Evaluate, Demonstrate, and Promote Management Practices to Reduce Impacts of Irrigation Drainage within the San Joaquin River Watershed

Project Information

1. **Proposal Title:**

   Evaluate, Demonstrate, and Promote Management Practices to Reduce Impacts of Irrigation Drainage within the San Joaquin River Watershed

2. **Proposal applicants:**

   Parry Klassen, Coalition for Urban/Rural Environmental Stewardship (CURES)

3. **Corresponding Contact Person:**

   Parry Klassen
   Coalition for Urban/Rural Environmental Stewardship (CURES)
   196 Bedford Clovis, CA 93611
   559 325-9855
   parryk@mediaone.net

4. **Project Keywords:**

   Ag/Urban Runoff
   Environmental Education
   Water Pollution, Non-point Source

5. **Type of project:**

   Implementation_Pilot

6. **Does the project involve land acquisition, either in fee or through a conservation easement?**

   No

7. **Topic Area**:

   Ecosystem Water and Sediment Quality

8. **Type of applicant:**

   Private non-profit

9. **Location - GIS coordinates:**

   Latitude: 37.4943275

   Longitude: -121.0879974

   Datum:

Describe project location using information such as water bodies, river miles, road intersections, landmarks, and size in acres.

The area targeted for this project includes the lower San Joaquin River region from downstream and north of the Mendota Dam to Vernalis, just west of Modesto in the SJR watershed (see Figure 1, attachment 1). This area is in the San Joaquin Ecological Management Zones 12.1, 12.2, 13.1, 13.2 and 13.3. More specifically, the project area within the watershed will include those farmlands near the SJR mainstem and its tributaries (Merced River, Tuolumne River, Stanislaus River, Orestimba And Del Puerto Creeks)that have return flow drainage and are most likely to impact the rivers water quality.

10. **Location - Ecozone:**

    12.1 Vernalis to Merced River, 12.2 Merced River to Mendota Pool, 13.1 Stanislaus River, 13.2 Tuolumne River, 13.3 Merced River, West San Joaquin Basin

11. **Location - County:**

    Fresno, Madera, Merced, San Joaquin, Stanislaus

12. **Location - City:**

    Does your project fall within a city jurisdiction?

    No

13. **Location - Tribal Lands:**

    Does your project fall on or adjacent to tribal lands?

    No

14. **Location - Congressional District:**

    18,19

15. **Location:**

    California State Senate District Number: 12, 16

    California Assembly District Number: 30,26

16. **How many years of funding are you requesting?**

    3

17. **Requested Funds:**
    a) Are your overhead rates different depending on whether funds are state or federal?

       No

       If no, list single overhead rate and total requested funds:

Single Overhead Rate: 3

Total Requested Funds: 2599440.00

b) Do you have cost share partners already identified?

No

c) Do you have potential cost share partners?

Yes

If yes, list partners and amount contributed by each:

Makhteshim-Agan 30,000

Dow AgroSciences 30,000

d) Are you specifically seeking non-federal cost share funds through this solicitation?

No

If the total non-federal cost share funds requested above does not match the total state funds requested in 17a, please explain the difference:

18. **Is this proposal for next-phase funding of an ongoing project funded by CALFED?**

No

Have you previously received funding from CALFED for other projects not listed above?

Yes

If yes, identify project number(s), title(s) and CALFED program.

65	**Promotion of Farming Best Management Practices and Calibration Technology to Mitigate OP Pesticide Runoff into the Sacramento River Watershed**	**CALFED Watershed**

19. **Is this proposal for next-phase funding of an ongoing project funded by CVPIA?**

No

Have you previously received funding from CVPIA for other projects not listed above?

No

20. **Is this proposal for next-phase funding of an ongoing project funded by an entity other than CALFED or CVPIA?**

    No

    Please list suggested reviewers for your proposal. (optional)

21. **Comments:**

    The applicant (CURES) will be pursuing CALFED directed funding for this proposal due to impending regulatory actions regarding irrigation return flows into the San Joaquin River watershed (described in the executive summary). If directed funding is declined the applicant will still seek funding through this CALFED Ecosystem Restoration PSP.

Environmental Compliance Checklist

Evaluate, Demonstrate, and Promote Management Practices to Reduce Impacts of Irrigation Drainage within the San Joaquin River Watershed

1. **CEQA or NEPA Compliance**
   a) Will this project require compliance with CEQA?

      No
   b) Will this project require compliance with NEPA?

      No
   c) If neither CEQA or NEPA compliance is required, please explain why compliance is not required for the actions in this proposal.

      A preliminary review by the Central Valley Regional Water Quality Control Board staff to determine whether the work plan proposed to the CALFED 2002 Ecosystem Restoration Program is a "project" as defined by CEQA or whether it is exempt was conducted. This preliminary screening indicates that the activity under this work plan does not involve the exercise of an agency's discretionary powers. This preliminary review also indicates that the activity under this work plan does not have the potential to result in a direct or foreseeable indirect physical change in the environment, and falls within the definition of a "project" as defined in Section 15060 of the Guidelines.

2. **If the project will require CEQA and/or NEPA compliance, identify the lead agency(ies).** *If not applicable, put "None".*

   CEQA Lead Agency:
   NEPA Lead Agency (or co-lead:)
   NEPA Co-Lead Agency (if applicable):

3. **Please check which type of CEQA/NEPA documentation is anticipated.**

   CEQA
   -Categorical Exemption
   -Negative Declaration or Mitigated Negative Declaration
   -EIR
   Xnone

   NEPA
   -Categorical Exclusion
   -Environmental Assessment/FONSI
   -EIS
   Xnone

   If you anticipate relying on either the Categorical Exemption or Categorical Exclusion for this project, please specifically identify the exemption and/or exclusion that you believe covers this project.

4. **CEQA/NEPA Process**
   a) Is the CEQA/NEPA process complete?

      Not Applicable

   b) If the CEQA/NEPA document has been completed, please list document name(s):

5. **Environmental Permitting and Approvals** (*If a permit is not required, leave both Required? and Obtained? check boxes blank.*)

LOCAL PERMITS AND APPROVALS

Conditional use permit

Variance

Subdivision Map Act

Grading Permit

General Plan Amendment

Specific Plan Approval

Rezone

Williamson Act Contract Cancellation

Other

STATE PERMITS AND APPROVALS

Scientific Collecting Permit

CESA Compliance: 2081

CESA Compliance: NCCP

1601/03

CWA 401 certification

Coastal Development Permit

Reclamation Board Approval

Notification of DPC or BCDC

Other

FEDERAL PERMITS AND APPROVALS

ESA Compliance Section 7 Consultation

ESA Compliance Section 10 Permit

Rivers and Harbors Act

CWA 404

Other

PERMISSION TO ACCESS PROPERTY

Permission to access city, county or other local agency land.
Agency Name:

Permission to access state land.
Agency Name:

Permission to access federal land.
Agency Name:

Permission to access private land.
Landowner Name: Mickey Saso (Wingsetter Ranch), Patterson — Required, Obtained

6. **Comments.**

Land Use Checklist

Evaluate, Demonstrate, and Promote Management Practices to Reduce Impacts of Irrigation Drainage within the San Joaquin River Watershed

1. **Does the project involve land acquisition, either in fee or through a conservation easement?**

   No

2. **Will the applicant require access across public or private property that the applicant does not own to accomplish the activities in the proposal?**

   Yes

3. **Do the actions in the proposal involve physical changes in the land use?**

   No

   If you answered no to #3, explain what type of actions are involved in the proposal (i.e., research only, planning only).

   Demonstration sites will be set up to showcase management practices that reduce pesticide and nutrient runoff in irrigation drainage in the San Joaquin River watershed.

4. **Comments.**

Conflict of Interest Checklist

Evaluate, Demonstrate, and Promote Management Practices to Reduce Impacts of Irrigation Drainage within the San Joaquin River Watershed

Please list below the full names and organizations of all individuals in the following categories:

- Applicants listed in the proposal who wrote the proposal, will be performing the tasks listed in the proposal or who will benefit financially if the proposal is funded.
- Subcontractors listed in the proposal who will perform some tasks listed in the proposal and will benefit financially if the proposal is funded.
- Individuals not listed in the proposal who helped with proposal development, for example by reviewing drafts, or by providing critical suggestions or ideas contained within the proposal.

The information provided on this form will be used to select appropriate and unbiased reviewers for your proposal.

Applicant(s):

Parry Klassen, Coalition for Urban/Rural Environmental Stewardship (CURES)

Subcontractor(s):

Are specific subcontractors identified in this proposal? Yes

If yes, please list the name(s) and organization(s):

Emilie Reyes	Central Valley Regional Water Quality Control Board
Mary McClanahan	California Water Institute

Helped with proposal development:

Are there persons who helped with proposal development?

Yes

If yes, please list the name(s) and organization(s):

Parry Klassen	**CURES**
Rick Sandberg	**CURES**
Orit Kalman	**Private grant writer**

Emilie Reyes **Central Valley Regional Water Quality Control Board**

Mary McClanahan **California Water Institute**

Comments:

Budget Summary

Evaluate, Demonstrate, and Promote Management Practices to Reduce Impacts of Irrigation Drainage within the San Joaquin River Watershed

Please provide a detailed budget for each year of requested funds, indicating on the form whether the indirect costs are based on the Federal overhead rate, State overhead rate, or are independent of fund source.

Independent of Fund Source

Year 1												
Task No.	**Task Description**	**Direct Labor Hours**	**Salary *(per year)***	**Benefits *(per year)***	**Travel**	**Supplies & Expendables**	**Services or Consultants**	**Equipment**	**Other Direct Costs**	**Total Direct Costs**	**Indirect Costs**	**Total Cost**
1	Planning and Project Management	207					30840			30840.0	925	31765.00
2	Data Collection Activities (CWI)		18720	7280	1500	800				28300.0	5221	33521.00
3	Demonstration Activities	780	101558	40761	3867	9200	160750	10000		326136.0	21143	347279.00
4	Education/Outreach Activities and Materials	610	6574	2556	11486	29300	442700			492616.0	9401	502017.00
5	CALFED Reporting	80					9600			9600.0	1512	11112.00
		1677	126852.00	50597.00	16853.00	39300.00	643890.00	10000.00	0.00	887492.00	38202.00	925694.00

Year 2												
Task No.	**Task Description**	**Direct Labor Hours**	**Salary *(per year)***	**Benefits *(per year)***	**Travel**	**Supplies & Expendables**	**Services or Consultants**	**Equipment**	**Other Direct Costs**	**Total Direct Costs**	**Indirect Costs**	**Total Cost**
1	Planning and Project Management	227					27240			27240.0	817	28057.00
2	Data Collection Activities (CWI)									0.0		0.00
3	Demonstration Activities	780	115233	27085	3866	7200	160750	10000		324134.0	24772	348906.00
4	Education/Outreach Activities and Materials	1451	4428	1722	11636	31550	393970			443306.0	13299	456605.00
5	CALFED Reporting	80					9600			9600.0	288	9888.00
		2538	119661.00	28807.00	15502.00	38750.00	591560.00	10000.00	0.00	804280.00	39176.00	843456.00

Year 3												
Task No.	**Task Description**	**Direct Labor Hours**	**Salary** ***(per year)***	**Benefits** ***(per year)***	**Travel**	**Supplies & Expendables**	**Services or Consultants**	**Equipment**	**Other Direct Costs**	**Total Direct Costs**	**Indirect Costs**	**Total Cost**
1	Planning and Project Management	227					27240			27240.0	817	28057.00
2	Data Collection Activities (CWI)									0.0		0.00
3	Demonstration Activities	780	115234	27085	3867	7200	160750	10000		324136.0	24772	348908.00
4	Education/Outreach Activities and Materials	1123	7275		11486	33550	377010			429321.0	12880	442201.00
5	CALFED Reporting	80					10800			10800.0	324	11124.00
		2210	122509.00	27085.00	15353.00	40750.00	575800.00	10000.00	0.00	791497.00	38793.00	830290.00

Grand Total=2599440.00

Comments.

Budget Justification

Evaluate, Demonstrate, and Promote Management Practices to Reduce Impacts of Irrigation Drainage within the San Joaquin River Watershed

Direct Labor Hours. Provide estimated hours proposed for each individual.

Hour totals for 3 years: Parry Klassen, CURES: 3042 Rick Sandberg, CURES: 2806 Mary McClanahan, CWI: 3070 Tim Jacobsen, CWI: 3070 Ellen Burnes, CWI: 3070 Mark Somma, CWI: 347 Student assistant, CWI: 95 University professor, CVRWQCB: 504 ES 111, CVRWQCB: 660 Student intern, CVRWQCB: 1512 Student intern, CVRWQCB: 1512 Norman Crow, WSRCD: 960

Salary. Provide estimated rate of compensation proposed for each individual.

Hourly rate Parry Klassen, CURES: $120 Rick Sandberg, CURES: $70 Mary McClanahan, CWI: $35 Tim Jacobsen, CWI: $35 Ellen Burnes, CWI: $35 Mark Somma, CWI: $45 Student assistant, CWI: $20 University professor, CVRWQCB: $62.01 ES 111, CVRWQCB: $67.21 Student intern, CVRWQCB: $20.22 Student intern, CVRWQCB: $20.22 Norman Crow, WSRCD: $45

Benefits. Provide the overall benefit rate applicable to each category of employee proposed in the project.

Mary McClanahan, CWI: 28% Tim Jacobsen, CWI: 28% Ellen Burnes, CWI: 28% Mark Somma, CWI: 28% Student assistant, CWI: 28% University professor, CVRWQCB: 30% ES 111, CVRWQCB: 30% Student intern, CVRWQCB: 30% Student intern, CVRWQCB: 30% Norman Crow, WSRCD: 30%

Travel. Provide purpose and estimate costs for all non-local travel.

