity] as well as narrative and numeric water quality goals listed in *A Compilation of Water Quality Goals* (Marshack, 2000)[See summary table SJR-7.] To identify potential sources of impairment, site selection has focused on locations representing subwatersheds within the basin and/or specific land uses.

The second objective is to determine, overtime, if implementation efforts are improving water quality. To help meet this objective, permanent monitoring locations have been selected along the main stem of the San Joaquin River and also at sites representing drainage flows into the main stem from five sub-basins. These sites will allow evaluation of water quality both over time and over water year types that can range from flood to critically dry years.

In meeting these two summary objectives, the design of the SJR monitoring program satisfies a number of the site-specific objectives identified in SWRCB (2000), as noted in Table **SJR-6**.

## 3.2 General Study Design

Sampling efforts are coordinated on the Water Year timeline[1] in order to account for the temporal differences between normal, wet, dry and critical runoff years (SWRCB, 1995). Review and adjustments to all SWAMP program activities will be made upon evaluation of Water Year 2001 and 2002 data, which is expected to be completed by January 2004. Current focus is on the lower SJR and tributaries on the valley floor representing sub-watershed areas just prior to discharge into the lower SJR. Future augmentations will allow more randomized sampling of the upper watersheds during sub-basin rotations, which can in turn be coordinated with upper basin activities of pathogen source identification, abandoned mines, and grazing. Frequency of monitoring and selection of constituents have been adjusted to account for the arid nature of the watershed, it's highly modified hydrology and the dominant role that irrigations return flows and storm water flows play in overall hydrology. For instance, special sampling events are sometimes scheduled during winter storms to catch the initial and ongoing flushes of the watershed, while overall sampling frequency is increased during the irrigation season to evaluate agricultural return flow impacts.

During FY04-05, monitoring activities related to the OP-TMDL, DO-TMDL and Ag Waiver efforts are scheduled to initiate and continue in the San Joaquin River Basin; therefore, current design has eliminated pesticide, bioassessment and a majority of nutrient analyses from the overall program design.

### 3.2.1 Overview of General Approach

[1] A water year lasts from 01 October through 30 September of the following year.

A general description of the projects prioritized in Table **SJR-1** follows.

*Salt/Boron/Selenium Program:* This project would allow continued participation in the multi-agency monitoring effort to evaluate the effectiveness and environmental impacts of the Grassland Bypass Project on selenium, salt and boron concentrations within the Grassland Watershed and the Lower San Joaquin River (SFEI, 2002).

*Expansion for Real Time Monitoring:* This project allows expanded monitoring of salt and boron in assorted inflows to the Lower San Joaquin River (including an increase in the number of sites as well as the frequency of analyses), in order to facilitate the use of a "Real Time Model" to balance discharges of fresh and saline inflows to meet salt and boron water quality objectives at the boundary of the Sacramento-San Joaquin Delta.

*Main Stem of the San Joaquin River:* The San Joaquin River serves as the drainage channel for the entire 16,000 square mile basin and discharges into the Sacramento-San Joaquin Delta. Eight sites, each one downstream of a major inflow to the lower river, will be monitored weekly, monthly, or quarterly (depending on the constituent) to determine overall water quality and potential source of the constituent. In addition to selenium, salt, and boron, evaluations may be conducted for dissolved oxygen, pH, temperature, hardness, general minerals, trace elements, nutrients, pesticides, total suspended solids, total organic carbon, and water column toxicity.

*Drainage Basin Inflows to the lower San Joaquin River:* Based on evaluations conducted during the Inland Surface Water Plan (ISWP, 1993) and initial TMDL evaluations (ref), six subwatersheds have been identified in the San Joaquin River Basin(Figure **SJR-1**):

1. Northeast Basin: Comprised of the Cosumnes, Mokelumne, and Calaveras Watersheds as well as eastside areas draining into the Sacramento-San Joaquin Delta downstream of Vernalis.
2. Eastside Basin: Comprised of the Stanislaus, Tuolumne, and Merced Watersheds as well as eastside valley floor areas draining directly to the main stem of the San Joaquin River.
3. Southeast Basin: Eastside areas draining into the San Joaquin River upstream of the San Joaquin River at Lander Avenue (Hwy 165).
4. Grassland Basin: Westside drainage into the San Joaquin River upstream of the Orestimba Creek watershed. Encompasses the Grassland Watershed (specifically identified within the Basin Plan (Bruns, 1998) which in turn encompasses the Drainage Project Area (97,000-acres of intensively farmed land that discharges selenium enriched subsurface agricultural drainage).

5. Northwest Basin: Westside drainage into the San Joaquin River between the Grassland Basin and the Sacramento-San Joaquin Delta.
6. Delta Basin: Westside drainage into and including the Lower Sacramento and Lower San Joaquin River systems.

Each sub-area is bounded by either the Sierra Nevada or Coast Range and is comprised of like land uses and drainage patterns. All natural and constructed water bodies have been identified in each sub-area as well as potential water quality concerns and major representative discharges to the lower river (ISWP, 1992). Multi-constituent monitoring is to be conducted at these representative discharges from each basin on monthly basis and twice a month during the irrigation season (February through August). The monitoring will allow an evaluation of the potential water quality concerns within the drainage basins as well as the relative impacts from the basins on the lower river.

