# Lower Putah Creek Watershed Pilot Implementation Projects

# **Project Information**

# 1. Proposal Title:

Lower Putah Creek Watershed Pilot Implementation Projects

# 2. Proposal applicants:

Rich Marovich, Lower Putah Creek Coordinating Committee

# 3. Corresponding Contact Person:

Rich Marovich Lower Putah Creek Coordinating Committee 508 Elmira Road Vacaville, CA 95687 (530) 574-1075 streamkeeper@putahcreek.org

### 4. Project Keywords:

Ag/Urban Runoff Habitat Restoration, Riparian Habitat Restoration, Upland

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:

**Riparian Habitat** 

### 8. Type of applicant:

Local Agency

# 9. Location - GIS coordinates:

Latitude:	38.530
Longitude:	-121.902
Datum:	NAD83

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

Putah Creek below Lake Berryessa to the confluence with Yolo Bypass

### 10. Location - Ecozone:

10.2 Putah Creek

## 11. Location - County:

Solano, Yolo

# 12. Location - City:

Does your project fall within a city jurisdiction?

Yes

If yes, please list the city: Davis, Winters

### 13. Location - Tribal Lands:

Does your project fall on or adjacent to tribal lands?

No

# 14. Location - Congressional District:

California 3rd

### 15. Location:

California State Senate District Number: 4

**California Assembly District Number:** 8

# 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: 0 Total Requested Funds: 1098269 b) Do you have cost share partners <u>already identified</u>?

Yes

If yes, list partners and amount contributed by each:

**USDA EQIP** 9000 LPCCC Veg Mgmt Fund 20000 **USFWS Partners for Wildlife** 6600 USBR 6600 **Integrated Waste Mgmt Board** 40000 c) Do you have <u>potential</u> cost share partners? Yes If yes, list partners and amount contributed by each: Sierra Orchards (land value), cash for hedgerows **Putah Creek Council Volunteers (labor)** 250000

- LPCCC\* 480000
- IWMB 140000
- 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:

45000

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

Yes

If yes, identify project number(s), title(s) and CALFED program (e.g., ERP, Watershed, WUE, Drinking Water):

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.

FW/S#1122201022	Arundo donax Eradication and Coordination: A	Watarchad
r w 5#115520J055	Team Arundo del Norte Project	watersneu

### 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:

17c. \*except as already claimed for CALFED 2001 #0128 matching funds.

# **Environmental Compliance Checklist**

# Lower Putah Creek Watershed Pilot Implementation Projects

# 1. CEQA or NEPA Compliance

a) Will this project require compliance with CEQA?

Yes

b) Will this project require compliance with NEPA?

Yes

- c) If neither CEQA or NEPA compliance is required, please explain why compliance is not required for the actions in this proposal.
- 2. If the project will require CEQA and/or NEPA compliance, identify the lead agency(ies). *If* not applicable, put "None".

<u>CEQA Lead Agency:</u> Solano County Water Agency <u>NEPA Lead Agency (or co-lead:)</u> U.S. FWS <u>NEPA Co-Lead Agency (if applicable):</u> Bureau of Reclamation only for Federal Water Project land

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

### CEQA

-Categorical Exemption XNegative Declaration or Mitigated Negative Declaration -EIR -none

# NEPA

-Categorical Exclusion XEnvironmental Assessment/FONSI -EIS -none

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?

No

If the CEQA/NEPA process is not complete, please describe the dates for completing draft and/or final CEQA/NEPA documents.

within 12 months of award

- 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 Required

CWA 401 certification Required

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 Required Other

### PERMISSION TO ACCESS PROPERTY

Permission to access city, county or other local agency land. Agency Name: City of Winters, City of Davis, County of Solano	Required
Permission to access state land. Agency Name: U.C. Davis	Required
Permission to access federal land. Agency Name: Bureau of Reclamation	Required
Permission to access private land. Landowner Name: John Pickerel, U.C. Davis, Ethel Hoskins, Harvey Olander, Don Jordan, City of Davis, City of Winters, Solano County, Bob Borchard, John Hammond, Richard Harris, Carl Ramos, Craig McNamara, Dennis Kilkenny, John Hasbrook	Required, Obtained

# 6. Comments.

Not all activities require CEQA/NEPA 5. We have 15 landowners who have expressed interest in controlling invasive weeds on their lands and are in the process of developing landowner agreements through our stewardship group.