Purpose for travel: Travel to meetings, field days Travel to perform chemical monitoring Travel to manage demonstrations farms Travel to perform farming surveys Travel to perform site assessments Travel for all project workers is billed at $.35/mile

Supplies & Expendables. Indicate separately the amounts proposed for office, laboratory, computing, and field supplies.

CVRWQCB Field supplies: $20,000 for 3 years CWI Supplies: $6000 for 3 years

Services or Consultants. Identify the specific tasks for which these services would be used. Estimate amount of time required and the hourly or daily rate.

Parry Klassen: $120/hr: 3042hrs for 3 years. Task 1: Planning and project management; recruit landowners; develop plans for demo plots. Task 3: Task management Task 4: Development of education materials including management practice booklets, demo site booklets, annual directory of services, watershed map posters, quarterly newsletter, website, meeting presentations, manage field days, collaborate with local groups and agencies. Task 5: Write quarterly reports to CALFED. Rick Sandberg, $70/hr; 2806 for 3 years Task 3: Setup and ongoing management of demonstration farms Task 4: Production assistant for developing management practice booklets, demo site booklets, annual directory of services, watershed map posters, quarterly newsletter, website. Norman Crow: $45/hr.; 960 hours for 3 years. Task 3: Setup and ongoing management of demonstration farms. Sean Denny, Denny Design (individual project estimates totaling $36,250; see detailed budget for indivdual price quotes) Task 4: Production layout, design and artwork of all published materials.

Equipment. Identify non-expendable personal property having a useful life of more than one (1) year and an acquisition cost of more than $5,000 per unit. If fabrication of equipment is proposed, list parts and materials required for each, and show costs separately from the other items.

none

Project Management. Describe the specific costs associated with insuring accomplishment of a specific project, such as inspection of work in progress, validation of costs, report preparation, giving presentatons, reponse to project specific questions and necessary costs directly associated with specific project oversight.

Parry Klassen: $120/hr: 1296 hrs for 3 years. Task 1: Planning and project management; recruit landowners; develop plans for demo plots. Task 3: Task management Task 4: Ensure development of education materials including management practice booklets, demo site booklets, annual directory of services, watershed map posters, quarterly newsletter, website, meeting presentations, manage field days, collaborate with local groups and agencies. Task 5: Write quarterly reports to CALFED. Rick Sandberg, $70/hr; 2160 for 3 years Task 3: Setup and ongoing management of demonstration farms Task 4: Production assistant for developing management practice booklets, demo site booklets, annual directory of services, watershed map posters, quarterly newsletter, website. Norman Crow: $45/hr.; 480 hours for 3 years. Task 3: Setup and ongoing management of demonstration farms.

Other Direct Costs. Provide any other direct costs not already covered.

None.

Indirect Costs. Explain what is encompassed in the overhead rate (indirect costs). Overhead should include costs associated with general office requirements such as rent, phones, furniture, general office staff, etc., generally distributed by a predetermined percentage (or surcharge) of specific costs.

CURES overhead rate of 3% will cover: the cost of adminstering funds and tracking budgets by the organization’s accountancy firm; assistance of legal firm to review all project contracts with CALFED and subcontractors; cover a portion of the organization’s liability insurance costs; and related incidental costs not anticiapted in the detailed budget review.

Executive Summary

Evaluate, Demonstrate, and Promote Management Practices to Reduce Impacts of Irrigation Drainage within the San Joaquin River Watershed

Irrigation return flows originating from agricultural lands in the San Joaquin Valley have been identified as an important contributor of pesticides, nutrients, sediment and other constituents impairing the San Joaquin River (SJR) and bay-delta system. In response to declining water quality in the SJR watershed, regulatory action focusing on irrigation return flows is anticipated in the near future. Of particular concern is the expiration of the Waiver of Waste Discharge Requirements for Irrigation Return Flows. This proposal would address an important component of the recent resolution (5-01-236) adopted by the California Regional Water Quality Control Board Central Valley Region to monitor and report success of voluntary control activities conducted by agricultural organizations. This proposal presents a demonstration and education project that was developed by CURES. The project will identify and evaluate region-specific, feasible management practices (MPs) with the highest potential for reducing or eliminating pesticide, nutrient and other contaminant loads carried by irrigation return flows. These findings will be communicated to farmers, agriculture professionals, regulatory agencies and irrigation districts through demonstration sites and outreach programs. The area targeted for this project includes the lower SJR region from downstream and north of the Mendota Dam to Vernalis, including primary tributaries. The goal of this project is to evaluate, demonstrate and promote the voluntary adoption of MPs by landowners who are impairing the SJR. The 3-year project will aim to accomplish five objectives: 1. Analyze the effectiveness and feasibility of applying new and available MPs to farmlands in the SJR watershed. 2. Facilitate the development and transfer of information on MPs to farmers. 3. Increase awareness levels and voluntary use of MPs. 4. Identify promising MPs for the region and effective outreach programs to promote MPs. 5. Work with local, state and federal agencies and stakeholders to enhance the project effectiveness. Results from demonstration plots monitoring and outreach projects evaluation will be published and publicly available on the CURES website. The proposed project meets ERP goals SJ5 and SJ6 and priorities set by the Central Valley Basin Plan that call for agricultural pesticide control efforts through greater understanding of MPs and their wide adoption in the region.

Proposal

Coalition for Urban/Rural Environmental Stewardship (CURES)

Evaluate, Demonstrate, and Promote Management Practices to Reduce Impacts of Irrigation Drainage within the San Joaquin River Watershed

Parry Klassen, Coalition for Urban/Rural Environmental Stewardship (CURES)

A. Project Description: Project Goals and Scope of Work

1. Problem, Goals and Objectives

Irrigation return flows originating from agricultural lands in the San Joaquin Valley have been identified as a contributor of non-point source (NPS) pesticides, nutrients, sediment and other constituents detected in the San Joaquin River (SJR) watershed. This loading results in decreased water quality as well as compromised critical habitat (USEPA, 1989; Foe and Connor, 1988; Foe, 1995).

Nutrients, originating from commercial fertilizers, animal manure applications to fields, suspended colloids and organic material, are conveyed to the SJR through surface and subsurface flows and are suspected causes of observed increases of algal growth and low dissolved oxygen in the Deep Water Ship Channel in the lower San Joaquin River. The established standard for dissolved oxygen in the SJR is 6 mg/L for September through November, and 5 mg/L for the remainder of the year. However, dissolved oxygen measurements of 2-mg/L are frequently detected in the SJR thereby potentially causing physiological stress to aquatic life and impeding salmon migration (Hayes and Lee, 1998).

The organophosphate (OP) pesticides, diazinon and chlorpyrifos, have been detected at elevated concentrations in the San Joaquin River and its tributaries during both the winter dormant spray period and the summer growing season when irrigation return flows occur (Foe and Connor, 1991; Foe, 1995, 1997). The occurrence of these pesticides at elevated concentrations has been confirmed in monitoring studies conducted by agencies including the U.S. Geological Survey, the California Department of Pesticide Regulation and the Central Valley Regional Water Quality Control Board (Domagalski *et al.,* 1997; Ross et al., 1991; Page: 1
Deanovic *et al.,* 1996 and 1998).

Current regulatory activities are focusing on irrigation return flows in the SJR watershed in anticipation of the January 2003 expiration of the Waiver of Waste Discharge Requirements for Irrigation Return Flows. An important component of the recent resolution (5-01-236) adopted by the California Regional Water Quality Control Board Central Valley Region in September 2001 is implementing voluntary monitoring and control activities conducted by agricultural organizations.

Activities are also beginning on the Clean Water Act requirement to develop Total Maximum Daily Loads (TMDLs) for pesticides, dissolved oxygen (DO), salts and boron for the SJR. These regulations and the recognition of declining water quality in the SJR watershed have created the need to identify and demonstrate, to SJR riparian farmers in particular, the available Management Practice (MP) options with the highest potential for reducing or eliminating pesticide, nutrients and other constituent loads carried by irrigation return flows to the SJR, the San Joaquin/Sacramento River Delta, and San Francisco Bay.

The area targeted for this project includes the lower San Joaquin River region downstream and north of the Mendota Dam to Vernalis, just west of Modesto in the SJR watershed (Attachment 1, Figure 1). More specifically, the project area within the watershed will include those farmlands near the SJR mainstem and its tributaries that have return flow drainage and are most likely to impact the river's water quality. Demonstration sites will be set up in selected fields in Merced, Madera, Stanislaus and San Joaquin Counties. Fields will be chosen, with the collaborator landowner/grower, based on their proximity to the river system and the MP already in place. While the demonstration sites will be focused on these riparian sites and farmers, the education and outreach efforts will be SJR basin-wide.

The goal of this project is to evaluate, demonstrate and promote the adoption of MPs to riparian landowners with surface irrigation return flows. While the applicants understand that subsurface flow also contribute to SJR constituent loading, this project will focus only on surface irrigation return flows. MPs (also called Best Management Practices) are designated by state law as a Tier 1 implementation

option for reducing non-point source loads. MPs, such as re-circulation of irrigation return flows, blending of drainage water with fresh water then re-applying to fields and irrigation scheduling have proven in other areas of the San Joaquin Valley to successfully mitigate irrigation return flow impacts originating from commercial agriculture production. These and other MPs could potentially be adopted by SJR farmers on a broad scale. However, farmers current knowledge of, and access to, these MPs are limited by their ability to view the practices in use on commercial farm operations in the region. Other newer MPs have not been evaluated on a broader scale, examined for their ability to remove pesticides or nutrients from return flows nor tested in the wide range of crops produced in the watershed. More information on effectiveness, feasibility, and capital and maintenance costs are needed to ensure that growers select appropriate MP for their farmland.

Fundamental to this project is the identification of MPs that are best suitable for the primary crops, soil types and farm conditions in the SJR watershed and with the greatest applicability and economic efficiency for reducing pesticide and nutrient levels in surface waters. Once identified, these practices that can lead to the greatest reduction in pesticide and nutrient levels in surface waters will be incorporated into the overall core strategy of this project. This objective is in accord with Strategic Goal 6 of the Ecosystem Restoration Program to "Improve and/or maintain water and sediment quality conditions that fully support healthy and diverse aquatic ecosystems in the Bay-Delta watershed and eliminate, to the extent possible, toxic impacts on organisms in the system, including humans." In addition, nutrient load reduction can directly benefit SJ5 and MR5 and help resolve the low DO problem in the lower SJR.

The project's 3-year demonstration and outreach program in the SJR watershed will aim to accomplish the following objectives:

1. Analyze the effectiveness and feasibility of applying new and available MPs to riparian farmlands in an effort to reduce off-site movement of pesticides and fertilizers.
2. Facilitate the development and transfer of information on irrigation return flow MPs to farmers, in particular farmers with riparian fields or fields with drainage systems leading to the SJR, through demonstration projects and outreach programs.
3. Increase awareness levels and voluntary use of MP with the goal of reducing agricultural irrigation runoff impacts to regional waters.
4. Identify promising MPs for the region and effective outreach programs to promote MPs.
5. Work with local agencies, stakeholders and firms to enhance the project management, outreach, and effectiveness.

Relevant studies and solutions

Studies to evaluate MPs for their efficiency in reducing nutrient and salt in irrigation runoff have been performed by UC Cooperative Extension, the Natural Resource Conservation Service and other entities. While evaluation results show that some MPs are beneficial in reducing the negative impact of more than one constituent of concern, other MPs need further development and evaluation in larger commercial farming operations.

Limited studies have been performed on MPs for controlling pesticide movement in return flows. However, there is considerable knowledge about application practices, alternative products with lower aquatic impact potential and other MPs with promise for reducing or eliminating off-site movement of pesticides that can be applied to the demonstration outreach programs proposed in this project.

Recent studies confirm that the use of proper MPs can result in reduced pesticide and nutrient runoff into surface waters. An Integrated On-Farm Drainage Management (IFDM) study conducted by the Westside Resource Conservation District during the 1990's managed irrigation water, drainage water, salt, and selenium as resources, rather than waste, within farm boundaries. Results showed an increase in land values and crop yields without any discharge into lakes or rivers (WRCD, 1999).

Independent evaluations of PAM (polycrylamides) effectiveness in reducing sediment and pesticide loads in irrigation runoff has been documented in the West Stanislaus Hydrologic Unit Area (HUA), Australia, and Kimberly, Idaho (M. McElhiney and P. Osterli, USDA-NRCS, 1996; Waters et al., 1999a,b; Wood, 1997). Evaluation results indicate that PAM application can significantly decrease soil loss (95-98%), decrease pesticide residues, and increase groundwater infiltration (10-40%). Combining PAM with humic acid has been shown to further increase infiltration rates (WSRCD, 1999).

Soil organic matter, also referred to as humus, is an important catalyst in the adsorption of pesticides in soil. A recent study has shown that the mobility of the herbicide atrazine can be impeded or retarded by soil management that enhances the content of aliphatic groups with soil organic matter (Piccolo, et al., 1998)

Withholding nutrients such as nitrogen typically decreases crop yields by one-third in the first year. Therefore, nutrients are essential for crop growth and production. On the other hand, proper nutrient and irrigation management practices can increase yields and reduce the probability of nutrients, pesticides and salts leaching into ground water (Soltanpour et al., 2001).

Conservation buffers decrease pesticide loads in surface runoff by trapping eroded sediment that carry adsorbed pesticide, and by increasing infiltration of water into buffer soil where dissolved pesticides can be adsorbed and degraded. Boyd, et al. 1999 found that chlorpyrifos, one of the main pesticides found at elevated levels in the San Joaquin River watershed, was reduced by 57-79 percent with the use of conservation buffers.