*Intensive Rotational Basin Monitoring:* The majority of monitoring efforts in the San Joaquin River Basin are focused on the valley floor and lower river reach. The Intensive Basin Program will evaluate surface water quality in the five identified subwatersheds that are tributary to the San Joaquin River on a five-year rotational basis and determine if beneficial uses are impaired. Data generated from this program will be used to evaluate overall water quality in the subwatershed, determine 303d listing and/or delisting, identify potential water quality concerns related to land use, and be used to help support and develop drinking water policy decisions. Approximately 15 sites will be selected from each of the 5 basins during the year that basin is monitored, in addition to the long-term monitoring sites already incorporated as part of the Drainage Basin Inflow project. At a minimum, the additional sites will be evaluated for EC, pH, temperature, turbidity, dissolved oxygen, total coliform, and E. coli twice a month. Expanded analyses will be funding dependent.

*Total Organic Carbon:* Drinking water groups have identified total organic carbon (TOC) as a constituent of high priority due to the potential for trihalomethane formation during chlorination of water supplies. TOC will be monitored on a bi-weekly basis at 15 sites in the sub-basins described in *Intensive Basin Rotational Monitoring* to support the drinking water aspect of the Intensive Basin Program. This project will identify baseline TOC conditions within the five sub-basins and identify potential sources. It will then link back to the Main Stem program by correlating Intensive Basin findings to those found along the main stem.

*Baseline Conditions for Future Urban Creek:* Land use patterns in the basin are changing as traditionally rural areas are developing into an urban corridor between Fresno and Stockton and demand continues to increase for housing in the Bay Area. A new city of 55,000, completely

surrounding Mountain House Creek, was slated for development between 2000 and 2003 and has now initiated that development. Mt. House Creek received drainage from agricultural and pasture lands adjacent to the creek. This project has helped develop some baseline conditions and will aid in evaluation of urban impacts on existing water bodies as development continues.

*Pathogens/Bacteria:* All surface water bodies within the basin have potential municipal supply designated as a beneficial use. In addition, the San Joaquin River discharges to the Sacramento-San Joaquin Delta and can impact water supplies delivered to southern California. A major concern with water supplies used for drinking water and recreation is contamination by pathogens and bacteria. This project will identify baseline pathogen/bacteria conditions within the five sub-basins described in *Intensive Basin Rotational Monitoring* and potential sources. If resources are available, this project will extend into the main stem of the San Joaquin River on a quarterly basis.

*Storm Events:* The lower San Joaquin River has a highly managed hydrology with flow patterns and water quality primarily impacted by water year type (wet, normal, dry), storm events, and irrigation return flows. Frequency of standardized monitoring has been developed to emphasize predictable irrigation patterns. This project will focus on intensive monitoring of key sites distributed throughout the basin during two major storm events (greater than two inches of rain in a 72-hour period). Monitoring will be conducted every six to twelve hours depending on accessibility, while continuous samplers will be distributed to five sites in order to determine changing concentrations over time and flow patterns. Review of data will help to determine and change future storm sampling events.

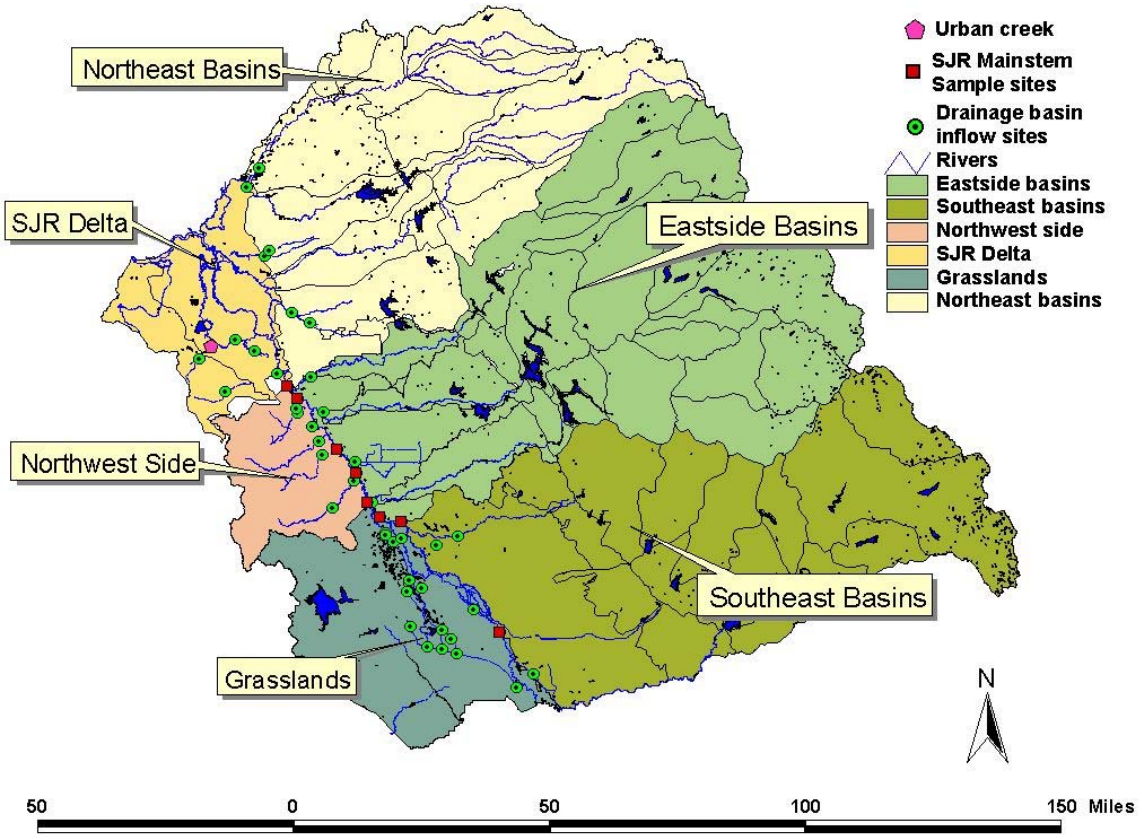
*Algal Bloom in Hidden Reservoir:* Excessive algal Blooms have been observed in Hidden Reservoir (a.k.a. Hensley Lake). The Fresno River Watershed has been identified as the contributor of nutrients. SWAMP funds will be used to begin identifying sources of nitrates and phosphorus in the Fresno River Watershed.

