

99D-121

4.5 PSP Cover Sheet (Attach to the front of each proposal)

Proposal Title: Auburn Ravine CRNP Water Quality Monitoring Project  
Applicant Name: Placer County Resource Conservation District  
Mailing Address: 251 Auburn Ravine Road, Suite 201, Auburn, CA 95603  
Telephone: (530) 885-3046  
Fax: (530) 823-5504  
Email: pcrcd@quiknet.com

Amount of funding requested: \$ 532,287.00 for 3 years

Indicate the Topic for which you are applying (check only one box).

- Fish Passage/Fish Screens
- Habitat Restoration
- Local Watershed Stewardship
- Water Quality
- Introduced Species
- Fish Management/Hatchery
- Environmental Education

Does the proposal address a specified Focused Action? x yes no

What county or counties is the project located in? Placer and Sutter

Indicate the geographic area of your proposal (check only one box):

- Sacramento River Mainstem
- Sacramento Trib: Auburn/Coon Creek
- San Joaquin River Mainstem
- San Joaquin Trib: \_\_\_\_\_
- Delta: \_\_\_\_\_
- East Side Trib: \_\_\_\_\_
- Suisun Marsh and Bay
- North Bay/South Bay: \_\_\_\_\_
- Landscape (entire Bay-Delta watershed)
- Other: \_\_\_\_\_

Indicate the primary species which the proposal addresses (check all that apply):

- San Joaquin and East-side Delta tributaries fall-run chinook salmon
- Winter-run chinook salmon
- Late-fall run chinook salmon
- Delta smelt
- Splittail
- Green sturgeon
- Migratory birds
- Other: \_\_\_\_\_
- Spring-run chinook salmon
- Fall-run chinook salmon
- Longfin smelt
- Steelhead trout
- Striped bass
- All chinook species
- All anadromous salmonids

Specify the ERP strategic objective and target (s) that the project addresses. Include page numbers from January 1999 version of ERP Volume I and II:

Concern for contaminants Vol2 page 173 and Maintaining fresh water Habitat, Target 1 page 188

Indicate the type of applicant (check only one box):

- |   |   |
|---|---|
| <input type="checkbox"/> State agency                         | <input type="checkbox"/> Federal agency |
| <input type="checkbox"/> Public/Non-profit joint venture      | <input type="checkbox"/> Non-profit     |
| <input checked="" type="checkbox"/> Local government/district | <input type="checkbox"/> Private party  |
| <input type="checkbox"/> University                           | <input type="checkbox"/> Other: _____   |

Indicate the type of project (check only one box):

- |  |   |
|--|---|
| <input type="checkbox"/> Planning              | <input type="checkbox"/> Implementation |
| <input checked="" type="checkbox"/> Monitoring | <input type="checkbox"/> Education      |
| <input type="checkbox"/> Research              |   |

By signing below, the applicant declares the following:

- 1.) The truthfulness of all representations in their proposal;
- 2.) The individual signing the form is entitled to submit the application on behalf of the applicant (if the applicant is an entity or organization); and
- 3.) The person submitting the application has read and understood the conflict of interest and confidentiality discussion in the PSP (Section 2.4) and waives any and all rights to privacy and confidentiality of the proposal on behalf of the applicant, to the extent as provided in the Section.

Placer County Resource Conservation District

Printed name of applicant



Signature of applicant

Title Page

Title of the Project

Auburn Ravine CRMP Water Quality Monitoring Project

Placer County Resource Conservation District

Richard Gresham, Manager

251 Auburn Ravine Road, Suite 201

Auburn, CA 94603

Phone – (530) 885-3046

Fax – (530) 823-5504

Email – [pered@quiknet.com](mailto:pered@quiknet.com)

Participants and Collaborators:

Please see list in text

Type of Organization

Local Government/district

Federal Tax ID#: 68-0389895

## *EXECUTIVE SUMMARY*

Baseline monitoring data would be collected for Auburn Ravine, Dry Creek (Auburn), Rock Creek, Coon Creek, Pleasant Grove and Dry Creek (Roseville) watersheds. Water quality, benthic/aquatic invertebrates, and fish data would be collected at over 35 sites in the 450-square-mile watershed area, in a manner consistent with California Department of Fish & Game's Rapid Bioassessment Protocol (RBP) and Department of Pesticide Regulation. Members of watershed Coordinated Resource Management and Planning (CRMP) groups have existing activities that vary in monitoring water quality. Our mission is to ensure existing and future watershed resources are sustained, restored or enhanced. In particular, we recognize our history of gold mining, urbanization and agriculture suggests that mercury and Organo phosphates may be an issue of concern to beneficial uses. These uses include drinking water, salmon and steelhead fishery, recreation and quality agricultural irrigation water.