2. JUSTIFICATION

Conceptual Model:

The conceptual model undertaken by this project involves demonstration and communication as means of developing, sharing, and transferring information about irrigation runoff MPs to commercial farmers, crop consultants pesticide and fertilizer distributors, regulatory agencies, irrigation districts and other professional stakeholders. The conceptual model is shown in Attachment 2, Figure 2. Education programs, demonstration sites and outreach efforts will provide farmers with examples and insight into successful management options while providing the needed guidance at hand. Promoting voluntary adoption will be most successful if farmers can take advantage of local and on-the-ground expertise of local farmers who already use the MPs, crop consultants, crop input suppliers, irrigation districts, farm advisors and other professional stakeholders. In addition, the current water quality regulatory environment is also a powerful motivating factor in encouraging farmers, input suppliers, irrigation districts and grower organizations to cooperate in finding practical and lasting solutions to irrigation return flow impacts.

Farmers and their crop consultants (Pest Control Advisors or PCAs) best understand their crops' nutrient and pest control needs and therefore it is imperative to work with them closely in developing MP solutions that will ensure the greatest likelihood of success. Therefore, feedback from farmers and PCAs on successful MPs and the effectiveness of the outreach programs and demonstration sites is important for improving dialogue about irrigation runoff management and improving water quality in the region.

Continuous dialogue among farmers, distributors, irrigation districts, and other pertinent agencies will ensure that appropriate MPs are implemented in the region, thereby reducing irrigation runoff impacts in the SJR and bay-delta system.

Some of the most promising MPs for addressing irrigation NPS problems are existing return flow management practices used in southern San Joaquin Valley (Westlands Water District). These MPs offer growers the tools that can be used to reduce loads of pesticides and nutrients into water bodies. Currently, a number of management practices are successfully being used by farmers in the proposal project area to eliminate return flows or reduce the amount of constituents in the flows.

Hypothesis

The San Joaquin Valley's productive agricultural industry is greatly dependent on pesticides (organophosphate) and nutrient (nitrogen and phosphate) applications. Yet, these constituents have become a water quality liability once transported off-site into the watershed's receiving waters, adversely affecting the aquatic ecosystem and its beneficial uses. This project provides means for managing irrigation return flows from agricultural lands in an effort to effectively reduce or eliminate constituent loading and their impacts while minimizing economic impacts. Though dramatic reduction or changes to use of pesticides and nutrients can result in economic loss to farmers, proper management of irrigation return flows have been shown to effectively reduce pesticide and nutrient loading. Irrigation return flow recirculation systems, fresh water blending systems, constructed wetlands, and irrigation scheduling have been applied successfully in the SJR watershed (see relevant studies section). Evaluating these MPs in the SJR watershed can help regional farmers learn of relevant localized economic and management options thereby improving the chances for broader MP adoption in the SJR watershed.

Though several education and outreach programs have been proposed and implemented in the region, this proposal seeks, in addition to implementing outreach programs, to evaluate the outreach programs for their effectiveness in meeting the goal of increasing voluntary adoption of MPs in the region. It is imperative that limited resources for such educational purposes be used judiciously and effectively. Other projects also do not provide the chemical, toxicological and bio monitoring described in this project and needed to establish data necessary to prove the viability of a MP in reducing or removing constituents of concern.

Selection of project type

This proposal is being submitted as a demonstration and environmental education project. Demonstration sites will be set up to evaluate MPs for their efficiency, cost and feasibility and to provide pertinent information to farmers in an effort to promote voluntary adoption of these MPs. Education and outreach programs described in this proposal will support the demonstration site efforts by providing additional means for obtaining information on MP to control irrigation return flow impacts. In addition, these educational programs will be evaluated by the farmers early in the project to help confirm the impact of this approach and to identify efficient outreach efforts for subsequent years.

3. APPROACH

Information on MPs will be provided to farmers with riparian fields or fields with drainage systems leading to the SJR and the farming communities in the San Joaquin River watershed through demonstration farms and various outreach programs and campaigns. These educational efforts will be followed up with monitoring, surveys, and evaluation to determine the effectiveness and feasibility of the MPs and the programs.

Task 1. Planning and Project Management

CURES will be responsible for overall project management and coordination. Subcontractors (California Water Institute (CWI) and the Central Valley Regional Water Quality Control Board (CVRWQCB)) will also perform several components of the program. CURES responsibilities in this task will include:

1. Organizing and facilitating the meetings of the project's collaborators and relevant stakeholders.
2. Maintaining a communication network to inform and keep stakeholders involved in the project.

Upon project approval, CURES will form a Management Team (MT) to guide all project efforts. The MT will consist of the project coordinator, representatives of all collaborator groups and selected individuals with specific expertise. A report will be written after each meeting of the MT compiling and summarizing recommendations developed for individual components of the project.

CURES staff and the project management team will recruit six or more landowners within the project's study area who will be willing to offer their fields or property as demonstration sites where irrigation return flow MPs can be evaluated and showcased. The MT will work closely with landowners and farmers to develop management plans that are appropriate to their crop and irrigation practices. Currently, one farmer in Stanislaus County has signed a letter of agreement (see attached letter from Mickey Saso) to hold a demonstration farm on their property. Owners of two other potential sites had agreed to participate and were finalizing letters at the PSP deadline. Project collaborators have assured the applicant of their ability to locate the remaining demonstration farms within 30 days of project approval by CALFED.

Task 2. Data Collection Activities

Upon project approval, CWI, a subcontractor to the project, will initiate an analysis of agriculture and irrigation practices in the targeted watershed throughout Merced, Madera, Stanislaus and San Joaquin counties. The study will determine cropping patterns, irrigation practices, drainage practices, pest control and fertilizing practices, and other pertinent information affecting agricultural drainage into the river system. Information will be used to assist in targeting demonstration farms, evaluating management practices and targeting outreach materials tailored for specific producer groups. Results will also provide confirmation to the crops and management practices and outreach programs described in this proposal, which are listed based on the knowledge of the proposal applicants and collaborators for the project.

Task 3. Demonstration Activities

The project intends to develop a minimum of six demonstration sites throughout the project area. Activities at each demonstration site include: set up and on-going management; monitoring; evaluation; and showcasing MPs to the farming community though field days (outlined in Task 4).

Set up. One or more of the following MPs will be set up and tested at the demonstration farms (see Attachment 3, Table 1):

a. *Tailwater return flow recirculation system*. This system is used to collect, store and transport field irrigation return flows for reuse in a farm water distribution system.

b. *Fresh water blending system*. The blending of low salt water with drainage water (higher salinity) for reuse in the farm irrigation system.

c. *Constructed Wetlands*. A lowland pond, basin or canal system containing vegetation or other water handling practices that can filter irrigation return flows.

d. *PAM (polyacrylamide)*. A polymer injected into headwaters of furrow irrigated crops. PAM has been shown to be very effective in reducing erosion and therefore lessening sediment (and potentially the constituents bound to the sediment, a trait not yet analyzed) transport in irrigation water.

e. *Biofiltration*. The filtering of irrigation return flows through various types of vegetation.

f. *Humic Acid*. An organic liquid that increases water infiltration and can potentially be used as a soil treatment to degrade pesticides that land on the ground during applications to crop foliage.

g. *Pesticide MPs*. Management practices that reduce or eliminate presence or movement of pesticides into irrigation waters. These MPs will be integrated into demonstration sites of the MPs above where appropriate.

h. *Nutrient MPs*. Management practices that reduce or eliminate presence or movement of nutrients into irrigation return flows or other surface waters. These MPs will be integrated into demonstration sites of MPs above where appropriate.

Primary crops targeted for this effort will include, but not be limited to, row crops such as alfalfa, corn, dry beans, tomatoes, and orchard crops such as almonds, peaches, walnuts and plums.

Monitoring. The Central Valley Regional Water Quality Control Board (CVRWQCB), a subcontractor to the project, will monitor irrigation return flows from the demonstration sites for constituents and flow rates. Monitoring will include assessing the effectiveness of the MPs in reducing pesticide and nutrient loads. Effects on water quality will be monitored through sample collection, chemical analysis, and biological analysis of water samples collected from the appropriate locations on the demonstration sites. CVRWQCB monitoring will be coordinated with the project collaborators and the CWI so that sites can also be measured for infiltration rates, irrigation parameters and other site-specific information that coincides with irrigation events.

CVRWQCB will develop a monitoring protocol with input from CURES, CWI and other collaborators of this project. Monitoring will be conducted over three irrigation seasons. Physical water quality parameters such as flow and EC will be measured. Chemical monitoring will focus on pesticides (organophosphate compounds and pyrethroid class compounds) and nutrients. Biological parameters will be measured through toxicity tests in order to evaluate bioavailability. Technical and field assistance will be solicited from project collaborators.

Evaluation. Monitoring results, compiled by the CVRWQCB, will be analyzed by CURES, collaborators, and CVRWQCB to identify promising MPs for the SJR watershed. CWI will evaluate all MPs installed in demonstration sites. The evaluations will include the development of costs and design options, constituent removal efficiency of MPs, a feasibility evaluation to determine the viability of adapting each technology to current farming operations within the watershed and the impact of MPs on irrigation runoff quantity reduction and salinity levels.

Showcase MPs. Farmers, Pest Control Advisors (PCAs), and agriculture professionals will be invited to participate in field days to tour the demonstration plots as part of the outreach program (see Task 4).

Task 4. Educational/Outreach Activities and Materials

This component of the project will include educational and outreach programs, publications, and evaluation of outreach efforts.

Educational/Outreach Activities. Education and outreach efforts include the development, compilation and dissemination of technical information to growers, PCAs, pesticide dealers and watershed groups to encourage use of MPs on properties with irrigation return flows. A group of particular importance are farmers with riparian fields or fields with drainage systems leading to the SJR. This group of farmers will be identified in a CURES project separate of this proposal, with the list made available for project outreach.

Outreach programs for SJR watershed farmers and landowners will include six annual field days at demonstration plots and presentations at 15 existing grower/PCA meetings (continuing education courses). Educational events/tours will be organized and managed each year to showcase the demonstration sites to local farmers and other interested stakeholders. Moreover, outreach efforts and educational material distribution will be achieved through collaboration with local pesticide and nutrient distributors, agricultural commissioners, farm advisors, commodity groups and continuing education meetings for farmers and PCAs to facilitate information transfer to farmers in the SJR watershed.

Publications. Information on MPs and relevant contacts will also be published and made available at the field days as well as County Agricultural Commissioners offices, Farm Advisors offices, project collaborators, through local farm and commodity groups, on the CURES and CWI websites and through direct mailings to riparian farmers.

a. *Demonstration Site Booklets*. Six individual booklets will be developed for each demonstration site explaining the MPs on the site, their cost and other pertinent information specific to the site.

b. *MP Informational Booklets*. Eight individual booklets on each MP (Attachment 3, see Table 1) will be published for distribution to farmers, crop consultants and other interested parties in the watershed. Each booklet will provide a description of an MP and its installation requirements along with references to further studies or information. Each booklet will also provide a summary of the CWI MP evaluation and include the economic analysis, cost breakdowns and technical evaluation of the MP.

c. *Annual Local Directory*. An annual directory of local service companies, consultants and other state or local experts capable of assisting in implementing the MPs will be published for local distribution. The directory will include updates on this project and similar watershed projects.

   Included in the annual directory and MP booklets will be a list of funding sources for farmers pursuing various improvements to irrigation facilities (pumps and conveyance) or other conservation practices.

d. *Watershed Map*. A poster map of the San Joaquin River watershed will be published showing tributary flows and sites where demonstration farms are located (additional sites added after publication can be indicated with markers). The map will be included in mailings to farmers with riparian fields or fields with drainage systems leading to the SJR.

e. *Quarterly Newsletter*. A newsletter titled *Irrigation Return Flow Update* will be published four times per year. Content will include SJR watershed field day schedules for this and other related projects, updates on MP evaluations, short profiles of farmers using the MPs, regulatory updates and other information related to irrigation return flows of interest to farmers and PCAs.

f. *Website*. Websites operated and managed by CURES and CWI will be expanded to include project updates, schedules of events and information on existing and new MPs included in the project.

Evaluation. Farmers attending field days and demonstration sites will be surveyed to determine their opinion on the feasibility of adopting MPs to their farming operations. Surveys and feedback questionnaires will also provide data on the effectiveness of the outreach and education programs. Additionally, feedback questionnaires will be provided to those who choose to access information on the CURES website. These questionnaires will be used to identify promising outreach approaches as well as management solutions that are most likely to be adopted by farmers.

In addition, the efficiency of the educational/outreach programs will be measured in terms of reaching farmers (number of farmers/funds spent on outreach) and effectiveness, measured as percentage of farmers that choose to voluntarily adopt MP. This data will be collected at field days and farmer meetings and via a postal survey to approximately 2000 farmers each year for three years.

Task 5. CALFED Reporting

The project applicant will develop and submit quarterly reports on the progress of the overall project and individual deliverables described in Tasks 1-4. These reports will include fiscal and program information such as amount invoiced, description of activities performed during the quarter, the percentage of each task completed, the deliverables produced, problems and delays encountered and descriptions of contract amendments or modifications.

4. Feasibility

All of the MPs listed in Attachment 3, Table 1, have been researched in California and some are currently being practiced in the SJR watershed. The MPs described provide the best opportunity for growers to adopt MPs that fulfill the goals of the CALFED Ecosystem Restoration Program. These MPs provide a range of choices for riparian farmers that grow many different crops on a range of soil types in the SJR watershed. The MPs are broad not only with regard to the technology presented but also with regard to their cost. MPs are both feasible and appropriate for growers operating in the region.