*Abandoned Mines:* Mercury has been identified as a major contaminant of placer deposits in the Sierra Nevada. In addition, abandoned mercury mines exist in the coast ranges of the San Joaquin River Basin. This project will allow a preliminary review of potential mercury contamination from such sources during each round of the subwatershed evaluation discussed above. This project would build upon current efforts being put forth by the Regional Board Mercury TMDL program.

*Grazing and Timber Harvest:* Impacts from grazing and timber harvest have not been evaluated within the San Joaquin River Basin. This project will allow a preliminary review of potential impacts from these activities during each round of the subwatershed evaluation discussed above.

When the SWAMP began in FY99/00, it was funded at approximately $3.1-million. Region 5's total share of the available contract dollars was $800,000. The SJR's portion of that funding allowed staff to move forward on the first five project priorities identified for the basin (salt/boron/selenium through baseline conditions for future urban creeks, see FY01-02 workplan) FY01-02 allowed staff to continue that effort and begin preliminary site investigations for an intensive rotational baseline monitoring of subwatersheds (hydrologic units). During FY02-03, funding cuts and contract budget delays curtailed the SWAMP program as well as other agency and partner programs. Negotiations continued with these funding sources in order to maintain the overall contract dollars available to the basin. Funding for SWAMP was reduced even further during budget cuts to general fund programs during FY03/04, resulting in $44,464 to implement the SJR portion of the program. A decision was made to utilize Waste Discharge Program Fees (WDPF) in the hopes to provide a stable funding source for the statewide SWAMP effort in the future. This change re-established Region 5 SWAMP funding to it's original $800,000/year budget for FY03-04, however those fees were not available prior to June 2004. FY04-05 funds were once again reduced and are expected to have a similar delay making them not available until Jan 2005. FY04-05 funds will build upon available FY03-04 funds and FY02-03 funds, which have been re-directed from previous workplans, due to budget and contracting delays.

**Figure SJR-1**




### 3.2.2 Water Quality Indicators

Water quality indicators for the SJR SWAMP program have been identified in Table **SJR-7** and are based on the most limiting beneficial uses identified for the basin.

## 3.3 List of Water Bodies to be Sampled

Monitoring will be conducted using existing and available funding from FY02-03, 03-04, and 04-05. Constituents being monitored will be dependant upon SJR SWAMP program prioritizations (3.2.1) and collaboration with existing programs and grants. At a minimum sites will be monitored for EC, pH, temp, DO, turbidity, bacteria, and photo documentation. As funding becomes available monitoring frequency may increase and include total suspended solids, water column toxicity, total organic carbon, nutrients, trace metals, minerals, and sediment toxicity. Below is the list of sites to be monitored and the frequency that these sites will be visited.

**MAIN STEM SAN JOAQUIN RIVER: Weekly monitoring**

SJR @Sack Dam
SJR @ Fremont Ford
SJR @ Crows
SJR @ Maze
SJR @ Lander
SJR @ Hills Ferry
SJR @ Patterson
SJR @ Airport Way/Vernalis

**SUB-BASINS DRAINING TO THE SAN JOAQUIN RIVER:**

**Northeast Basin: Monthly monitoring**

COSUMNES RIVER WATERSHED:
Cosumnes R. @ Twin Cities Rd.
MOKELUMNE RIVER WATERSHED:
Mokelumne R. @ New Hope Rd.