# Land Use Checklist

# Lower Putah Creek Watershed Pilot Implementation Projects

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?

### Yes

If you answered yes to #3, please answer the following questions:

a) How many acres of land will be subject to a land use change under the proposal?

8.5 total of which 6 acres will be taken out of agricultural production

b) Describe what changes will occur on the land involved in the proposal.

See Figure 2 in the appendix to the proposal. Two tailwater ponds of one-half acre each will be installed to catch runoff from agricultural fields, two acres of agricultural fields will be converted to new oak woodland contiguous to the existing riparian forest. Two swale buffers (grassy strips bordered by mixed upland native shrubs) will be planted perpendicular and contiguous with the riparian forest to create movement corridors for wildlife. A third swale buffer that carries agricultural runoff back into the creek will be extended the last 500 feet toward the creek to also serve as a continuous wildlife movement corridor. A roadside grassy strip will be added along Putah Creek Road to bound the entire farm with trees grasses and shrubs to provide continuous branching movement corridors. Two sediment traps will be added to reduce sediment loading in the eastern-most swale buffer and return waters that flow into the creek.

c) List current and proposed land use, zoning and general plan designations of the area subject to a land use change under the proposal.

Category	Current	Proposed (if no change, specify ''none'')
Land Use	Agricultural	Agricultural/Riparian/Upland Habitat
Zoning	Ag40	none
General Plan Designation	agricultural	none

d) Is the land currently under a Williamson Act contract?

e) Is the land mapped as Prime Farmland, Farmland of Statewide Importance, Unique Farmland or Farmland of Local Importance under the California Department of Conservation's Farmland Mapping and Monitoring Program?

Yes

If yes, please list classification:

**Prime Farmland** 

f) Describe what entity or organization will manage the property and provide operations and maintenance services.

FARMS Program (at Sierra Orchards)

4. Comments.

Craig McNamara, a progressive local grower, wants to create a model farming operation that applies state-of-the-art farm management practices that are are known to improve water quality and wildlife value. The proposed land use modifications are taken from the Yolo RCD publication, "Bring Farm Edges Back to Life". The value of this demonstration site is compounded by its central location in the watershed and its association with the FARMS program that educates urban youth about farming and restoration programs.

# **Conflict of Interest Checklist**

# Lower Putah Creek Watershed Pilot Implementation Projects

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):** 

Rich Marovich, Lower Putah Creek Coordinating Committee

**Subcontractor(s):** 

Are specific subcontractors identified in this proposal? Yes

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

**Rick Poore** Streamwise

Helped with proposal development:

Are there persons who helped with proposal development?

Yes

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

Ron Unger EDAW/PCC

**Comments:** 

Ron Unger is the Putah Creek Council Restoration Coordinator and also works for EDAW, an environmental consulting firm.

# **Budget Summary**

# Lower Putah Creek Watershed Pilot Implementation Projects

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
A1-2	Administration	150	3786	1620	250	750	0	0	0	6406.0	0	6406.00
PI-2	Internet Publishing	0	0	0	0	0	30000	0	0	30000.0		30000.00
PII-7	Develop Initial Assessment/Conservation Plan	50	1262	540	50	0	23334	0	0	25186.0		25186.00
PIII-2	Weed Abatement and Streambank Stabilization	100	2524	1080	0	0	150000	0	0	153604.0		153604.00
PIII-3.1	Aquatic Toxicology Outreach Program (ATOP)	60	1893	810	400	4000	18000	0	0	25103.0		25103.00
PIII-3.2	Citizen Engagement	0	0	0	0	0	68375	0	0	68375.0		68375.00
PIII-6	Bringing Farm Edges Back to Life Demonstration Site	13	318	136	0	7200	67800	0	0	75454.0		75454.00
PIII-8	Task PIII-8: Bank Stabilization for Ethel Hoskins Property	40	999	428	0	0	163760	0	0	165187.0		165187.00
		413	10782.00	4614.00	700.00	11950.00	521269.00	0.00	0.00	549315.00	0.00	549315.00