The timeframe proposed for the project is three years, initiating in November 2002 with completion in October 2005. This timeframe should provide adequate time to evaluate the MPs listed and eliminate those that prove less effective. Outreach and education programs will focus on the most promising MPs. This project will provide an avenue for promotion and adoption of MPs that best fit the individual farming operations and at the same time meet the priorities of CALFED.

Growers will be identified and selected for demonstration sites in Spring 2002 upon approval of this proposal. While some specific sites have been identified, the project collaborators have knowledge of other potential sites where demonstration could be held. Upon project approval, written permission for site access will be gained from those landowners who volunteer for the project.

5. PERFORMANCE MEASURES

The project performance will be evaluated based on the following criteria:

1. Resources expended on developing the demonstration projects as well as specific outreach programs will be monitored.
2. The utilization of proposed outreach programs and demonstration projects will be evaluated based on farmer's participation and their response to the programs in which they participate. Questionnaires will be used to learn of farmer's perception and concerns regarding adoption of MPs.

3. Efficiency of outreach programs and demonstration projects will be evaluated based on the number of participants reached by each program relative to the program cost.
4. The effectiveness of the outreach programs will be evaluated based on the percent of farmers reached who chose to implement voluntary programs. Both effective outreach programs and preferred MPs will be identified.
5. Since quantifying the regional water quality effects of voluntary application of MPs by riparian landowners is unattainable within the scope of this project, results from demonstration projects will be used to consider the potential impact that wide application of MP can have on water quality in the watershed.

6. DATA HANDLING AND STORAGE

Data from monitoring of the demonstration sites will be compiled, analyzed and stored by CVRWQCB. Research results will also be available on the CURES website (www.curesworks.org) and CWI websites at the completion of each growing season once the data is finalized.

All other information and data gathered throughout this project will be publicly available on the CURES web site. Information will include evaluation of irrigation runoff management, results from evaluation of outreach projects, the newsletter and the MP booklets.

7. EXPECTED PRODUCTS/OUTCOMES

The following publications, presentations and reports will be developed and become available to the public:

- Results of the CWI survey of agricultural irrigation and drainage practices used in the San Joaquin River watershed.
- Eight booklets on individual MPs based on available information and demonstration sites monitoring results.
- Six individual booklets for each demonstration site explaining the MP on the site, its cost and other information specific to the site.
- An annual directory of local service companies and consultants capable of implementing the MPs and updates on this project and similar watershed projects.
- A watershed map of rivers, tributaries and project demonstration sites.
- A newsletter titled *Irrigation Return Flow Update* published four times per year.
- A slide show presentation on irrigation return flows, management practices and regulations impacting agricultural return flows.
- Websites operated and managed by CURES and CWI will be expanded to include newly compiled information on existing and new MPs.
- Summary of outreach programs and technology evaluation based on participants' response.
- Water quality monitoring data usable in other evaluation efforts such as the SJR DO TMDL implementation planning process.

Adoption in the SJR watershed of effective management practices, especially among riparian farmers, is expected to increase during the timeframe of this project.

8. WORK SCHEDULE

This proposal project would begin as soon as funds are approved in November 2002 (or when funding is available). (See Attachment 4, Table 2 a detailed work schedule).

Task 1: Planning and Project Management. The formation of a management team will proceed immediately upon approval with the first planning meeting held in January 2003. This team will help design management plans for the demonstration sites and be asked to suggest minor changes to the overall plan. The management team will meet four times per year throughout the three year project. Work will also begin immediately on identifying additional demonstration sites and developing management plans for each demonstration site with the landowners.

Task 2: Data Collection Activities. A survey of agricultural and irrigation practices will begin at project funding and be completed by March 2003 with a final report in April 2003.

Task 3: Demonstration Activites. Work on setting up the demonstration sites covering the individual practices will begin immediately upon project approval or after a site is identified. Chemical, biological and toxicity monitoring of the demonstration sites will begin in May of each year to coincide with seasonal irrigation practices, ending in September. Evaluation of each site for feasibility, economics and other factors will begin in April 2003 and continue through the end of each irrigation season (September) of each project year.

Task 4: Educational/Outreach Activities and Materials. In April 2003, a letter will be sent to farmers in the targeted area announcing the program. Work will also commence on developing the management practices booklets and the demonstration sites booklets so the publications will be available when the first field days are held in May. Updated versions of each booklet will be published in years 2 and 3 for use at the field days in those years. The annual directory of services and watershed map will be published in June with the directory updated and published annually on that month. The newsletter *Irrigation Return Flow Update* will be published quarterly in each year of the project. Presentations at grower and PCA continuing education meetings will be made from December to April in Winter 2002/2003 and November to April the subsequent two winters, the period when most farmer/PCA meetings are held. Six demonstration field days will be held each year of the project between May and September. Collaboration with local groups will be ongoing for 10 months of the year of each project year. Monitoring of the programs and surveys of farmers attending programs will coincide with field day events in all three years of the project.

Task 5: Quarterly and Final Reports: Reports to CALFED will be developed and submitted each quarter throughout the project with a final report submitted in October 2005.

Priority of Tasks: The scope of this project is designed to cover a diverse number of crops and types of management practices with the potential to reduce or eliminate the impacts of irrigation return flows on the SJR watershed. The outreach efforts and publications are designed to provide farmer-friendly and useful information that is specific enough to cover a range of crops and practices. Evaluations of the practices through water quality sampling and economic analysis plus surveys of regional farming will show to farmers the effectiveness of the practices and this program. If only partial funding is approved for this project, reductions might be made in number of practices evaluated, the number of demonstration sites or the scope of evaluation of individual practices. The applicants would not recommend reductions in the outreach efforts or materials developed simple because farmers need to be made aware of this issue and given all the informational tools necessary to implement practices in their farming operations. More importantly, the outreach materials will have a useful life far beyond the three-year scope of this project.

B. Applicability to CalFed ERP and Science Program Goals

1. ERP, Science Program and CVPIA priorities

The CALFED program facilitates continuous water quality improvement for the bay-delta with the goal of protecting all ecological beneficial uses. Improved water quality in the bay-delta system will increase and enhance the system's aquatic and terrestrial habitats and ecological functions. To meet this mission, ERP goals SJ5 and SJ6 as well as priorities set by the Central Valley Basin Plan that call for agricultural pesticide control efforts through greater understanding of MPs and their wide adoption in the region. The proposed outreach and demonstration site programs directly address these goals by seeking to incorporate local involvement**,** through voluntary adoption of MPs, in improving and restoring water quality in the SJR and delta-bay estuary. The demonstration site programs will investigate and provide essential information on selective MPs to aid farmers in choosing appropriate MPs for their riparian land conditions. Outreach programs will disseminate the necessary information to riparian landowners in efforts to facilitate voluntary adoption of MPs. An adaptive management approach will be employed in selecting MPs and outreach efforts for educating landowners on the importance of voluntarily adoption of MPs and participation in the CALFED process. Through outreach and demonstration projects, it is anticipated that regional landowners will adopt measures that will lead to significant reduction in the impact of current agricultural use of pesticides and nutrients on water resources.

2. Relationship to other ecosystem restoration projects

Several educational projects in the SJR watershed and bay-delta system have been approved recently by CALFED. The committee for Sustainable Agriculture has received funding (2001-I207) for two conservation conferences and tours in the San Joaquin Valley to present conservation practices that mitigate production decisions and thereby help reduce water pollution and soil erosion from agriculture and landscape operations. The Community Alliance with Family Farmers provides an ongoing education program for farmers and landowners regarding issues facing the regional ecosystem (2001-I213). The outreach and education program provides technical assistance in efforts to reduce pesticide and fertilizer use in Solano County.

In addition to these CALFED projects, there are several other projects in the SJR watershed that complement the efforts described in this proposal. A research and education program set up by the University of California, Davis, Integrated Pest Management program concentrates on reduction of herbicide and pesticide loading from the rice industry as well as other agricultural and urban sources (B211)(97-C12). The California Department of Water Resources manages the San Joaquin Valley Drainage Program to implement recommendations of the San Joaquin Valley Drainage Program Management Plan published in 1990. The goal of the program is to coordinate agency programs and budgets to assist local landowners to solve their drainage problems. Currently, the San Joaquin River Dissolved Oxygen TMDL Steering Committee is supporting a BMP inventorying and evaluation CALFED project proposal for nutrients and oxygen demanding precursors and a BMP inventorying and evaluation project for non-nutrient BMPs. The San Joaquin River Dissolved Oxygen TMDL Steering Committee will be developing an implementation plan for solving the low DO problem in the fall of 2002 and will benefit from the information gained from this project.

Information from these and other relevant outreach programs will be incorporated into the education and outreach efforts presented in this proposal. Furthermore, farmers targeted in this project will have access to various local experts to assist in implementing the MPs to their operations. Of particular importance are the retail suppliers of pesticides and nutrients, crop consultants and local farm advisors. These traditional suppliers of information on crop management practices are not only project

collaborators but have a vital interest in seeing this program succeed in reducing or eliminating products they sell from irrigation return flows.

Unlike most other projects in the watershed, this proposal includes a component to evaluate the effectiveness of outreach programs to ensure that resources are judiciously spent on the most effective outreach efforts. Other programs don't evaluate the success of their outreach programs in subsequent years to gauge effectiveness.

Information gained from other watershed projects could be readily integrated into the tasks described in this proposal and assist in selecting MPs that should be subject to more detailed evaluation and monitoring, and/or demonstration and educational outreach.

The Sacramento River Agriculture Implementation Group (AIG), a coalition of stakeholders organized by CURES and formed out of the Sacramento River Watershed Program (SRWP), Organophosphate Focus Group (OPFG) subcommittee, is leading an effort to reduce runoff and pesticide loading from dormant season orchard sprays in the Sacramento River through demonstration farm, outreach and education programs. The program is similar in scope to this proposal, although its primary emphasis is on storm water NPS runoff. The outreach and education program is targeted to farmers and PCAs in the Sacramento River watershed and will be assisted by pesticide dealers, county Agricultural Commissioners and other stakeholders in the watershed. The proposed project in the SJR is similar in its outreach scope to the work done and in progress in the Sacramento River watershed. However, differences in crop type, hydrology, and constituent effects from both dormant spraying and irrigation runoff warrant independent efforts in the SJR watershed to ensure that management efforts are appropriate to the region. Successful practices identified in the dormant orchard demonstration farms in the Sacramento River watershed will be useful as this proposed project is implemented in the SJR watershed.

3. Request for next phase funding

N/A

4. Previous recipients of Calfed program or CVPIA funding

CURES was recently awarded a CALFED grant from the Watershed Program entitled "Promotion of Farming Best Management Practices and Calibration Technology to Mitigate OP Pesticide Runoff into the Sacramento River Watershed." This outreach and education program is targeted at farmers and PCAs. The project goal is to raise the awareness level of growers in the Sacramento River watershed about pest management strategies, pesticide application methods and on-site practices that can minimize runoff of dormant orchard pesticides after winter storms, thereby improving water quality and the ecosystem.

5. System wide ecosystem benefits

Education, cooperation, and an adaptive management approach described in this proposal are important aspects in attaining the regional and system-wide goal of protecting and enhancing the SJR and bay-delta system ecosystem. Riparian landowners' participation in the outreach effort and voluntary adoption of MP to reduce pesticide loading, as well as other constituents such as nutrients and sediment in agriculture drainage runoff, will lead to improved water quality and restoration of ecosystem habitats and their functions. Improved ecosystem conditions are particularly important to the recovery of at-risk species in the region that are dependent on the Delta and other connected watersheds.

The region-wide outreach effort will emphasize collaboration and integration among landowner, crop input distributors, and other stakeholder groups to promote effective regional runoff management. The

evaluation of proposed outreach efforts and demonstration projects would provide valuable information on conducting effective outreach programs that can be applied to other watersheds. In addition to water quality and ecosystem improvements, information gained through demonstration sites could be valuable for TMDL implementation programs for the SJR watershed as well as other watersheds that are adversely affected by pesticides and nutrients in agriculture runoff.

6. Additional information for proposal containing land acquisition

Land acquisition is not a component of this proposal.

C. Qualifications

This project will be organized and managed by The Coalition for Urban/Rural Environmental Stewardship (CURES). Several tasks and sub-tasks will be subcontracted to the California Water Institute (CWI) and the Central Valley Regional Water Quality Control Board (CVRWQCB).

CURES

CURES is a non-profit organization formed to address environmental stewardship issues relating to the safe use of crop protection products. CURES operates by forming coalitions with interested groups in agriculture, industry, academia and government to develop funding and work on solutions to pesticide and nutrient-related problems. The CURES Board of Trustees is made up of individuals committed to this goal. Parry Klassen, the CURES Executive Director, is himself an orchard grower whose career in agricultural communications spans 20 years. CURES has numerous past and current projects related to pesticide stewardship and is fully capable of implementing the projects described in this proposal. CURES relies on the financial management expertise of Springer & Schletewitz Accountancy Corp., Fresno, to assist CURES in tracking budgets and administering funds of all projects. This firm is experienced in complex budget management for large agricultural firms and various small and large businesses.

An independent Board of Trustees chaired by Len Richardson, editor of *California Farmer* magazine, sets priorities for CURES. Additional CURES board members include; Lon H. Records, President, Target Specialty Products; Jim Poorbaugh, Vice President, Monrovia Nursery; R. Mark Layman, Division Manager, Helena Chemical Company; Therese St. Peter, Zeneca Ag Products, Inc.; and Bryan Stuart, Dow AgroSciences.