**Eastside Basin: Monthly monitoring**

FARMINGTON BASIN:
French Camp Slough @ Airport Way
Lone Tree Creek @ Austin Rd.
EAST VALLEY FLOOR (DRAINS TO SJR):
TID 5 (Harding Drain)
STANISLAUS RIVER WATERSHED:
Stanislaus River @ Caswell State Park
TUOLUMNE RIVER WATERSHED:
Tuolumne River @ Shiloh Fishing Access
MERCED RIVER WATERSHED:
Merced River @ Hatfield Park (River Road)

**Southeast Basin: Monthly monitoring**

Bear Creek @ Bert Crane Rd.
Deep Slough @ Green House Rd.
Turner Slough

**Westside Basin: Bi-weekly monitoring**

15 sites (TBD as part of Phase III Rotational Basin Program)
Grayson Drain @ Grayson Rd.
GREATER ORESTIMBA:
Orestimba Creek @ River Rd.
WESTSIDE CREEKS:
Ingram Creek @ River Rd.
Hospital Creek @ River Rd.
Solado Creek @ Hwy 33
Del Puerto Creek @ Vineyard
VERNALIS NORTH:

**Grassland Watershed: Weekly monitoring**

| | |
|---|---|
| Camp 13 Drain | Agatha Canal @ Mallard Rd. |
| CCID Main @ Russell Ave. | Santa Fe Canal @ Weir |
| Inflow to San Luis Drain | San Luis Canal @ Splits |
| Salt Slough @ Lander/Hwy 165 | Mud Slough (Upstream) |
| Discharge from SLD | Mud Slough (Downstream) |

**Drainage into the Sacramento-San Joaquin Delta: Monthly monitoring**
New Jerusalem Drain
Tom Payne Slough @ Paradise Rd.
Old River @ Tracy Blvd.
Pixley Slough @Davis Rd.
Bear Creek @ Lower Sacramento Rd.

**Composite Samplers: Daily monitoring**

| | |
|---|---|
| SJR @ Crows Landing | San Luis Drain Terminus |
| Inflow to San Luis Drain | |

Table **SJR-6** lists these water bodies and associated most limiting beneficial uses.

### 3.4 Review of Available Information

In house reports as well as information/reports from the USGS, DWR, and recent sanitary surveys were briefly reviewed to determine priority concerns within the watershed and appropriate locations to monitor (Chilcott, 1992; DWR, 1995; Steensen *et.al.*, 1998; USGS, 1998; and SFEI, 2002). Table **SJR-3** is a limited summary (subject to change) that lists some of the major activities and current monitoring by other state, federal and local agencies which will supplement and support this comprehensive program.

### 3.5 Specific Sampling Design/Sample Collection

Site locations and frequencies are listed in 3.3. Sample collection procedures are listed in the *Ag Subsurface Drainage Program Procedures Manual* (Chilcott, *et. al.,* 1996) and updated draft appendices.

### 3.6 Laboratory Analyses

Table **SJR-4** lists laboratories and analytical methods used during FY03-04. Continued use of these laboratories will depend on future funding and augmentation of current analytical contracts.

### 3.7 Data Quality Evaluation and Data Reporting

To maintain the integrity of the monitoring activities, specific QA/QC procedures have been developed. These procedures include precise sample preparation,

collection, and processing activities, as well as, development of check samples (blanks, splits, spikes) to determine precision and accuracy of laboratory analyses--both in-house and by contract laboratories. All activities are governed by an internal Quality Assurance Project Plan (QAPP) (Chilcott, *et. al.*, 1996), and updated appendices. Updates to these QAPP's will be consistent with the pending master SWAMP QAPP.

### 3.8 Deliverable Products

The State Board will receive water year reports by project every two years. Interim draft water quality information for all SWAMP sites is available on the web at: http://www.swrcb.ca.gov/rwqcb5/programs/agunit/bypass/disclaim.htm. Data from the San Joaquin River and Grassland Bypass Project sites is updated on a monthly basis and is usually available within 10 weeks of collection.

### 3.9 Desired Milestone Schedule

Activities specifically slated for FY04-05 include:

- Complete funded monitoring identified in 3.3
  - Coordinate fieldwork internally and with outside agencies to meet sampling schedule outlined in 3.3
- Augment existing laboratory contracts or develop new contracts and subcontracts through the Master Contract for:

| | |
|---|---|
| o CSUS Foundation | Student interns |
| o SJSU Foundation | Project Assistant |
| o DFG | Sediment chemistry and toxicity, equipment |
| o Analytical Lab (TBD) | TSS, BOD, water column toxicity, TOC |

- Conduct an Invitation for Bid (IFB) for water column toxicity, TOC, and bacteria analyses under San Jose State University (SJSU) Master Contract
- Write contract with SJSU Foundation for a Project Assistant
- Update work order for sediment toxicity and sediment chemistry analyses under Department of Fish and Game sub-contract
- Write a task order with University of California at Davis (UCD) to develop QA/QC standards for replicate and split bacteria samples
- Update QAPP's for following monitoring programs based on WY 01-03 data:
  - Main stem of the San Joaquin River
  - Drainage Basin Inflows to the San Joaquin River
  - Baseline conditions for future urban creeks
  - Intensive Rotational Basin Monitoring
- Continue QA/QC comparisons for sample methods and laboratory analysis through coordination with other agency groups and internal laboratories

- Maintain the San Joaquin River SWAMP Website which will allow access to San Joaquin River Water Quality
- Finalize Phase I (first cylce) Intensive Basin Program report
- Complete draft reports on the following topics
    - Bi-annual report of WY01-02 SWAMP data
    - Water Quality chapter for the GBP Annual Report (Water Year 2002)
    - Water Quality within the Grassland Watershed (Water Year 2002)
    - Water Quality in the Lower San Joaquin River (Water Year 2002)
    - Phase II Intensive Basin Program
- Initiate Phase III Intensive Basin Program
    - Initiate field monitoring
    - Draft initial findings
- Start coordination efforts for Phase IV: Intensive Basin Program
    - Establish contacts in the watersheds of the next scheduled basin
    - Site selection
    - Begin monitoring in October 2005

### 3.10 Desired "Sample Throughput" Schedule

Throughput schedule will depend on lab being utilized and final contract agreement.