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
A1-2	Administration	150	3786	1620	250	0	0	0	0	5656.0		5656.00
PI-2	Internet Publishing	0	0	0	0	0	30000	0	0	30000.0		30000.00
PII-7	Develop Initial Assessment/Conservation Plan	50	1262	540	50	0	23333	0	0	25185.0		25185.00
PIII-2	Weed Abatement and Streambank Stabilization	100	2524	1080	0	0	102500	0	0	106104.0		106104.00
PIII-3.1	Aquatic Toxicology Outreach Program (ATOP)	60	1893	810	400	4000	18000	0	0	25103.0		25103.00
PIII-3.2	Citizen Engagement	0	0	0	0	0	38375	0	0	38375.0		38375.00
PIII-6	Bringing Farm Edges Back to Life Demonstration Site	13	318	136	0	29380	36900	0	0	66734.0		66734.00
		373	9783.00	4186.00	700.00	33380.00	249108.00	0.00	0.00	297157.00	0.00	297157.00

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
A1-2	Administration	150	3786	1620	250	0	0	0	0	5656.0		5656.00
P1-2	Internet Publishing	0	0	0	0	0	30000	0	0	30000.0		30000.00
PII-7	Develop Initial Assessment/Conservation Plan	50	1262	540	50	0	23333	0	400	25585.0	1	25585.00
PIII-2	Weed Abatement and Streambank Stabilization	100	2524	1080	0	0	102500	0	0	106104.0		106104.00
PIII-3.1	Aquatic Toxicology Outreach Program (ATOP)	60	1893	810	400	4000	18000	0	0	25103.0	1	25103.00
PIII-3.2	Citizen Engagement	0	0	0	0	0	38375	0	0	38375.0	1	38375.00
PIII-6	Bringing Farm Edges Back to Life Demonstration Site	13	318	136	0	7920	12600	0	0	20974.0		20974.00
		373	9783.00	4186.00	700.00	11920.00	224808.00	0.00	400.00	251797.00	0.00	251797.00

# Grand Total=<u>1098269.00</u>

Comments.

# **Budget Justification**

# Lower Putah Creek Watershed Pilot Implementation Projects

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

Streamkeeper 489 hours for contracting, supervision, landowner access agreements, permit coordination and accounting, coordination with agencies and stakeholders, and reporting

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

Streamkeeper \$25.24 per hour

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

Streamkeeper \$10.80 per hour

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

All travel will be local

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

All supplies are field supplies, including plants, irrigation and plumbing supplies, pre-emergent herbicides, flashboard risers and native grass seed

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.

Task PI-2 Internet Publishing 3000 hours x \$25/hour PII-7 Initial Assessment/Habitat Corridor Conservation and Restoration Plan: 200 hours x \$100 per hour (sr. planner) 400 hours x \$80 per hour (jr. planner) PIII-2 Weed Abatement and Streambank Stabilization: site assessment survey, bio/cultural letter report 130 hours x \$70 per hour. permits, regulatory compliance 550 hours x \$90 per hour maps and plans: 90 hours x \$105 per hour 180 hours x \$70 per hour abatement 100 hours x \$175 per hour (excavator and operator) 100 hours x \$110 per hour (haul truck and operator) 100 hours x \$100 per hour (dozer and operator) 2150 hours x \$20 per hour (cutting and removal) 1300 hours x \$20 per hour (herbicide application) 395 hours x \$50 per hour (arborist for tree felling/removal of large trees) berm construction bulldozer 210 hours @ \$100/hour excavator 70 hours @\$150/hour biorevetments 400 hours @ \$85/hour 800 hours @ \$25/hour monitoring and reporting 535 hours x \$70/hour 125 hours x \$100/hour Subtask PIII-3.1: Aquatic Toxicology Outreach Program 70 hours x \$85 project manager 400 hours x \$30 technical staff Task PIII-3.2: Citizen Engagement 1000 hours x \$30 technical staff 500 hours x \$30 docents PIII-6.2 Bringing Farm Edges to Life Subtask PIII-6.2 Tailwater and Sediment Recovery System: engineering 20 hours x \$50/hour excavation and pipe installation 12 days @ \$1500/day planting and maintenance 1500 hours @ \$15/hour Subtask PIII-6.3 Roadside Establishment of Native Grasses: planting and maintenance 900 hours x \$15/hour Subtask PIII-6.4 Riparian Swale Buffers: grading 40 hours x \$125/hour (equipment and operator) planting and maintenance 2100 hours x \$15/hour Subtask PIII-6.5 Extension of Riparian Forest: planting and maintenance 1200 hours x \$15/hour Subtask PIII-6.6 Sediment Traps: excavation 2 days x \$900/day maintenance 300 hours x \$15 Task PIII-8: Bank Stabilization for Ethel Hoskins Property 6 days x \$480/day

fluvial geomorphologist 6 days x \$240/day field survey assistant 5 days x \$1500/day planting crew 2 days x \$1500/day irrigation crew 12000 cuttings x \$1.00/cutting - 5 man crew

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.