CURES Executive Director, Parry Klassen, is responsible for managing the tasks and ensuring the deliverables outlined in this proposal. Mr. Klassen has extensive experience in writing and producing publications and managing outreach program from his years as an editor of a monthly agricultural magazine, director of public relations campaigns targeted to farmer audiences, and as owner/manager of a communications consulting business. CURES, under his direction, has conducted many stewardship programs involving pesticide education and outreach throughout California, with most of its emphasis in water quality protection in the San Joaquin and Sacramento River watersheds. Mr. Klassen will be the fiscal agent responsible for administering the funds with the accounting and project auditing performed by Springer & Schletewitz Accountancy Corp., Fresno.

CURES Research Director, Rick Sandberg, will be responsible for coordinating demonstration farm activities in the project and assisting in development and production of publications. Mr. Sandberg is a licensed Pest Control Advisor (PCA) and agronomist working with cotton, vegetable and orchard growers in Fresno and Merced Counties. He holds a Bachelors of Science and Masters degree in Plant Science with emphasis on soils and irrigation from California State University, Fresno. Mr. Sandberg

has firsthand knowledge, understanding and experience in the principles and practices of irrigation scheduling in cotton, tomatoes, grapes, and almonds as well as pest control in cotton, tomatoes, melons, alfalfa, grapes, and almonds. He also is an experienced freelance agricultural writer.

AIG and Project Collaborators

CURES will also rely on the collaboration and active participation of San Joaquin River Ag Implementation Group (AIG) to guide development and implementation of most activities in this proposal (CURES is coordinating organization for the AIG.) The AIG is participating in the development of an implementation plan for the San Joaquin River Total Maximum Daily Load (TMDL) for chlorpyrifos and diazinon.

Current confirmed collaborators for this proposal include:

- Almond Board of California;
- California Agricultural Production Consultants Association;
- California Alfalfa and Forage Association;
- California Dried Plum Board;
- California Plant Health Association;
- California Tomato Research Institute;
- California Tree Fruit Agreement;
- California Water Institute;
- Center for Irrigation Technology;
- Dow AgroSciences;
- Helena Chemical Co;
- Makhteshim-Agan;
- San Joaquin River Group;
- San Joaquin River Dissolved Oxygen Steering Committee;
- San Joaquin Valley Agricultural Commissioners and Sealers Association;
- Stanislaus County Farm Bureau;
- Stanislaus County Resources Conservation District;
- Syngenta Crop Protection;
- Natural Resources Conservation Service (NRCS); Wilbur-Ellis Co.;
- University of California Integrated Pest Management program (UC-IPM);
- Wilbur-Ellis Company.

Project Subcontractors

Subcontractors who will perform specific tasks in this proposal include the California Water Institute and the Central Valley Regional Water Quality Control Board. Biographies of key personnel who will actively work on this project are listed after each description below. The watershed coordinator for the West Stanislaus Resource Conservation District will also assist in oversight of the demonstration farms in this project.

California Water Institute

The California Water Institute was formed in October 2000 with funding from the Proposition 13 Water Bond. The mission of CWI is to provide a place where agriculture, urban, and environmental interests can be brought together to develop a shared vision of how our water resources will be utilized in an unbiased, open, collaborative process. The goals of the institute are:

- To carry out concise, comprehensive studies that will provide the direction for better future uses and conservation of California's waters;
- To promote practices that will enhance and preserve California's water resources and their quality;
- To serve as a center for research, education, planning, policy evaluation, and information transfer; to communicate the results of its research and studies with the residents of California;
- To collaborate with agencies and institutions in California to seek a positive resolution to California's complex water problems.

CWI works in close collaboration with the California State University system and the Center for Irrigation Technology. Current CWI projects cover a range of areas including: evaluation of biological oxygen demand (BOD) loading rates for land application of food processing wastewater in a contract awarded by the EPA; providing technical support and supplying qualified students to work as scientific aides for a study with the California Department of Fish and Game High Mountain Lakes Research; and providing project management and administrative services to the Central Valley Regional Quality Control Board to integrate the current TMDL and NPS pollution control programs associated with agricultural activities. Staff and scientists associated with the Institute are also conducting research on water-related issues, including evaluation of dairy manure as a fertilizer for feed crops, air injection into buried drip irrigation in tomatoes and peppers, and return flow and reuse of irrigation water.

Mary McClanahan is the Resource Specialist at CWI, which is based at California State University, Fresno (CSUF). She works with diverse groups having an interest in water-related issues in the San Joaquin Valley and throughout the state, and has over 20 years experience in the field of natural resource assessment and management, including establishing grass buffers to control erosion. She has developed, managed, and conducted research projects assessing impacts to terrestrial and riparian systems, and developed restoration plans for highly altered riparian systems. She has a Bachelors of Science degree in Range Management and a Master's degree in Plant Science with an emphasis on nutrient cycling and soil ecology from CSUF.

Ellen Burnes is an Assistant Professor in the Department of Agricultural Economics at CSUF. Her research focuses on the valuation and management of renewable natural resources with a specific interest is the interface between agriculture and the environment, and the role that regulations play in determining optimal agricultural strategies. Ms. Burnes holds a Ph.D. in natural resource economics from Oregon State University. In Oregon, she evaluated water quantity and quality issues on a governor's task force to research and write *The State of the Environment in Oregon*: a cross-discipline examination of ecosystem and human relations across the state. She holds an MBA from the University

of Texas at Austin with a focus on natural resource management and has worked with the Business Council for Sustainable Development for the Gulf of Mexico where she developed guidelines for an integrated management plan for the Gulf.

Tim Jacobsen has worked in agricultural irrigation for 20 years as a designer and installer of drip systems and as an irrigation consultant. He earned a Bachelor of Science degree in soil science from Cal Poly, San Luis Obispo and his MS in plant science from CSUF. He is currently working for the Center for Irrigation Technology at CSUF where he is responsible for coordinating educational seminars on topics related to irrigation.

Dr. Mark Somma is an Associate Professor of Political Science in the Department of Political Science at CSUF. Dr. Somma is also on the graduate faculty of the Master's Program in Public Administration and serves on the Kenneth L. Maddy Institute Executive Committee. He has conducted numerous surveys, using a variety of methodologies, among such diverse groups as police officers, farmers and ranchers, and environmentalists. Much of his survey research has been published in political science and public administration journals, including published research on West Texas irrigation politics and policy.

CVRWQCB

The Central Valley Regional Water Quality Control Board (CVRWQCB) is one of nine Regional Boards established under the Porter-Cologne Water Quality Act of 1969. The act, which also established the State Water Resources Control Board, renamed the Regional Water Pollution Control Boards established under the Dickey Water Pollution Act enacted by the State of California in 1949 and broadened the boards' authority. The boards have the primary responsibility of protecting water quality in California. Some of the activities the Regional Boards are involved with include water quality control planning, regulatory control, environmental monitoring and enforcement actions. The CVRWQCB's activities encompass the Central Valley region.

The water quality monitoring portion of this proposal will be coordinated by the CVRWQB's San Joaquin River (SJR) TMDL Unit. TMDLs are required under section 303d of the Federal Clean Water Act for all impaired waterbodies. The TMDL process provides a flexible assessment and planning framework for identifying load reductions or other actions needed to attain water quality standards. Currently, TMDLs are under development for specific waterbodies in the San Joaquin watershed impaired by dissolved oxygen, salt, selenium, chlorpyrifos and diazinon. The SJR TMDL Unit is also involved with watershed monitoring programs during the dormant spray season and the growing season.

Emilie Reyes is an environmental scientist with the SJR TMDL Unit. She has more than seven years of laboratory and field research experience in toxicology and biology. As researcher in aquatic toxicology with the University of California, Davis, she was involved in projects examining water quality issues in the Sacramento and San Joaquin River watersheds. In association with the Moroccan Administration of Waters and Forests, she coordinated and conducted collaborative biological research studies at a national park while working as a volunteer in the Peace Corps Agriculture and Environment Program.

Shakoora Azimi-Gaylon is an environmental scientist with the SJR TMDL Unit. She has over fifteen years professional experience in chemistry, managing both private sector analytical laboratories and field operations. While working for consulting engineering firms, she managed several environmental projects with monitoring and clean up tasks. Ms. Azimi-Gaylon also has extensive experience working on designing monitoring and environmental data quality assurance plans.

West Stanislaus Resource Conservation District

Norman W. Crow, WSRCD Watershed Coordinator and fifth generation farmer from Crows Landing, CA, is a grower of diversified vegetable and row crops, fruit and nut tree crops. Mr. Crow has been a Director and Chairman of the West Stanislaus Resource Conservation District (WSRCD) for over 25 years and a proactive leader of sediment reduction of runoff from irrigated farm land. He has authored or co-authored more than eight studies on water quality issues. Currently, Mr. Crow is Watershed Coordinator for the East and West Stanislaus Resource Conservation Districts. His top priority is improving water quality of the San Joaquin River and its tributaries. Mr. Crow earned an A.S. in Plant Science from Modesto Junior College and a Bachelor of Science in Agricultural Economics and Business Management from U.C. Davis.

Denny Design

For artwork and layout of all its published materials, CURES relies on Denny Design, Woodland, CA. Sean Denny, owner, has more than 20 years experience in graphic arts and production design for a wide range of clients. His understanding and experience in agriculture in the Sacramento Valley make him well-suited to develop materials that are usable and understandable to farmers. Projects in this proposal worked on by Denny Design will be subcontracted directly through CURES.

D. Cost

1. Budget

In addition to the budget summary posted on the website, a detailed breakdown of the 3-year budget has been attached.

2. Cost sharing

In contacting the groups listed as collaborators for this proposal, a request was made to commit to cost-sharing. While none of the groups could provide letters of commitments or contracts by the PSP deadline, several gave tentative approval. There were two primary reasons for not getting commitments or approval by the deadline: many groups had to take the requests to Boards of Directors or top management, which don't meet until the last quarter of the year and they couldn't give approval by the deadline; the second was the dire financial condition of California agriculture in 2001, which has left agricultural groups and companies struggling to meet normal costs of operation. However, the applicant plans to continue pursuing cost-sharing commitments from collaborators after the October 5 deadline. CURES will also be submitting a proposal for funding to the California Department of Food and Agriculture, Fertilizer Research and Education Program (FREP) in their March 2002 PSP for at least $50,000 per year in funds for this project. Collaborators who have given tentative approval to cost-sharing for this project:

Dow AgroSciences	$30,000
Makhteshim-Agan	30,000

E. Local involvement

A primary component of this project is working closely with multiple, local stakeholders in the SJR watershed, including but not limited to the project collaborators. The proposal has the support of all the commodity groups that represent the targeted crops; all the Agricultural Commissioners whose counties

encompass the SJR watershed; the major retail sellers of fertilizers and pesticides who operate in the SJR watershed; the regional chapter and state organization representing PCAs; the largest irrigation districts operating in the project area; among other local groups (see complete list under Qualifications). These people represent San Joaquin Valley farmer's primary source of information about agriculture, irrigation and crop production techniques. This project will facilitate efforts to provide solutions to the irrigation return flow problem while availing itself to the wealth of expertise afforded by this close relationship. This project will also coordinate with other CALFED program elements such as the UC Pesticide/Water Quality interdisciplinary approach that is currently funded by the CALFED Ecosystem Restoration Program. The strengths of the stakeholders who participate in the San Joaquin Ag Implementation Group as it works through a pesticide TMDL implementation plan offers assurance that these efforts will continue beyond the timeframe of this project. There are no anticipated third party impacts from this proposal.

F. Compliance with standard terms and conditions

CURES agrees to comply with all of the standard State and Federal contract terms as described in Attachments D and E of the PSP.

G. Literature cited

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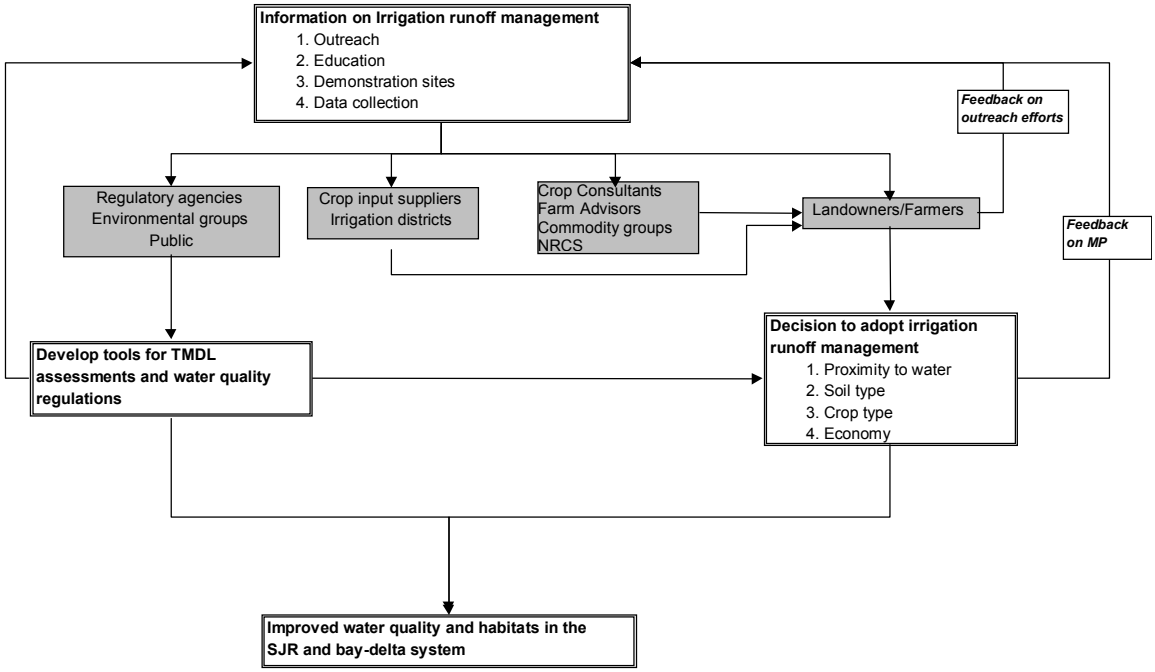
Attachment 1

Figure 1. Map of project area. The demonstration sites will be selected fields in the counties of Merced, Madera, Stanislaus and San Joaquin. Education and outreach efforts will be basin-wide.