### 3.11 Budget

Due to contracting and budget delays funds will be appropriated to programs based on the prioritizations listed in Table **SJR-1,** as they become available**.** The following is a breakdown of funds that are both available and un-available to the SJR SWAMP program.

**FY02-03**

| | |
|---|---|
| SJSU Master Contract | |
| Sediment analysis | $9,650 |
| Sub-contract through SJSU Master Contract | |
| Water Column analysis (Master Contract) | $105,577* |
| UCD Bacteria study | $31,500* |

**FY03-04**

| | |
|---|---|
| SJSU Master Contract | |
| SJSUF Project Assistant | $52,641 |
| Sediment analysis | $46,940 |
| Sub-contract through SJSU Master Contract | |
| Water Column analysis (IFB) | $230,219 |

**FY04-05 ($159,211)****

| | |
|---|---|
| Sub-contract through SJSU Master Contract | |
| CSUSF student contract | $60,200 |
| SJSUF Project Assistant | $52,641 |

Water column analysis (IFB) $75,963

*Funding is not yet available.
** Funding was available July 1, 2004.
***Funding is not expected to be available until after January 1, 2005

***Summary Notes – SJR SWAMP Program***

The previous discussion has applied to contract dollars. A severe shortfall exists in staffing necessary to maintain the program. Staff is needed to establish and maintain analytical and student contracts; establish and update QAPPs for each project; oversee and participate with students in sample collection, sample processing, data quality review, data entry and verification in data bases; prepare annual report; coordinate with federal, state and local agencies conducting monitoring within the Basin; and disseminate that information to area stakeholders.

Table **SJR-5** indicates available staffing resources and additional resources necessary to adequately address monitoring issues.

## 4.0 Coordinated Activities

All available funding is being utilized for directed sampling activities to better characterize the extent and source of known and suspected water quality impairments. Activities are being coordinated with external and internal agency sampling efforts in order to meet the specific needs identified above, maximize limited resources, and insure comparability of data.

**Inter-agency**

| Federal | Program | Coordination |
|---|---|---|
| U.S. Fish and Wildlife Service | Nutrient Survey | Sample Site and Analysis Coordination (through DO TMDL) |
| U.S.G.S. | Cycle II National Ambient Water Quality Monitoring (NAWQA) Program | Sample Site and Analysis Coordination |
| CALFED | Drinking Water Quality Program (DWQP) | Sample Site and Analysis Coordination |
| **State** | **Program** | **Coordination** |
| Department of Pesticide Regulation | Dormant Spray Evaluation Program | Sample Site and Analysis Coordination (through OP TMDL) |
| **Local** | **Program** | **Coordination** |
| | | |

**Intra-agency**

| Agency Group | Program | Coordination | Using SWAMP QAPP | Data SWAMP compatible | Data used for 303(d) & 305(b) |
|---|---|---|---|---|---|
| Salt/Boron/Selenium Program | Selenium Control Program | Data collection. Data is available on-line. Data transfer scheduled for SWAMP database, FY04-05. | X | X | X |
| Organophosphate Total Maximum Daily Load (OP TMDL) | SJR Dormant Spray Evaluation Program and Bioassessment Monitoring | Site and sample analysis coordination. QAPP compatibility verification is in-progress | | | X |
| Mercury Total Maximum Daily Load (TMDL) | Loading of Methyl Mercury | Site and sample analysis coordination. QAPP compatibility verification is in-progress | | | X |
| Agricultural Waiver Discharge Evaluation | Ag Waiver Program | Site and sample analysis coordination. Data will be submitted in electronic format using SWAMP templates. | X | X | |
| Dissolved Oxygen Total Maximum Daily Load | SJR DO TMDL | Site and sample analysis coordination. QAPP compatibility verification is in-progress | | | X |
| Grant Projects | Multiple programs being conducted in the SJR Basin. | Site and sample analysis coordination. Data will be submitted in electronic format using SWAMP templates. | X | X | |

### 4.1 Working Relationships

| Task | Responsible Organization | | |
|---|---|---|---|
| | SWRCB | RWQCBs | Contractors |
| Develop contract(s) for monitoring services. | ● | ● | ● |
| Identify water bodies or sites of concern and clean sites to be monitored. | | ● | |
| Identify site-specific locations with potential beneficial use impacts or unimpacted conditions that will be monitored. | | ● | |
| Decide if concern is related to objectives focused on location or trends of impacts. | | ● | |
| Select monitoring objective(s) based on potential beneficial use impact(s) or need to identify baseline conditions. | | ● | |
| Identify already-completed monitoring and research efforts focused on potential problem, monitoring objective, or clean conditions. | | ● | |

| Task | Responsible Organization | | |
|---|---|---|---|
| | SWRCB | RWQCBs | Contractors |
| Make decision on adequacy of available information. | | ● | |
| Prepare site-specific study design based on monitoring objectives, the assessment of available information, sampling design, and indicators. | ● (Work Plan Review Role) | ● | |
| Implement study design. (Collect and analyze samples.) | | ● | ● |
| Track study progress. Review quality assurance information and make assessments on data quality. Adapt study as needed. | ● (Review Role) | ● | ● |
| Report data through SWRCB web site. | ● | ● (Coordination Role) | ● |
| Prepare written report of data. | | ● | ● |
| | | | |