Data will be integrated into the Watershed Plan that was recently funded by a CALFED Category III award. In addition, the data acquisition methods will be complementary with those used by Aquatic Systems Research in a \$100,000 fish habitat assessment of Coon Creek funded by Placer County. When such an effort is completed, it will be coordinated with CALFED Category III and other programs such as the recently County funded "Legacy" open space effort.

The comprehensive education and outreach program will include the use of a range of media to reach specific target groups. Activities will include development of a website for citizens, students, professionals, and a newsletter for CRMP members and stakeholders. A display board/exhibit suitable for use at community functions and in schools addressing the issues of a healthy watershed, including the roles of CRMP members and individual stakeholders will also be constructed to assist with outreach. Educational support to all segments of the community from children to adults, disseminating accurate information and providing specific detailed examples of on-the-ground work which will help accomplish our goals of a healthier stream environment and watershed. The Resource Conservation District will establish demonstration sites with direct instruction in watershed conservation methods to guide private citizens in their property management related to Organo Phosphate contribution to the watershed. An informed and activated citizenry contributes to the efforts directed at the common goals of the CRMP and will help us achieve our goals to the betterment of the watershed.

Findings from this effort will be critical for development of long term land use policies that effect water quality and yield in the watershed. As adopted in the County General Plan, it is anticipated that stream habitat and water quality issues will be considered in future years based on water quality data and monitoring efforts that would be funded under this proposal. The education and outreach components of this project help to ensure heightened community involvement and ongoing participation in maintaining a healthy watershed.

### *Project Description*

Baseline monitoring data would be collected for Auburn Ravine/Coon Creek, Dry Creek (Auburn), and Rock Creek. Monitoring sites will usually be selected for each monitoring station based upon a two-stage stratified random sampling design (Hankin 1986). Strata may be reach, habitat type, habitat quality or some other pertinent factor. The amount of Auburn Ravine Creek that can be used as rearing habitat for juvenile salmon or trout depends largely upon water temperature. Water temperatures in Auburn Ravine will be monitored using Onset Optical Stowaway temperature loggers for three years and measuring water temperatures at one hour intervals. Loggers will be downloaded in approximate one month intervals to reduce risk of losing recorded data. Approximately 36 loggers will be used in Auburn Ravine Creek. Redox potential, pH, dissolved oxygen, total dissolved solids (conductivity) and water temperature will be periodically measured at least seasonally each year at selected stations using portable meters. Iron and manganese will also be assessed periodically using test kits. These kits test for existing levels of ions and valence. In addition, the ions, NO, NO<sub>2</sub>, NO<sub>3</sub>, SO<sub>2</sub>, Zn, Pb, Cu, Cr, Cl, OP Ag will be measured. In addition suspended sediment and bedload sampling will be performed. The data from these measurements will be used to develop chemistry and temperature relationships with annual runoff, baseflow, and groundwater characteristics. Chinook salmon or steelhead may still use Auburn Ravine Creek. Sites of abundant spawning gravel will be surveyed weekly during the spawning season for signs of returning adults such as concentrations of adults, leaping adults, adult carcasses, and redds.

Fall-run chinook generally spawn from October through December; spring-run chinook salmon usually spawn from mid-August through early October, and steelhead spawn from December through March (Li, 1997).