Attachment 2

Figure 2. Conceptual Model



Attachment 3

Table 1. Management Practices

Management Practice	Description	Examples
Tailwater Recirculation systems	Facility to collect, store, and transport irrigation water for reuse in a farm distribution system.	
Fresh water blending systems	Dilute drainage water with fresh water to reduce impact of salinity on crops and surrounding environment.	
Constructed Wetlands	Lowland pond with vegetation to filter tailwater	
PAM (polyacrylamide)	Polymer that has proved very effective in reducing erosion by preventing sediment transport in irrigation water	Furrow Irrigation Applications
Biofiltration	Filtering of tailwater through vegetation	Grass filter strips Vegetated Canals Potted vegetation in canals
Humic Acid	Organic liquid that increases water infiltration and shows promise in possible breakdown of pesticides	Field applications pre-pesticide spray Return flows recirculated through activated agents (humic acid)
Pesticide and nutrient BMPs	Management practices that reduce runoff and leaching of pesticides and nutrients	Product selection Irrigation Scheduling Treatment timing Application (calibration, rates)

Attachment 4 ***Evaluate, Demonstrate and Promote Management Practices to Reduce***
Table 2: Work Schedule ***Impacts of Irrigation Drainage within the San Joaquin River Watershed***

	**2002 **					**2003**												**\ 2004**												**\ 2005**										
Month / **Task**	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O				
Form management team (MT)	X	X	X	X																																				
Organize MT meetings			X		X		X		X							X		X		X		X						X		X		X		X					
MT meets				X		X		X		X							X		X		X		X						X		X		X		X	X	X	
MT project Reccs					X		X		X		X							X		X		X		X						X		X		X	X	X		
CWI Regional Ag Survey	X	X	X	X	X																																			
CWI Compile data			X	X	X	X																																		
CWI Survey reporting							X																																	
Setup/manage demo farm sites	X	X	X	X	X	X	X	X	X	X	X					X	X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X				
CVRWQCB farm monitoring							X	X	X	X	X								X	X	X	X	X								X	X	X	X	X	X				
CWI MP evaluate						X	X	X	X	X	X							X	X	X	X	X	X								X	X	X	X	X	X				
Grower intro letter / postcards						X												X												X										
Demo farm Booklets							X												X												X									
Management practice booklets							X																																	
Annual Directory								X												X												X								
River map								X																																
Newsletter				X			X		X			X				X			X		X			X				X			X		X			X	X		
Web updates						X	X	X	X	X	X	X	X					X	X	X	X	X	X	X						X	X	X	X	X	X	X				
Grower/PCA meetings		X	X	X	X	X						X	X	X	X	X	X	X						X	X	X	X	X	X	X									
Field days							X	X	X	X	X								X	X	X	X	X								X	X	X	X	X	X				

Collaborate with groups	X	X	X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X	X	X	X	X				X	X	X	X	X	X	X	X	X	X
Survey growers/ evaluate prog							X	X	X	X	X	X								X	X	X	X	X								X	X	X	X	X	X	X
CALFED Reporting			X			X			X			X			X			X			X			X			X			X			X			X			X

EVALUATE, DEMONSTRATE AND PROMOTE MANAGEMENT PRACTICES TO REDUCE IMPACTS OF IRRIGATION DRAINAGE WITHIN THE SAN JOAQUIN RIVER WATERSHED						
	Hrs	Units	$/hour or $/unit	Sub-Total $	Total $/subtask	Total $/task
Year 1						
Task 1. Planning and Project Management						
1.1 Project management						
1.1 a. Formation of management team (MT)	15	1	$ 120.00	$ 1,800		
1.1 b. Organize MT meetings (4 per year)	20	1	$ 120.00	$ 2,400		
1.1 c. Attend MT meetings (4 per year)	32	1	$ 120.00	$ 3,840		
1.1 d. Compile MT recommendations (4 docs per year)	40	1	$ 120.00	$ 4,800	$ 12,840	
1.2 Recruitment of landowners/farmers, develop plans						
1.2 a. Recruitment of landowners/farmers	10	6	$ 120.00	$ 7,200		
1.2 b. Development of plans for demonstration site #1	15	1	$ 120.00	$ 1,800		
1.2 c. Development of plans for demonstration site #2	15	1	$ 120.00	$ 1,800		
1.2 d. Development of plans for demonstration site #3	15	1	$ 120.00	$ 1,800		
1.2 e. Development of plans for demonstration site #4	15	1	$ 120.00	$ 1,800		
1.2 f. Development of plans for demonstration site #5	15	1	$ 120.00	$ 1,800		
1.2 g. Development of plans for demonstration site #6	15	1	$ 120.00	$ 1,800	$ 18,000	$ 30,840
Task 2. Data Collection Activities (CWI)						
2.1 Data Collection	360	1	$ 35.00	$ 12,600	$ 12,600	
2.2 Data Compilation	120	1	$ 35.00	$ 4,200	$ 4,200	
2.3 Project Management	160	1	$ 40.00	$ 6,400	$ 6,400	
2.4 Report Writing	80	1	$ 35.00	$ 2,800	$ 2,800	
2.5 Travel (6 trips @ 250 miles/trip)	1	1500	$ 0.40	$ 600	$ 600	
2.6 Lodging (6 nights @ $150/night)	1	6	$ 150.00	$ 900	$ 900	
2.7 Supplies	1	1	$ 800.00	$ 800	$ 800	
2.8 Indirect Costs @ 15%	1	1	$ 4,245.00	$ 4,245	$ 4,245	$ 32,545
Task 3. Demonstration Activities						
3.1 Setup and ongoing management of demonstration farms						
3.1 a. Project Management	60	1	$ 120.00	$ 7,200		
3.1 b. RCD Watershed Coordinator	320	1	$ 45.00	$ 14,400		
3.1 c. Tailwater return flow site	120	1	$ 70.00	$ 8,400		
3.1 d. Fresh water blending system site	120	1	$ 70.00	$ 8,400		
3.1 e. Constructed wetlands site	120	1	$ 70.00	$ 8,400		
3.1 f. PAM (polyacrylamide) site	120	1	$ 70.00	$ 8,400		
3.1 g. Biofiltration site	120	1	$ 70.00	$ 8,400		
3.1 h. Humic Acid	120	1	$ 70.00	$ 8,400	$ 72,000	
3.2 Monitoring (Regional Board)						
3.2 a. Monitoring design and coordination						
3.2 a. 1. University Professor	84	1	$ 62.01	$ 5,209		
3.2 a. 2. ES 111	55	1	$ 67.21	$ 3,697		
3.2 b. Field Sampling						
3.2 b. 1. ES 111	110	1	$ 67.21	$ 7,393		
3.2 b. 2. Student Intern	504	1	$ 20.22	$ 10,191		
3.2 b. 3. Student Intern	504	1	$ 20.22	$ 10,191		
3.2 c. Data Evaluation and Reporting						
3.2 c. 1. University Professor	84	1	$ 62.01	$ 5,209		
3.2 c. 2. ES 111	55	1	$ 67.21	$ 3,697		
3.2 d. Organophosphorus Pesticide Analysis	1	1	$ 50,600.00	$ 50,600		
3.2 e. Pyrethroid Class Pesticide Analysis	1	1	$ 11,550.00	$ 11,550		
3.2 f. Nutrients and Sediment Analysis	1	1	$ 21,000.00	$ 21,000		
3.2 g. Water Column Toxicity Testing	1	1	$ 20,000.00	$ 20,000		
3.2 h. Supplies	1	1	$ 8,000.00	$ 8,000	$156,736	

3.3 Evaluation (CWI) The evaluations will include the development of estimated costs and design options for each MP, an analysis of the constituent removal efficiency of each MP based on the CVRWQCB data, a feasibility evaluation to determine viability of adapting each MP to current farming operations within the watershed, and the impact of MPs on irrigation runoff quantity and changes in soil salt levels.						
3.3 a. Salaries (6 MPs, all subtasks)	1	6	$ 9,880.00	$ 59,280		
3.3 b. Benefits	1	6	$ 3,842.22	$ 23,053		
3.3 c. Travel (6 MPs, all subtasks)	1	6	$ 644.44	$ 3,867		
3.3 d. Equipment (6 MPs, all subtasks)	1	6	$ 1,666.67	$ 10,000		
3.3 e. Supplies (6 MP's, all subtasks)	1	6	$ 200.00	$ 1,200		
3.3 f. Indirect costs @ 15%	1	6	$ 2,435.00	$ 14,610	$112,010	$ 340,746
Task 4. Educational/Outreach Activities and Materials						
4.1 Develop Educational Materials						
4.1 a. Promotion Letter announcing project						
4.1 a. 1. Write Initial Promotion Letter	4	1	$ 120.00	$ 480		
4.1 a. 2. Promotion Letter (Materials and Printing)	1	5000	$ 0.30	$ 1,500		
4.1 a. 3. Mail Initial Promotion Letter	1	5000	$ 0.40	$ 2,000		
4.1 b. Demonstration Site Booklets (6)						
4.1 b. 1. Develop/Write/Layout Demo Site Booklets (6)	40	6	$ 120.00	$ 28,800		
4.1 b. 2. Production Assistant	20	6	$ 70.00	$ 8,400		
4.1.b 3. Layout/artwork for booklet (6)	6	1	$ 3,500.00	$ 21,000		
4.1 b. 4. Print Demo Site Booklets (6)	6	2000	$ 2.50	$ 30,000		
4.1 b. 5. Distribute Demo Site Booklets (6)	6	2000	$ 1.50	$ 18,000		
4.1 c. Management Practices Information Booklets (8)						
4.1 c. 1. Develop/Write MP Info Booklets (8)	40	8	$ 120.00	$ 38,400		
4.1 c. 2. Production Assistant	20	8	$ 70.00	$ 11,200		
4.1 c. 3. Layout/Artwork for booklet (8)	8	1	$ 4,000.00	$ 32,000		
4.1 c. 4. Print MP Info Booklets (8)	8	2000	$ 2.50	$ 40,000		
4.1 c. 5. Distribute MP Info Booklets (8)	8	2000	$ 1.50	$ 24,000		
4.1 d. Annual Directory of Services						
4.1 d. 1. Develop/Write Directory of Services	150	1	$ 120.00	$ 18,000		
4.1 d. 2. Production Assistant	50	1	$ 70.00	$ 3,500		
4.1 d 3. Layout/artwork for directory	1	1	$ 6,000.00	$ 6,000		
4.1 d. 4. Print Directory	1	2000	$ 8.00	$ 16,000		
4.1 d. 5. Distribute Directory	1	2000	$ 3.00	$ 6,000		
4.1 e. Watershed Map Posters						
4.1 e. 1. Develop Watershed Map Posters	10	1	$ 120.00	$ 1,200		
4.1 e. 2. Map artwork	1	1	$ 4,000.00	$ 4,000		
4.1 e. 3. Print Watershed Map Posters	1	5000	$ 4.00	$ 20,000		
4.1 e. 4. Distribute Watershed Map Posters (in-kind also)	1	5000	$ 2.00	$ 10,000		
4.1 f. Quarterly Newsletter (Return Flow Updates)						
4.1 f. 1. Develop/write newsletter (4 issues)	40	4	$ 120.00	$ 19,200		
4.1 f. 2. Layout/artwork (4 issues)	1	4	$ 250.00	$ 1,000		
4.1 f. 3. Print newsletter (4 issues)	4	5000	$ 0.55	$ 11,000		
4.1 f. 4. Newsletter postage (4 issues)	4	5000	$ 0.45	$ 9,000		
4.1 g. Website						
4.1 g. 1. Task Coordination	20	1	$ 120.00	$ 2,400		
4.1 g. 2. CURES website updates, info postings	120	1	$ 75.00	$ 9,000	$392,080	
4.2 Farmer/Landowner/PCA Meeting Outreach						
4.2 a. Setup/Organize presentations at grower meetings	15	1	$ 120.00	$ 1,800		
4.2 b. Develop Presentation slide show	30	1	$ 120.00	$ 3,600		
4.2 c. Give 15 Presentations	45	1	$ 120.00	$ 5,400		
4.2 d. Travel Expenses for 15 Presentations	1	15	$ 250.00	$ 3,750	$ 14,550	