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# TULARE LAKE BASIN

PART 1 – 5 YEAR LONG TERM PLAN:

Vision, Goals, and Objectives

The Tulare Lake Basin is divided into six watershed management areas:

Kern County Basin
Tulare Lake Basin
Tule Basin
Kaweah Basin
Kings Basin
Westside Basin

VISION:
The vision of the Tulare Lake Basin SWAMP is for a two-component monitoring program consisting of a combination of 1) rotational watershed management area monitoring and 2) limited special screening level studies (including better characterization of known problems). Prior to any monitoring, a preliminary analysis of existing water quality data will be used to identify data gaps and/or suspected problems needing better characterization. Other programs/groups collecting monitoring data, such as TMDL's, the CVRWQCB Irrigated Lands Program, watershed groups (grant projects), and others will be valuable for the identification of data gaps, identification of suspected problems needing better characterization, and for use in interpretation and final reporting of each rotational cycle of watershed management area monitoring data. Such analysis will be used to focus rotational and/or screening level monitoring efforts each fiscal year.

All SWAMP monitoring data will be reported in final reports and submitted to the SWAMP database. Final reports will summarize existing water quality data and data gaps, analyze and interpret new data, and correlate the data to the protection of beneficial uses.

GOALS:

1) Conduct ambient monitoring program that addresses all 6 watershed management areas of the Tulare Lake Basin using consistent and objective monitoring, sampling, and analytical methods; consistent data quality assurance protocols; and centralized data management. This monitoring program will be an umbrella program that monitors and interprets data for each watershed management area at least one time every five years.
2) Document ambient water quality conditions and characterize surface water quality as either maintaining beneficial uses or as impaired. The scale of these assessments ranges from site-specific to watershed wide.
3) Conduct limited special screening level studies as needed for emerging contaminant issues.
4) Determine whether there is an association between land use and water quality impacts.
5) Provide the data to evaluate the overall effectiveness of water quality regulatory programs in protecting beneficial uses of waters of the State.

OBJECTIVES:

1) Gather and conduct preliminary analysis of existing water quality data to identify data gaps and/or suspected problems needing better characterization.
2) Assess one watershed management area per year and rotate back through each watershed management area at least once every five years.
3) Identify beneficial uses associated with surface waters in each watershed management area and assess attainment of the water quality objectives that support those beneficial uses.

4) Incorporate and coordinate relevant and available monitoring data from other agencies and watershed groups in final interpretation of watershed management area assessments.

Indication Selection:

Indicators (monitoring tools and methods) of water quality conditions and beneficial use attainment in rotational and/or screening level monitoring efforts will be selected based upon preliminary analyses of existing information, suspected water quality problems, data gaps, and available resources.

# PART 2 ANNUAL PLAN

## 4.0 **Specific Activities Planned for FY 2004-05**

Activities planned for FY 2004-05, will be to continue baseline water quality monitoring for the water bodies listed in section 4.1 as funding will allow. Due to issues with contracts in the past two fiscal years it has been difficult to have samples analyzed for all of the constituents we originally proposed during each sampling event. Therefore, we are continuing baseline monitoring as needed on water bodies listed as one through six in the following section.

Citizen groups on the Kern River and the Upper Kings River have submitted complaints to the CVRWQCB identifying these surface water bodies as exhibiting algal blooms and foaming. Past monitoring has not provided enough data to determine any impairment. Additionally, during the summer of 2002 a catastrophic forest fire, known as the McNally Fire, occurred in the upper Kern River watershed. In the ensuing 2002-2003 rainy season, both the Kern river and Lake Isabella had visible sediment and debris. We propose to continue monitoring the Kern River and Lake Isabella through this fiscal year to monitor any continued effects from the fire. To more efficiently use SWAMP funding the primary focus of SWAMP sampling for FY 2004-05 will be in the Kern and Kings Watershed Basins. If funding and staffing resources allow, additional sampling on other surface water bodies listed in section 4.1 will be performed.

### 4.1 List of Water Bodies to be Sampled in 2004-05

With SWAMP funding for FY 2004-05, baseline monitoring for the following underlined surface water bodies will continue. If additional funds become available in the second half of FY 2004-05, monitoring will be performed on the other surface water bodies listed, giving priority to segments of the Kaweah, and Tule Rivers respectively. Table **TLB-2** provides a listing of monitoring parameters.