The comprehensive education and outreach program will utilize a wide range of media to reach specific target groups. The project includes development of a website for citizens, students, professionals, and a newsletter for CRMP members and stakeholders. In addition, a display board/exhibit will be constructed suitable for use at community functions and in schools addressing the issues of a healthy watershed, including the roles of CRMP members and individual stakeholders. Educational support to all segments of the community from children to adults, disseminating accurate information and providing specific detailed examples of on-the-ground work which will help accomplish our goals of a healthier stream environment and watershed. The Resource Conservation District will establish demonstration sites with direct instruction in watershed conservation methods to guide private citizens in their resource management. An informed and activated citizenry contributes to the efforts directed at the common goals of the CRMP and will help us achieve our goals to the betterment of the watershed.

### *Location*

The Auburn Ravine/Coon Creek Watersheds are located within Placer and Sutter Counties. Although the attached map does not show that portion of the watershed, it

does extend to the Verona. See the attached watershed map.

*Ecological/Biological Objectives.*

The proposed objectives are to document existing water quality conditions in Auburn Ravine/Coon Creek watershed. Both Chinook salmon and steelhead are reputed to have used Auburn Ravine/Coon Creek in the past. There is inadequate base data along reaches to determine causes of variations in detected levels of certain parameters including Orogano Phospates. These data establish the existing conditions within the watershed and is necessary to define the sampling universe so that sampling bias can be avoided. However, consistent information on Auburn Ravine/Coon Creek is seriously lacking. The CRMP is supporting the formation of a Joint Powers Authority between the County of Placer and the Cities of Auburn and Lincoln. This Project will assist in establishing needed baseline data for this project as well as the existing "Legacy" Open Space study which is intended to result in a voluntary Habitat Conservation Plan.

*Linkages and System Wide Ecosystem Benefits*

The purpose of the CRMP is to address a wide range of environmental and economic issues in an integrated manner from a watershed scope. A major emphasis will be on protection and restoration of riparian and aquatic habitats, protecting watershed integrity, improving water quality, reducing the risk of catastrophic wildfire, improving wildlife habitat and improving the ecological functioning of the watersheds, including ecological factors such as connectivity with the mainstem Sacramento River and the integrity of watershed processes. CRMP discussions have determined that major emphasis will be placed on restoration, and protection of the various ecological structures, functions, and processes in the watershed. These watersheds contain a variety of habitats supporting an array of uses including sensitive wildlife. Sources of cooperative funding include, Natural Resources Conservation Service, California Department of Fish and Game, Placer County Environmental Health Department, Placer County Resource Conservation District, Placer County Water Agency and contributed labor from a plethora of private landowners and local volunteers.

Placer County has demonstrated a commitment to retaining and restoring environmental quality, as indicated in its General Plan (adopted 1994). The members of the CRMP committee have a wide range of interest and capabilities related to the maintenance and improvement of watersheds. Implementation of the completed plans will result in the identification and future reduction of primary stressors identified by CALFED in their Ecosystem Restoration Program Plan. These stressors include: alteration of flows and other effects of water management, floodplain and marshplain changes, channel form changes, water temperature, and land use. Reduction and /or removal of these stressors will provide benefits to an array of wildlife species that respond to restoration of riparian areas. Water quality will be enhanced as restoration projects reduce the potential of detrimental sediment inputs to aquatic habitats.



### *Technical Feasibility and Timing*

This monitoring project does not require environmental documentation. Written permission to trespass, when necessary, will be obtained prior to gaining access to the stream reaches.

### *Monitoring and Data Collection Methodology*

Monitoring sites will usually be selected for each monitoring station based upon a two-stage stratified random sampling design (Hankin 1986). Strata may be reach, habitat type, habitat quality or some other pertinent factor. An exception to this selection process is when point source factors are monitored. In this case locations upstream and downstream of the point source will be monitored. Monitoring stations/locations will be established in the Auburn Ravine Creek stream channel on lands of cooperating landowners. Stations will include headwater location(s) near Auburn and lower reaches near Lincoln. Monitoring will be conducted for three years to provide baseline data and to arrive at some correlation between water quality and benthic macroinvertebrate assemblages.

Water temperature data loggers will be used to measure hourly water temperatures in each stream and integrate these measurements with each stream's hydrograph to describe annual and site-specific temperature variations in relation to streamflow regimes.