4.3 Demonstration Plot Field Days						
4.3 a. Setup/Organize field days (6)	10	6	$ 120.00	$ 7,200		
4.3 b. Write field day press release for media (6)	5	6	$ 120.00	$ 3,600		
4.3 c. Write grower direct mail promotions (6)	5	6	$ 120.00	$ 3,600		
4.3 d. Print direct mail promotions	6	5000	$ 0.55	$ 16,500		
4.3 e. Postage for direct mail promotions	6	5000	$ 0.45	$ 13,500		
4.3 f. Attendees lunches for 6 field days	1	6	$ 800.00	$ 4,800		
4.3 g. CWI manager attendance (6)	8	6	$ 35.00	$ 1,680		
4.3 h. Project Coordinator attendance (6)	8	6	$ 120.00	$ 5,760		
4.3 i. Demo site manager attendance (6)	8	6	$ 70.00	$ 3,360	$ 60,000	
4.4 Collaboration with local groups/agencies						
4.4 a. Watershed groups, stakeholders						
4.4 a. 1. Collaboration with watershed groups	60	1	$ 120.00	$ 7,200		
4.4 a. 2. Travel expenses	1	20	$ 250.00	$ 5,000		
4.4 b. Pesticide/Fertilizer Dealers, PCA's						
4.4 b. 1. Collaboration with pesticide/fertilizer dealers	30	1	$ 120.00	$ 3,600		
4.4 b. 2. Travel expenses	1	10	$ 250.00	$ 2,500	$ 18,300	
4.5 Monitoring and Evaluation of Education/Outreach						
4.5 a. Write meeting survey (6)	12.5	6	$ 45.00	$ 3,375		
4.5 b. Write mailing survey	30	1	$ 45.00	$ 1,350		
4.5 c. Creation of database program	8	1	$ 45.00	$ 360		
4.5 d. Analysis of 1st year data	12	1	$ 45.00	$ 540		
4.5 e. Interim report writing	25	1	$ 45.00	$ 1,125		
4.5 f. Travel (1 trip @ 250 miles/trip)	1	250	$ 0.35	$ 86		
4.5 g. Lodging (1 night @ $150/night)	1	1	$ 150.00	$ 150		
4.5 h. Student Assistant	35	1	$ 20.00	$ 700	$ 7,686	$ 492,616
Task 5. CALFED Reporting						
5.1 Quarterly Report # 1	20	1	$ 120.00	$ 2,400		
5.2 Quarterly Report # 2	20	1	$ 120.00	$ 2,400		
5.3 Quarterly Report # 3	20	1	$ 120.00	$ 2,400		
5.4 Quarterly Report # 4	20	1	$ 120.00	$ 2,400	$ 9,600	$ 9,600
				Year 1 Total		**$ 906,347**
	CURES Administrative Overhead (3%)					**$ 27,190.41**
				Year 1 Grand Total		**$ 933,537**
Year 2						
Task 1. Planning and Project Management						
1.1 Project management						
1.1 a. Formation of management team (MT)	15	1	$ 120.00	$ 1,800		
1.1 b. Organize MT meetings (4 per year)	20	1	$ 120.00	$ 2,400		
1.1 c. Attend MT meetings (4 per year)	32	1	$ 120.00	$ 3,840		
1.1 d. Compile MT recommendations (4 docs per year)	40	1	$ 120.00	$ 4,800	$ 12,840	
1.2 Recruitment of landowners/farmers, develop plans						
1.2 a. Task Management	5	6	$ 120.00	$ 3,600		
1.2 b. Development of plans for demonstration site #1	15	1	$ 120.00	$ 1,800		
1.2 c. Development of plans for demonstration site #2	15	1	$ 120.00	$ 1,800		
1.2 d. Development of plans for demonstration site #3	15	1	$ 120.00	$ 1,800		
1.2 e. Development of plans for demonstration site #4	15	1	$ 120.00	$ 1,800		
1.2 f. Development of plans for demonstration site #5	15	1	$ 120.00	$ 1,800		
1.2 g. Development of plans for demonstration site #6	15	1	$ 120.00	$ 1,800	$ 14,400	$ 27,240
Task 2. Data Collection Activities (CWI) (Year 1 only)						
Task 3. Demonstration Activities						
3.1 Setup and ongoing management of demonstration farms						
3.1 a. Project Management	60	1	$ 120.00	$ 7,200		
3.1 b. RCD Watershed Coordinator	320	1	$ 45.00	$ 14,400		
3.1 c. Tailwater return flow site	120	1	$ 70.00	$ 8,400		
3.1 d. Fresh water blending system site	120	1	$ 70.00	$ 8,400		

3.1 e. Constructed wetlands site	120	1	$ 70.00	$ 8,400		
3.1 f. PAM (polyacrylamide) site	120	1	$ 70.00	$ 8,400		
3.1 g. Biofiltration site	120	1	$ 70.00	$ 8,400		
3.1 h. Humic Acid	120	1	$ 70.00	$ 8,400	$ 72,000	
3.2 Monitoring (Regional Board)						
3.2 a. Monitoring design and coordination						
3.2 a. 1. University Professor	84	1	$ 62.01	$ 5,209		
3.2 a. 2. ES 111	55	1	$ 67.21	$ 3,697		
3.2 b. Field Sampling						
3.2 b. 1. ES 111	110	1	$ 67.21	$ 7,393		
3.2 b. 2. Student Intern	504	1	$ 20.22	$ 10,191		
3.2 b. 3. Student Intern	504	1	$ 20.22	$ 10,191		
3.2 c. Data Evaluation and Reporting						
3.2 c. 1. University Professor	84	1	$ 62.01	$ 5,209		
3.2 c. 2. ES 111	55	1	$ 67.21	$ 3,697		
3.2 d. Organophosphorus Pesticide Analysis	1	1	$ 50,600.00	$ 50,600		
3.2 e. Pyrethroid Class Pesticide Analysis	1	1	$ 11,550.00	$ 11,550		
3.2 f. Nutrients and Sediment Analysis	1	1	$ 21,000.00	$ 21,000		
3.2 g. Water Column Toxicity Testing	1	1	$ 20,000.00	$ 20,000		
3.2 h. Supplies	1	1	$ 6,000.00	$ 6,000	$154,736	
3.3 Evaluation (CWI) See description in year 1						
3.3 a. Salaries (6 MPs, all subtasks)	1	6	$ 9,880.00	$ 59,280		
3.3 b. Benefits	1	6	$ 3,842.22	$ 23,053		
3.3 c. Travel (6 MPs, all subtasks)	1	6	$ 644.44	$ 3,867		
3.3 d. Equipment (6 MPs, all subtasks)	1	6	$ 1,666.67	$ 10,000		
3.3 e. Supplies (6 MP's, all subtasks)	1	6	$ 200.00	$ 1,200		
3.3 f. Indirect costs @ 15%	1	6	$ 2,435.00	$ 14,610	$112,010	$ 338,746
Task 4. Educational/Outreach Activities and Materials						
4.1 Develop Educational Materials						
4.1 a. Reminder Postcards						
4.2 a. 1. Write Reminder Postcards	5	1	$ 120.00	$ 600		
4.2 a. 2. Reminder Postcards (Materials and Printing)	1	5000	$ 0.55	$ 2,750		
4.2 a. 3. Mail Reminder Postcards	1	5000	$ 0.55	$ 2,750		
4.1 b. Demonstration Site Booklets (6) Update						
4.1 b. 1. Develop/Write/Layout Demo Site Booklets (6)	40	6	$ 120.00	$ 28,800		
4.1 b. 2. Production Assistant	20	6	$ 70.00	$ 8,400		
4.1.b 3. Layout/artwork for booklet (6)	6	1	$ 2,000.00	$ 12,000		
4.1 b. 4. Print Demo Site Booklets (6)	6	2000	$ 2.50	$ 30,000		
4.1 b. 5. Distribute Demo Site Booklets (6)	6	2000	$ 1.50	$ 18,000		
4.1 c. Management Practices Information Booklets (8) Update						
4.1 c. 1. Develop/Write MP Info Booklets (8)	30	8	$ 120.00	$ 28,800		
4.1 c. 2. Production Assistant	15	8	$ 70.00	$ 8,400		
4.1 c. 3. Layout/Artwork for booklet (8)	8	1	$ 2,000.00	$ 16,000		
4.1 c. 4. Print MP Info Booklets (8)	8	2000	$ 2.50	$ 40,000		
4.1 c. 5. Distribute MP Info Booklets (8)	8	2000	$ 1.50	$ 24,000		
4.1 d. Annual Directory of Services						
4.1 d. 1. Develop/Write Directory of Services	100	1	$ 120.00	$ 12,000		
4.1 d. 2. Production Assistant	50	1	$ 70.00	$ 3,500		
4.1 d. 3. Layout/artwork for directory	1	1	$ 6,000.00	$ 6,000		
4.1 d. 4. Print Directory	1	2000	$ 8.00	$ 16,000		
4.1 d. 5. Distribute Directory	1	2000	$ 3.00	$ 6,000		
4.1 e. Quarterly Newsletter (Return Flow Updates)						
4.1 e. 1. Develop/write newsletter (4 issues)	40	4	$ 120.00	$ 19,200		
4.1 e. 2. Layout/artwork (4 issues)	1	4	$ 250.00	$ 1,000		
4.1 e. 3. Print newsletter (4 issues)	4	5000	$ 0.55	$ 11,000		
4.1 e. 4. Newsletter postage (4 issues)	4	5000	$ 0.45	$ 9,000		
4.1 f. Website						

4.1 f. 1. Task Coordination	20	1	$ 120.00	$ 2,400		
4.1 f. 2. CURES website updates, info postings	120	1	$ 75.00	$ 9,000	$315,600	
4.2 Farmer/Landowner/PCA Meeting Outreach						
4.2 a. Setup/Organize presentations at grower meetings	15	1	$ 120.00	$ 1,800		
4.2 b. Develop Presentation slide show	30	1	$ 120.00	$ 3,600		
4.2 c. Give 15 Presentations	45	1	$ 120.00	$ 5,400		
4.2 d. Travel Expenses for 15 Presentations	1	15	$ 250.00	$ 3,750	$ 14,550	
4.3 Demonstration Plot Field Days						
4.3 a. Setup/Organize field days (6)	10	6	$ 120.00	$ 7,200		
4.3 b. Write field day press release for media (6)	5	6	$ 120.00	$ 3,600		
4.3 c. Write grower direct mail promotions (6)	5	6	$ 120.00	$ 3,600		
4.3 d. Print direct mail promotions	6	5000	$ 1.50	$ 45,000		
4.3 e. Postage for direct mail promotions	6	5000	$ 0.50	$ 15,000		
4.3 f. Attendees lunches for 6 field days	1	6	$ 800.00	$ 4,800		
4.3 g. CWI manager attendance (6)	8	6	$ 35.00	$ 1,680		
4.3 h. Project Coordinator attendance (6)	8	6	$ 120.00	$ 5,760		
4.3 i. Demo site manager attendance (6)	8	6	$ 70.00	$ 3,360	$ 90,000	
4.4 Collaboration with local groups/agencies						
4.4 a. Watershed groups, stakeholders						
4.4 a. 1. Collaboration with watershed groups	60	1	$ 120.00	$ 7,200		
4.4 a. 2. Travel expenses	1	20	$ 250.00	$ 5,000		
4.4 b. Pesticide/Fertilizer Dealers, PCA's						
4.4 b. 1. Collaboration with pesticide/fertilizer dealers	30	1	$ 120.00	$ 3,600		
4.4 b. 2. Travel expenses	1	10	$ 250.00	$ 2,500	$ 18,300	
4.5 Monitoring and Evaluation of Education/Outreach						
4.5 a. Revise meeting survey (6)	2.5	6	$ 45.00	$ 675		
4.5 b. Revise mailing survey	30	1	$ 45.00	$ 1,350		
4.5 c. Additions to database	6	1	$ 45.00	$ 270		
4.5 d. Analysis of 2nd year data	10	1	$ 45.00	$ 450		
4.5 e. Interim report writing	25	1	$ 45.00	$ 1,125		
4.5 f. Travel (1 trip @ 250 miles/trip)	1	250	$ 0.35	$ 86		
4.5 g. Lodging (2 night @ $150/night)	1	2	$ 150.00	$ 300		
4.5 h. Student Assistant	30	1	$ 20.00	$ 600	$ 4,856	$ 443,306
Task 5. CALFED Reporting						
5.1 Quarterly Report # 1	20	1	$ 120.00	$ 2,400		
5.2 Quarterly Report # 2	20	1	$ 120.00	$ 2,400		
5.3 Quarterly Report # 3	20	1	$ 120.00	$ 2,400		
5.4 Quarterly Report # 4	20	1	$ 120.00	$ 2,400	$ 9,600	$ 9,600
				Year 2 Total		**$ 818,892**
	CURES Administrative Overhead (3%)					**$ 24,566.76**
				Year 2 Grand Total		**$ 843,459**
Year 3						
Task 1. Planning and Project Management						
1.1 Project management						
1.1 a. Formation of management team (MT)	15	1	$ 120.00	$ 1,800		
1.1 b. Organize MT meetings (4 per year)	20	1	$ 120.00	$ 2,400		
1.1 c. Attend MT meetings (4 per year)	32	1	$ 120.00	$ 3,840		
1.1 d. Compile MT recommendations (4 docs per year)	40	1	$ 120.00	$ 4,800	$ 12,840	
1.2 Recruitment of landowners/farmers, develop plans						
1.2 a. Task Management	5	6	$ 120.00	$ 3,600		
1.2 b. Development of plans for demonstration site #1	15	1	$ 120.00	$ 1,800		
1.2 c. Development of plans for demonstration site #2	15	1	$ 120.00	$ 1,800		
1.2 d. Development of plans for demonstration site #3	15	1	$ 120.00	$ 1,800		
1.2 e. Development of plans for demonstration site #4	15	1	$ 120.00	$ 1,800		
1.2 f. Development of plans for demonstration site #5	15	1	$ 120.00	$ 1,800		
1.2 g. Development of plans for demonstration site #6	15	1	$ 120.00	$ 1,800	$ 14,400	$ 27,240