1. Ten Mile Creek, including Hume Lake
2. South Fork of the Kings River and tributaries
3. Kings River and tributaries
4. Kaweah River and tributaries, including Lake Kaweah
5. Tule River and tributaries, including Lake Success and Elk Bayou
6. Kern River and tributaries, including Lake Isabella
7. Mendota Pool, including the Fresno Slough
8. Panoche Creek
9. San Carlos Creek

### 4.2 Review of Available Information

Data available from self monitoring reports, citizen monitoring data, United States Army Corp of Engineers, Federal Energy Regulatory Commission renewal projects, and any other current monitoring done by state, federal, or local agencies will be reviewed.

### 4.3 Specific Sampling Design/Sample Collection

Site locations and frequencies will be developed for each watershed to be monitored. Sample sites will be designated using a Global Positioning System (GPS) and photographic documentation. Each watershed and related number of sampling sites are listed in Table 7 below:

## TABLE 7
**SAMPLING SITES AND ANALYSIS**
**FISCAL YEAR 2004-2005**

| Watershed | Number of Sample Sites | Sample Analysis | Frequency of Sampling |
|---|---|---|---|
| Ten Mile Creek | 5 | Physical Properties<br>Nutrient and Bacteria | Quarterly |
| Kings River, South Fork | 5 | Physical Properties<br>Nutrient and Bacteria | Quarterly |
| Kings River | 7 | Physical Properties<br>Nutrient and Bacteria<br>Toxicity – (water column) 3 species | Quarterly |
| Tule River | 14 | Physical Properties<br>Nutrient and Bacteria | Quarterly |
| Kaweah River | 14 | Physical Properties<br>Nutrient and Bacteria | Quarterly |
| Kern River | 18 | Physical Properties<br>Nutrient and Bacteria | Quarterly |
| Mendota Pool | 6 | Physical Properties<br>Nutrient and Bacteria<br>Inorganic Chemistry | March, April, May |
| Panoche Creek | 4 | Physical Properties<br>Inorganic Chemistry | Quarterly |
| San Carlos Creek | 4 | Physical Properties<br>Inorganic Chemistry<br>Turbidity | Quarterly |

Sample and collection procedures will follow all SWAMP QAPP guidelines.

### 4.4 Laboratory Analyses

Laboratory analyses will depend on future funding and assessment needs for the watersheds to be monitored. Twining Laboratories, Inc. will perform the bacteria count; standard metals, minerals, and nutrient analysis; and on the lower Kings River, water column toxicity testing (this is currently coming out of our office laboratory contract).

### 4.5 Data Quality Evaluation and Data Reporting

To maintain data reliability and quality, monitoring activities will follow the SWAMP QAPP. Sampling activities will follow specific quality assurance/quality control procedures as outlined in the SWAMP QAPP. Data collected from other sources will be reviewed and assessed for reliability and quality based on the inclusion of quality assurance and laboratory reports.

### 4.6 Deliverable Products

For each watershed monitoring project an annual water year report will be prepared. In addition, copies of all reports and laboratory analysis will be submitted to the State of California, State Water Resources Control Board.

### 4.7 Desired Milestone Schedule

Anticipated milestones are described in Table 8:

**TABLE 8**
**ANTICIPATED MILESTONES**
**FISCAL YEAR 2003-2004**

| Milestone | Projected Start Date | Projected Date of Completion |
|---|---|---|
| Quarterly Sampling | 1 September 2004 | 30 June 2005 |
| Evaluation of Data | 1 September 2004 | 1 October 2005 |
| Preparation of Annual Report | 30 June 2005 | 1 October 2005 |

**Activities specifically slated for FY 04-05 include:**

- Complete funded monitoring for water bodies listed in section 4.1
  - Coordinate field work internally and with citizen monitoring groups to complete quarterly sampling of sites.
- Augment existing laboratory contracts or develop subcontracts through the Master Contract for:
  - Twining Laboratories — Water chemistry*
  - Sierra Foothill Laboratories — Water Column Toxicity (3 species)
  - UCD — Nutrients**
  - DFG Master — Equipment, Sample Collection & Analysis

*We will not be amending this contract, we will use our existing office contract until funds through the DFG master contract become available.

**We will use the remaining funds in the UCD contract. There are no plans to develop a new contract.

- Start coordination efforts for expanding monitoring to lower Kings River and tributaries; lower Kaweah/St. Johns River and tributaries; lower Tule River, Elk Bayou, and tributaries; lower Kern River and tributaries; Mendota Pool and Fresno Slough; Panoche Creek; and San Carlos Creek
    - Establish agreement with Kings River Conservation District to collect lower Kings River samples.
    - Site Selection.

### 4.8 Desired "Sample Throughput" Schedule

Throughput schedule will depend on laboratory being used and the final contract agreements and/or task orders.

### 4.9 Budget

See attached Monitoring and Assessment Budget Table **TLB-2**. The costs listed in TLB-2 assume the use of existing laboratory contracts, use of the Master Contract, sample collection and analysis as needed, and data tracking. The listed costs assume the use of existing contracts without significant cost increases.

## Summary Notes – Tulare Lake Basin SWAMP Program

The previous discussion has applied to contract dollars. A severe shortfall exists in staffing necessary to maintain the program. Staff is needed to establish and maintain analytical contracts; establish and update QAPPs for each project; oversee and participate in sample collection, sample processing, data quality review, data entry and verification of data bases; prepare annual report; coordinate with federal, state, and local agencies conducting monitoring within the Basin; compile and evaluate existing data from other sources; and disseminate that information to area stakeholders. To perform these tasks we estimate a minimum of 2.0 PYs is still needed, currently the Tulare Lake Basin is allocated 0.3 PY.