Task A1-2: 450 hours x \$36/hour Streamkeeper

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

\$400 printing of Initial Assessment/Habitat Corridor Conservation and Restoration Plan

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.

Solano County Water Agency as fiscal agent for the Lower Putah Creek Coordinating Committee is willing to forgo reimbursement of indirect costs.

# **Executive Summary**

# Lower Putah Creek Watershed Pilot Implementation Projects

LOWER PUTAH CREEK WATERSHED PILOT IMPLEMENTATION PROJECTS The Lower Putah Creek Watershed begins at Monticello Dam (Lake Berryessa) and continues 30 miles downstream to Putah Creeks confluence with the Yolo Bypass that carries Putah Creeks water to the Sacramento-San Joaquin Delta. Major problems include invasive weeds (Arundo, Tamarisk, Ailanthus and eucalyptus). Studies have shown that sedimentation of Lake Solano (and downstream reaches and water supply canals) is caused primarily by rampant lateral erosion and downcutting of the Pleasants Creek tributary. A prominent local landowner, Ethel Hoskins (granddaughter of Mr. Pleasant for whom the valley was named) has particularly suffered from eroding stream banks that now threaten a historic structure. This proposal calls for use of trees removed from local orchards as root wad revetments. When the trunks are trimmed and buried in trenches cut back into the bank, the root mass provides extraordinary bank stability. Successful stabilization of the Hoskins stream banks as proposed would give the local stewardship group a tremendous start. If this grant is awarded, a local walnut grower, Craig McNamara has offered to donate 8 acres of prime agricultural land to be converted into a variety of RCD-designed projects emphasizing wildlife movement corridors and water quality improvements in a working agricultural operation. This proposal also provides for setting up aquatic toxicology laboratories in local high schools and promotes visitation and participation by the public in regular tours and hands-on restoration projects. These pilot and demonstration projects would promote stewardship by responding to landowners and other stakeholders who are ready to act now while assuring others that ongoing assessments are not occurring at the expense of actions that require no further study.

# Proposal

Lower Putah Creek Coordinating Committee Lower Putah Creek Watershed Pilot Implementation Projects Rich Marovich, Lower Putah Creek Coordinating Committee

# LOWER PUTAH CREEK WATERSHED

# PILOT IMPLEMENTATION PROJECTS



LOWER PUTAH CREEK COORDINATING COMMITTEE

# The Lower Putah Creek Coordinating Committee consists of :

City of Davis City of Fairfield Suisun City City of Vacaville City of Vallejo City of Winters County of Yolo Maine Prairie Water District Putah Creek Council Solano County Water Agency Solano Irrigation District University of California, Davis

# LOWER PUTAH CREEK WATERSHED PILOT IMPLEMENTATION PROJECTS

#### A. PROJECT DESCRIPTION: Project Goals and Scope of Work

**1. Problem Statement:** The Lower Putah Creek Watershed begins at Monticello Dam (Lake Berryessa) and continues 30 miles downstream to Putah Creek's confluence with the Yolo Bypass that carries Putah Creek's water to the Sacramento-San Joaquin Delta (see Appendix A, Figure 1). Although the lower Putah Creek corridor represents one of the most extensive remaining tracts of high quality wildlife habitat in Yolo and Solano Counties, and is home to a unique assemblage of fish and common and special-status wildlife species native to the Central Valley, it suffers from substantial infestations by invasive weeds, eroding banks, habitat loss and degradation, flood-related impacts, non-point source (NPS) pollution, illegal dumping and other major problems.

Previous studies have documented the general extent of invasive plants, especially Arundo, Tamarisk, Ailanthus and Eucalyptus and defined gaps in the riparian corridor that are likely to impede movement of wildlife. Studies have shown that Putah Creek is a remarkably diverse fishery hosting a large number of both warm water and cold water species. Although Putah Creek also provides some of the best remaining wildlife habitat in Solano and Yolo counties, the representation of herps and amphibians is somewhat less than that found in comparable streams. For example, a recent wildlife monitoring study commissioned by the Lower Putah Creek Coordinating Committee found only four snakes in two years of observations (Mike Melanson, Strategic Environmental).