Task 2. Data Collection Activities (CWI) (Year 1 only)						
Task 3. Demonstration Activities						
3.1 Setup and ongoing management of demonstration farms						
3.1 a. Project Management	60	1	$ 120.00	$ 7,200		
3.1 b. RCD Watershed Coordinator	320	1	$ 45.00	$ 14,400		
3.1 c. Tailwater return flow site	120	1	$ 70.00	$ 8,400		
3.1 d. Fresh water blending system site	120	1	$ 70.00	$ 8,400		
3.1 e. Constructed wetlands site	120	1	$ 70.00	$ 8,400		
3.1 f. PAM (polyacrylamide) site	120	1	$ 70.00	$ 8,400		
3.1 g. Biofiltration site	120	1	$ 70.00	$ 8,400		
3.1 h. Humic Acid	120	1	$ 70.00	$ 8,400	$ 72,000	
3.2 Monitoring (Regional Board)						
3.2 a. Monitoring design and coordination						
3.2 a. 1. University Professor	84	1	$ 62.01	$ 5,209		
3.2 a. 2. ES 111	55	1	$ 67.21	$ 3,697		
3.2 b. Field Sampling						
3.2 b. 1. ES 111	110	1	$ 67.21	$ 7,393		
3.2 b. 2. Student Intern	504	1	$ 20.22	$ 10,191		
3.2 b. 3. Student Intern	504	1	$ 20.22	$ 10,191		
3.2 c. Data Evaluation and Reporting						
3.2 c. 1. University Professor	84	1	$ 62.01	$ 5,209		
3.2 c. 2. ES 111	55	1	$ 67.21	$ 3,697		
3.2 d. Organophosphorus Pesticide Analysis	1	1	$ 50,600.00	$ 50,600		
3.2 e. Pyrethroid Class Pesticide Analysis	1	1	$ 11,550.00	$ 11,550		
3.2 f. Nutrients and Sediment Analysis	1	1	$ 21,000.00	$ 21,000		
3.2 g. Water Column Toxicity Testing	1	1	$ 20,000.00	$ 20,000		
3.2 h. Supplies	1	1	$ 6,000.00	$ 6,000	$154,736	
3.3 Evaluation (CWI) See description in year 1						
3.3 a. Salaries (6 MPs, all subtasks)	1	6	$ 9,880.00	$ 59,280		
3.3 b. Benefits	1	6	$ 3,842.22	$ 23,053		
3.3 c. Travel (6 MPs, all subtasks)	1	6	$ 644.44	$ 3,867		
3.3 d. Equipment (6 MPs, all subtasks)	1	6	$ 1,666.67	$ 10,000		
3.3 e. Supplies (6 MP's, all subtasks)	1	6	$ 200.00	$ 1,200		
3.3 f. Indirect costs @ 15%	1	6	$ 2,435.00	$ 14,610	$112,010	$ 338,746
Task 4. Educational/Outreach Activities and Materials						
4.1 Develop Educational Materials						
4.1 a. Reminder Postcards						
4.1 a. 1. Write Reminder Postcards	5	1	$ 120.00	$ 600		
4.1 a. 2. Reminder Postcards (Materials and Printing)	1	5000	$ 0.55	$ 2,750		
4.1 a. 3. Mail Reminder Postcards	1	5000	$ 0.55	$ 2,750		
4.1 b. Demonstration Site Booklets (6) Update						
4.1 b. 1. Develop/Write/Layout Demo Site Booklets (6)	20	6	$ 120.00	$ 14,400		
4.1 b. 2. Production Assistant	8	6	$ 70.00	$ 3,360		
4.1.b 2. Layout/artwork for booklet (6)	6	1	$ 1,000.00	$ 6,000		
4.1 b. 3. Print Demo Site Booklets (6)	6	2000	$ 2.50	$ 30,000		
4.1 b. 4. Distribute Demo Site Booklets (6)	6	2000	$ 2.00	$ 24,000		
4.1 c. Management Practices Information Booklets (8) Update						
4.1 c. 1. Develop/Write MP Info Booklets (8)	20	8	$ 120.00	$ 19,200		
4.1 b. 2. Production Assistant	8	8	$ 70.00	$ 4,480		
4.1 c. 2. Layout/Artwork for booklet (8)	8	1	$ 1,000.00	$ 8,000		
4.1 c. 3. Print MP Info Booklets (8)	8	2000	$ 2.50	$ 40,000		
4.1 c. 4. Distribute MP Info Booklets (8)	8	2000	$ 1.50	$ 24,000		
4.1 d. Annual Directory of Services						
4.1 d. 1. Develop/Write Directory of Services	75	1	$ 120.00	$ 9,000		
4.1 b. 2. Production Assistant	50	1	$ 70.00	$ 3,500		
4.1 d. 2. Layout/artwork for directory	1	1	$ 6,000.00	$ 6,000		

4.1 d. 3. Print Directory	1	2000	$ 8.00	$ 16,000		
4.1 d. 4. Distribute Directory	1	2000	$ 3.00	$ 6,000		
4.1 e. Quarterly Newsletter (Return Flow Updates)						
4.1 e. 1. Develop/write newsletter (4 issues)	40	4	$ 120.00	$ 19,200		
4.1 e. 2. Layout/artwork (4 issues)	1	4	$ 1,500.00	$ 6,000		
4.1 e. 3. Print newsletter (4 issues)	4	5000	$ 1.50	$ 30,000		
4.1 e. 4. Newsletter postage (4 issues)	4	5000	$ 0.55	$ 11,000		
4.1 f. Website						
4.1 f. 1. Task Coordination	20	1	$ 120.00	$ 2,400		
4.1 f. 2. CURES website updates, info postings	120	1	$ 75.00	$ 9,000	$297,640	
4.2 Farmer/Landowner/PCA Meeting Outreach						
4.2 a. Setup/Organize presentations at grower meetings	15	1	$ 120.00	$ 1,800		
4.2 b. Develop Presentation slide show	20	1	$ 120.00	$ 2,400		
4.2 c. Give 15 Presentations	45	1	$ 120.00	$ 5,400		
4.2 d. Travel Expenses for 15 Presentations	1	15	$ 250.00	$ 3,750	$ 13,350	
4.3 Demonstration Plot Field Days						
4.3 a. Setup/Organize field days (6)	10	6	$ 120.00	$ 7,200		
4.3 b. Write field day press release for media (6)	5	7	$ 120.00	$ 4,200		
4.3 c. Write grower direct mail promotions (6)	5	6	$ 120.00	$ 3,600		
4.3 d. Print direct mail promotions	6	5000	$ 1.50	$ 45,000		
4.3 e. Postage for direct mail promotions	6	5000	$ 0.50	$ 15,000		
4.3 f. Attendees lunches for 6 field days	1	6	$ 800.00	$ 4,800		
4.3 g. CWI manager attendance (6)	8	6	$ 35.00	$ 1,680		
4.3 h. Project Coordinator attendance (6)	8	6	$ 120.00	$ 5,760		
4.3 i. Demo site manager attendance (6)	8	6	$ 70.00	$ 3,360	$ 90,600	
4.4 Collaboration with local groups/agencies						
4.4 a. Watershed groups, stakeholders						
4.4 a. 1. Collaboration with watershed groups	60	1	$ 120.00	$ 7,200		
4.4 a. 2. Travel expenses	1	20	$ 250.00	$ 5,000		
4.4 b. Pesticide/Fertilizer Dealers, PCA						
4.4 b. 1. Collaboration with pesticide/fertilizer dealers	60	1	$ 120.00	$ 7,200		
4.4 b. 2. Travel expenses	1	10	$ 250.00	$ 2,500	$ 21,900	
4.5 Monitoring and Evaluation of Education/Outreach						
4.5 a. Revise meeting survey (6)	2.5	6	$ 45.00	$ 675		
4.5 b. Revise mailing survey	30	1	$ 45.00	$ 1,350		
4.5 c. Additions to database	6	1	$ 45.00	$ 270		
4.5 d. Analysis of 3rd year data	10	1	$ 45.00	$ 450		
4.5 e. Final report writing	50	1	$ 45.00	$ 2,250		
4.5 f. Travel (1 trip @ 250 miles/trip)	1	250	$ 0.35	$ 86		
4.5 g. Lodging (1 night @ $150/night)	1	1	$ 150.00	$ 150		
4.5 h. Student Assistant	30	1	$ 20.00	$ 600	$ 5,831	$ 429,321
Task 5. CALFED Reporting						
5.1 Quarterly Report # 1	20	1	$ 120.00	$ 2,400		
5.2 Quarterly Report # 2	20	1	$ 120.00	$ 2,400		
5.3 Quarterly Report # 3	20	1	$ 120.00	$ 2,400		
5.4 Final Report	30	1	$ 120.00	$ 3,600	$ 10,800	$ 10,800
				Year 3 Total		**$ 806,107**
	CURES Administrative Overhead (3%)					**$ 24,183.21**
				Year 3 Grand Total		**$ 830,290**
			Cumulative Grand Total - 3 Years			**$ 2,607,286**

Parry Klassen
Coalition for Urban/Rural Environmental Stewardship
1801 I Street, Suite 200
Sacramento, CA 95814

October 3, 2001

Re: Project titled "Evaluate, Demonstrate, and Promote Management Practices to Reduce Impacts of Irrigation Drainage within the San Joaquin River Watershed."

Dear Sirs,

I am the owner of Wingsetter Ranch adjacent to the San Joaquin River in Stanislaus County near the intersection of Villa Manuche and River Roads. I have been contacted by Coalition for Urban/Rural Environmental Stewardship (CURES) concerning their CALFED Ecosystem Restoration Program proposal on irrigation return flows from irrigated farmlands. Their plans are to organize a demonstration farm on my property. I fully support the proposal and look forward to participating in the proposed actions when approved for funding.

I understand that the CURES, their consultants and certain project-essential agency personnel will be visiting my property for the purpose of implementing the proposed actions. I hereby grant access for this purpose provided that I receive adequate notice, which will not reasonably be withheld.

I understand that the project involves monitoring and I authorize that activity as part of the approved project. Also, I assume no additional liability regarding CURES related visitors to my property.

Thank you for considering me for this important project.

Sincerely,

Mickey Saso

SAN JOAQUIN VALLEY
AGRICULTURAL COMMISSIONERS AND SEALERS ASSOCIATION

FRESNO
KERN
KINGS
MADERA
MARIPOSA
MERCED
SAN JOAQUIN
STANISLAUS
TULARE

September 14, 2001

Parry Klassen, Executive Director
Coalition for Urban/Rural Environmental Stewardship
1801 I Street, Suite 200
Sacramento, CA 95814

To Whom It May Concern:

SUBJECT: CALFED Eco-Restoration Proposal

This letter is to affirm our support and commitment of your proposed CALFED project titled "Evaluate, Demonstrate and Promote Irrigation Return Flow Technologies in the San Joaquin River Watershed." This type of information is very important given the significance of the pesticide and nutrient runoff problem in the San Joaquin River Watershed.

The demonstration and promotion of new and existing irrigation return flow technologies will help CALFED achieve its objective to restore natural functions in the Bay-Delta system. Irrigation return flow management practices which reduce pesticide and nutrient runoff will protect the watershed and at the same time allow growers to utilize appropriate tools to conduct farming operations. The process used to implement this proposal will also meet CALFED's objective of working with local interests to meet the stated goals.

We support CURES in the implementation of this project and would like to thank you for developing this project and bringing it to the attention of the agricultural community.

Sincerely,

Jerry Prieto, Jr., Chairman
San Joaquin Valley Agricultural Commissioners
and Sealers Association

REPRESENTING OVER HALF OF THE AGRICULTURAL PRODUCTION OF THE STATE OF CALIFORNIA

San Joaquin River Group

P.O. Box 4060, Modesto, CA 95352 ▪ (209) 526-7405 ▪ (209) 526-7315 - Fax

- Modesto Irrigation District
- Turlock Irrigation District
- Oakdale Irrigation District
- Merced Irrigation District
- Friant Water Users Authority
- City and County of San Francisco
- South San Joaquin Irrigation District
- San Joaquin River Exchange Contractors

September 12, 2001

Parry Klassen, Executive Director
CURES
196 Bedford Avenue
Clovis, CA 93611

Re: CURES CalFed Proposal – Ecosystem Restoration Program

Dear Mr. Klassen:

The SJRG managers have reviewed your proposal to Demonstrate and Promote Irrigation Return Flow Technologies for farmers in the San Joaquin River Watershed. I am pleased to inform you that the SJRG has agreed to support your proposal and look forward to working with you.

If you have any questions, please feel free to contact me.

Sincerely,

Allen Short
Coordinator

c: SJRG

DEPARTMENT OF AGRICULTURE

Agricultural Commissioner • Weights and Measures • Animal Control

2139 WARDROBE AVENUE
MERCED, CALIFORNIA 95340-6495
TELEPHONE (209) 385-7431

MICHAEL J. TANNER
Agricultural Commissioner
Director of Weights and Measure
Director of Animal Control

GARY CASERI
Assistant Agricultural Commission

September 6, 2001

Parry Klassen
Executive Director
Coalition for Urban/Rural Environmental Stewardship
1801 I Street, Suite 200
Sacramento, CA 95814

To Whom It May Concern:

Subject: CALFED Eco-Restoration Proposal

I am writing in support of your proposed CALFED project titled "Evaluate, Demonstrate and Promote Irrigation Return Flow Technologies in the San Joaquin River Watershed". The information developed will be very important to farmers/landowners with riparian properties given the significance of the pesticide and nutrient runoff problem in the San Joaquin River Watershed.

The demonstration and promotion of new and existing irrigation return flow technologies should help CALFED achieve it's objective to help restore natural functions in the Bay-Delta system.

Irrigation return flow management practices which reduce any pesticide and nutrient laden water runoff will help protect the watershed and at the same time allow growers to utilize available or appropriate tools to conduct farming operations.

The process used to implement this proposal will also meet CALFED's objective of working with local interests to meet the stated goals.

I support CURES in this project and am willing to help distribute information developed from it to our agricultural community. We appreciate your developing this project and bringing this subject to the added attention of the agricultural industry.

Very truly yours,

Michael J. Tanner

Michael J. Tanner,
Agricultural Commissioner
Merced County

MJT/jn