The amount of Auburn Ravine Creek that can be used as rearing habitat for juvenile salmon or trout depends largely upon water temperature. Water temperatures in Auburn Ravine will be monitored using Onset Optical Stowaway temperature loggers for three years and measuring water temperatures at one hour intervals. Loggers will be downloaded in approximate one month intervals to reduce risk of losing recorded data. Approximately 36 loggers in Auburn Ravine Creek.

Redox potential, pH, dissolved oxygen, total dissolved solids (conductivity) and water temperature will be periodically measured at least seasonally each year at selected stations using portable meters. Iron and manganese will also be assessed periodically using test kits. These kits test for existing levels of ions and valence. In addition, the ions, NO, NO<sub>2</sub>, NO<sub>3</sub>, SO<sub>2</sub>, Zn, Pb, Cu, Cr, Cl, OP AG will be measured. In addition suspended sediment and bedload sampling will be performed. Samples of stream water will be analyzed for alkalinity, turbidity, dissolved oxygen, chlorides and phosphorus in the spring and fall by trained laboratory staff concurrent with collections of the resident benthic macroinvertebrates. Detailed records will be kept in association with benthic macroinvertebrate monitoring records to allow correlation. The data from these measurements will be used to develop chemistry and temperature relationships with annual runoff, baseflow, and groundwater characteristics. These relationships will

be developed by water year. The information on valence state and ionic composition of conservative chemical species such as iron will be interpreted to provide an estimate of source and age of water from various sources during different seasons. Older groundwater generally has more dissolved iron than annual runoff from recent snow or rain. Deeper water from anoxic sites under the flood plains will have more reduced iron, and the food chain will thus be based upon these hyporheic zone waters, with their less well understood but important anoxic microorganism-based food-energy systems.

Published water quality and stream chemistry data will be collected. Sources for these include Regional Water Quality Control Board (RWQCB) basin plans standards, USGS or other gage chemistry measurements, USFWS, CDFG, RWQCB, and USFS.

Rating curves (parameter/discharge relationships) for any water quality parameters that may be historically available such as suspended sediment, dissolved ions, etc. This provides information of the seasonal and annual behavior of water quality parameters relative to streamflow history.

#### *Local Involvement and Applicant Qualifications*

This project is submitted through the Auburn Ravine/Coon Creek CRMP of which Placer County, the Cities of Auburn and Lincoln, Placer Resource Conservation District and others are members. The following is a list of some participating members and their role:

*Agency Name:* Placer County Environmental Health Division

*Role/Contribution to Project:* Implementation of water monitoring program.

*Contact Person:* Lynn Johnson *Phone:* (530) 889-7335

*Agency Name:* Natural Resources Conservation Service

*Role/Contribution to Project:* Implementation of water monitoring program.

*Contact Person:* Cliff Heitz *Phone:* (530) 823-6830

*Agency Name:* California Department of Fish & Game

*Role/Contribution to Project:* Implementation of water monitoring program.

*Contact Person:* Jeff Finn *Phone:* (530) 477-0308

*Agency Name:* Placer County Resource Conservation District

*Role/Contribution to Project:* Implementation of water monitoring program and education/outreach program.

*Contact Person:* Richard Gresham *Phone:* (530) 885-3046

*Agency Name:* Sutter County ( Anticipated MOU signatory)

*Role/Contribution to Project:* Implementation of water monitoring program and education/outreach program.

*Contact Person:* Bob Barrett *Phone:* (530) 822-7450

*Agency Name:* City of Auburn

*Role/Contribution to Project:* Implementation of water quality monitoring and education/outreach program.

*Contact Person:* Paul Ogden *Phone:* (530) 823-4211

*Agency Name:* City of Lincoln (Anticipated MOU signatory)

*Role/Contribution to Project:* Implementation of water quality monitoring and education/outreach program.

*Contact Person:* John Pedri *Phone:* (530) 645-3314

*Agency Name:* Placer High School

*Role/Contribution to Project:* Implementation of water quality monitoring and education/outreach program.

*Contact Person:* Harry Hickman *Phone:* (530) 885-4581

*Agency Name:* Lincoln High School

*Role/Contribution to Project:* Implementation of water quality monitoring and education/outreach program.