4.10 Working Relationships (Intra & Interagency Coordination)

The following decision matrix describes the general relationships for implementing the regional monitoring portion of SWAMP. The SWAMP staff includes the contract manager for all grants that are currently funded to do surface water monitoring. Staff will work closely with these citizen monitoring groups on the development of their monitoring plans and QAPP development. Due to the time line for the Irrigated Lands Conditional Waiver monitoring, SWAMP staff will look at Coalition Group monitoring sites and data during FY 04-05. The three waterbodies on the 303d list are not to the point of TMDL development. However, SWAMP staff will work with citizen monitoring through the current grants and TMDL staff as needed to reduce any duplication in efforts.

During the current fiscal year inter agency working relationships include close coordination with the United States Forest Service, Greenhorn Ranger District for Lake Isabella, and the United States Army Corps of Engineers for Lake Kaweah and Lake Success, these agencies have been providing us with staff and a boat to do sampling on these lakes. The Kings River Conservation District has provided us with access to sampling locations on the lower Kings River.

| Task | Responsible Organization | | |
|---|---|---|---|
| | SWRCB | RWQCBs | Contractors |
| Develop contract(s) for monitoring services. | ● | ● | ● |
| Identify surface water bodies or sites of concern and sites to be monitored. | | ● | |
| Identify site-specific locations with potential beneficial use impacts or unimpacted conditions that will be monitored. | | ● | |
| Decide if concern is related to objectives focused on location or trends of impacts. | | ● | |
| Select monitoring objective(s) based on potential beneficial use impact(s) or need to identify baseline conditions. | | ● | |
| Identify already-completed monitoring and research efforts focused on potential problem, monitoring objective, or clean conditions. | | ● | ● |
| Make decision on adequacy of available information. | | ● | ● |
| Prepare site-specific study design based on monitoring objectives, the assessment of available information, sampling design, and indicators. | ● (Work Plan Review Role) | ● | ● |

| Task | Responsible Organization | | |
|---|---|---|---|
| | SWRCB | RWQCBs | Contractors |
| Implement study design. (Collect and analyze samples.) | | | ● |
| Track study progress. Review quality assurance information and make assessments on data quality. Adapt study as needed. | ● (Review Role) | ● | ● |
| Report data through SWRCB web site. | ● | ● (Coordination Role) | ● |
| Prepare written report of data. | ● | ● | ● |

## TABLE: TLB-2

### I. MONITORING LOCATIONS

1. Ten Mile Creek, including Hume Lake
2. South Fork of the Kings River and tributaries
3. Kings River
4. Kern River, including Lake Isabella
5. Tule River, including Lake Success
6. Kaweah River, including Lake Kaweah

### II. MONITORING PARAMETERS - EXPECTED 2004-2005 BUDGET*

1. Field Parameters

| Parameter | Total Samples | Method | Frequency |
|---|---|---|---|
| EC | 252 | Water Sample | Quarterly |
| DO | 252 | Water Sample | Quarterly |
| PH | 252 | Water Sample | Quarterly |
| Temperature | 252 | Water Sample | Quarterly |

| | |
|---|---|
| Sample Cost | $0.00 |
| Total Cost | $0.00 |

2. Nutrients

| Constituent | Total Samples | Method | Frequency |
|---|---|---|---|
| Nitrate | 252 | Water Sample | Quarterly |
| Nitrite | 252 | Water Sample | Quarterly |
| TKN | 252 | Water Sample | Quarterly |
| Phosphate | 252 | Water Sample | Quarterly |
| Ammonia | 252 | Water Sample | Quarterly |

| | |
|---|---|
| Analysis Cost | $82.75 |
| Total Cost | $20,853 |

3. Pathogens

| Constituent | Total Samples | *Method* | *Frequency* |
|---|---|---|---|
| Total Coliform | 252 | Water Sample | Quarterly |
| Fecal Coliform | 252 | Water Sample | Quarterly |
| E. Coli | 252 | Water Sample | Quarterly |

| | |
|---|---|
| Analysis Cost | $66.00 |
| Total Cost | $16,632 |

4. Water Column Toxicity

| Constituent | Total Samples | *Method* | *Frequency* |
|---|---|---|---|
| *Acute* Ceriodaphnia dubia | 28 | Water Sample | Quarterly |
| Pimephales promelas | 28 | Water Sample | Quarterly |
| Selenastrum capricornutum | 28 | Water Sample | Quarterly |
| *Chronic* Ceriodaphnia dubia | 28 | Water Sample | Quarterly |
| Pimephales promelas | 28 | Water Sample | Quarterly |

| | |
|---|---|
| *Analysis Cost* | $765.00 |
| *Total Cost* | $21,420.00 |
| **TOTAL ESTIMATED COST** | $58,905.00 |

*Extent of water bodies to be sampled has been reduced due to funding uncertainty during first half of FY04-05 and available PYs. Amended budget and Task Orders will be provided when FY04-05 funds are released to the Region.