*Contact Person:* Mark Fowler *Phone:* (530) 645-6360

Placer County Resource Conservation District is the applicant on behalf of the CRMP. A coordinated effort was undertaken with the cooperation of other members of the Auburn Ravine Watershed CRMP to identify possible project areas and to develop voluntary cooperation with the private landowners. Demonstration sites have been identified to assist in the public education process. Notification of a request to trespass and written statements of consenting landowners to allow trespass is underway. Due to the large number of landowner participation, requests will be scheduled by stream segment.

The comprehensive education and outreach program includes use of a wide selection of media to reach specific target groups. These will include a website for citizens, students, professionals, and a newsletter for CRMP members and stakeholders. A display board/exhibit suitable for use at community functions and in schools addressing the issues of a healthy watershed, including the roles of CRMP members and individual stakeholders. Educational support to all segments of the community from children to adults, disseminating accurate information and providing specific detailed examples of on-the-ground work which will help accomplish our goals of a healthier stream environment and watershed. The Resource Conservation District will establish demonstration sites with direct instruction in watershed conservation methods to guide private citizens in their property management. An informed and activated citizenry contributes to the efforts directed at the common goals of the CRMP and will help us achieve our goals to the betterment of the watershed.

Monitoring will be primarily accomplished by volunteers under the direction of a monitoring coordinator and with assistance from resource specialists from Placer County Division of Environmental Health, Placer County Water Agency(PCWA), Natural Resources Conservation Service (NRCS), and California Department of Fish and Game (CDF&G). Organizations associated with the Auburn Ravine Watershed Group will provide the bulk of volunteers. Many of these groups are currently involved in monitoring and this program would continue and enhance that involvement. Lincoln, Del Oro, and other high schools would be involved in the core monitoring group. Placer High School and Lincoln High School have environmental education programs in place that would be enhanced by this monitoring effort. The monitoring program will also provide opportunities for students from Sierra Community College.

The project will be evaluated on a monthly basis with project reports submitted quarterly to the Auburn Ravine Watershed Group for review and evaluation.

	Beginning October 1999	O	N	D	J	F	M	A	M	J	J	A	S
Task 1.	Select Monitoring Site	●	●	●									
Task 2.	Monitor Temperature	●	●	●	●	●	●	●	●	●	●	●	●
Task 3.	Monitor Water Quality	●	●	●	●	●	●	●	●	●	●	●	●
Task 4.	Monitor Aquatic Invertebrates	●	●	●	●	●	●	●	●	●	●	●	●
Task 5.	Search for Anadromous Adults			●	●				●				
Task 6.	Public Outreach/Education	●	●	●	●	●	●	●	●	●	●	●	●
Tasks 2,3,4 and 6 will be ongoing throughout the 3 year study													

An initial scoping process will be conducted to solicit input related to selection of monitoring sites.

Data will be entered on a database and a GIS spreadsheet. Data will be permanently archived at the Placer County Planning Department. This effort will be coordinated with the County "Legacy" Open Space Program. Three one day training sessions for volunteer workers each year for three years will be provided by appropriate CRMP members.

All data collection and GIS integration will be provided by consulting professionals.

Training sessions for citizen volunteers are included in existing Clean Water Act (319-H) grants for the aquatic invertebrate bioassessment training sessions. However, this proposal supplements training and provides funds for lab analysis. High school and citizen volunteers will be trained to perform macroinvertebrate sampling and taxonomic identification using keys. Each team will receive appropriate training from State biologists each year. Trained citizen/student volunteers will monitor Benthic macroinvertebrate assemblages in the spring and fall. Three schools in the watershed have developed curricula pertaining to stream/riparian ecosystem evaluation/restoration. Students and sponsoring teachers will be recruited from the Glen Edwards Middle School's BEST program (Bill Justice) and Biology/Life Science high school students from Placer High (Harry Hickman) and Lincoln High School (Mark Fowler), assisted by County staff. Organisms will be keyed to order/family as appropriate and bioassessment metrics

calculated. Standard operating procedures (SOP's) will be followed. Detailed records will be kept.

*Equipment/supplies:*

Each team of citizen/student monitors will be provided with field sampling equipment and supplies necessary to perform the benthic macroinvertebrate sampling and identification. There will be at least three complete field kits to equip Lincoln High School, Placer High School and Del Oro High School.

Chinook salmon or steelhead may still use Auburn Ravine Creek. Sites of abundant spawning gravel and potential migration barriers will be surveyed weekly during the spawning season for signs of returning adults such as concentrations of adults, leaping adults, adult carcasses, and redds.

Fall-run chinook generally spawn from October through December; spring-run chinook salmon usually spawn from mid-August through early October, and steelhead spawn from December through March (Li, 1997).

Training for this task for citizen volunteers will be incorporated with other training sessions. Volunteer citizen monitors will conduct fish counts in the spring and fall in consultation with the CDF&G.

The comprehensive education and outreach program includes a wide selection of media that will be targeted to specific groups. Activities will include development of a website for citizens, students, professionals, and a newsletter for CRMP members and stakeholders. A display board/exhibit suitable for use at community functions and in schools addressing the issues of a healthy watershed, including the roles of CRMP members and individual stakeholders. Educational support to all segments of the community from children to adults, disseminating accurate information and providing specific detailed examples of on-the-ground work which will help accomplish our goals of a healthier stream environment and watershed. The Resource Conservation District will establish demonstration sites with direct instruction in watershed conservation methods to guide private citizens in their property management. An informed and activated citizenry contributes to the efforts directed at the common goals of the CRMP and will help us achieve our goals to the betterment of the watershed.

## COST

### Budget

Project Task	Direct Labor Hours	Direct Salary & Benefits	Overhead Labor (General Admin & Fee)	Service Contracts	Materials & Acquisitions	Misc Other Direct Costs	Total Cost
Task One	372	\$ 20,440	\$ -	\$ 8,500	\$ -	\$ -	\$ 28,940
Task Two	372	\$ 20,440		\$ 60,000	\$ 39,917	\$ 5,400	\$ 125,757
Task Three	372	\$ 20,440		\$ 65,000	\$ 39,917	\$ 5,400	\$ 130,757
Task Four	372	\$ 20,440		\$ 50,000	\$ 39,917	\$ 5,400	\$ 115,757
Task Five	372	\$ 20,440		\$ 10,000			\$ 30,440
Task Six	573	\$ 31,500		\$ 76,000			\$ 107,500
Project mgnt	643	\$ 35,350					\$ 35,350
Total		\$ 159,546	\$ 38,290	\$ 198,500	\$ 119,751	\$ 16,200	\$ 532,287

With the exception of equipment purchase, the costs and expenditures for this monitoring project are anticipated to be evenly distributed throughout each quarter the projects three year life. The Placer County Resource Conservation District shall provide all technical and administrative services as needed for contract completion; monitor, supervise and review all work performed; and coordinate budgeting, scheduling, agreement and sub-contract administration to assure that the contract is completed within budget, on schedule and in accordance with approved procedures, applicable laws and regulations. Overhead is calculated at 25%. Other Direct Costs include funds to support laboratory analysis.

#### CITATIONS

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- Flosi, G. and F. Reynolds. 1994. *California Salmonid Stream Habitat Restoration Manual*. California Department of Fish and Game.
- Hankin, D. G. 1986. Sampling designs for estimating the total number of fish in small streams. *Pacific North West Research Paper PNW-360*: 33pp.
- Hankin, D.G. and G.H. Reeves. 1988. Estimating total fish abundance and total habitat area in small streams based on visual estimation methods. *Canadian Journal of Fisheries and Aquatic Science* 45(5): 834-844.
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studies. *Proceedings of the Symposium on Small Hydropower and Fisheries*, May 1-3, 1985, Aurora, Colorado. Olsen, White and Hamre eds. American Fisheries Society.

Li, Stacy K. 1997. Chapter 10.0 Fisheries and Aquatic Resources: Deer Creek Fish Habitat and Populations. Existing Conditions of Deer Creek. Report by Habitat Restoration Group to Deer Creek Watershed Conservancy.

Lisle, T. and S. Hilton. 1991. Fine sediment in pools: an index of how sediment is affecting a stream channel. *FHR Currents* 6: 1-7.

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