There are also water quality problems in Putah Creek, most notably excessive sediments. For example Lake Solano is listed as sediment impaired, chiefly due to lateral erosion of the Pleasants Creek tributary that has threatened several bridges on Pleasants Valley Road that traverses the creek at several points. The Ethel Hoskins' parcel on Pleasants Creek has witnessed such extreme lateral erosion, that a Chinese laborer shack that was once fifty feet from the top of the bank is now teetering on the edge of the incised channel. Moreover, the channel has down cut over 15 feet in the last 40 years (Ethel Hoskins, landowner).

Farmers in Solano and Yolo counties in the vicinity of Putah Creek almost universally practice "clean farming" with little or no vegetation on field boundaries in an effort to control weeds and weed-borne pests. Wildlife habitat in intensively farmed agricultural areas is almost non-existant. Yet there are proven methods of controlling weeds and creating wildlife habitat by planting farm boundaries with grass borders, hedgerows and riparian swales. These practices have water quality benefits too by trapping sediments and removing potential contaminants by acting as a biological filter. The USDA EQIP program and landowner contributions funded the installation of hedgerows (Task PIII-6.1) at Sierra Orchards, but that is only one of many strategies (as detailed in Task III-6).

*Goals:* The goals of this project are to achieve a healthier, more intact stream system, providing high quality habitat for fish, wildlife and native plant species, improved water quality, with farming practices that support wildlife and protect water quality, a local community that appreciates and feels vested in the future of the watershed, and private landowners who are active partners in weed abatement and other stewardship goals. The objectives of this project include 1) a model program for agriculture that enhances wildlife and preserves water quality, 2) a concerted knowledge building program that will help the community understand appreciate and take care of the watershed as a community objective, 3) an eradication program for four primary invasive weeds, 4) a streambank stabilization project that will incrementally reduce sediment loading in Lake Solano and provide a model to be replicated and adapted throughout the Pleasants Creek tributary.

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This project draws upon the following hypotheses:

- > an informed community will appreciate and protect their watershed
- > a concerted community effort is greater than the sum of individual efforts
- > demonstration projects decrease fear and uncertainty over new stewardship practices
- > agriculture can benefit wildlife and water quality largely by implementing known practices like tailwater ponds
- invasive non-native species often displace native species
- > many invasive non-native species are favored by lack of natural predators, disease, etc. and tend to dominate landscapes
- ▶ several species are limited by the diminishing availability of large contiguous habitats
- > wide riparian woodland corridors support higher bird diversity than narrow riparian woodland strips
- > plant community diversity and structure promote wildlife species diversity
- habitat continuity is enhanced by movement corridors
- movement corridors facilitate recolonization after locally catastrophic events (e.g. disease, food shortage) that reduce wildlife populations
- > more favorable and/or abundant habitat supports more numbers of a given species
- erosion increases sedimentation
- sedimentation reduces fish spawning success
- > Arundo and tamarisk infestations in channel often increase lateral erosion

Putah Creek has a variety of stressors that come from physical, biological and societal causes. Physically, the channel has been severely altered from its original state and transitions into a completely artificial channel east of Highway 80, that was designed to carry flood waters away from the City of Davis. It is controlled by two dams and has perennially regulated flows in all but the wettest of years when the glory hole spills from Monticello Dam. Although suspended solids are generally low, agricultural return flows are often thick with sediments and the creek runs muddy brown in any runoff producing event.

Biologically the watershed is under seige from four highly invasive species, arundo (Arundo donax), tamarisk (Tamarix), tree-of-heaven (Ailanthus) and eucalyptus. Together, these four species occupy approximately 80 acres of prime riparian habitat (see Table 1 and Figure 1) and they are spreading rapidly to all points downstream. On the other hand, Putah Creek hosts a remarkably diverse population of native fishes and is critical habitat for the federally listed endangered valley elderberry longhorn beetle and state listed swainson's hawk.

Societally, Putah Creek mirrors the split personalities of local communities. On one hand, ongoing dumping is a serious threat to water quality and an atmosphere of community stewardship, on the other hand volunteers supported by local businesses removed 160 cubic yards of trash so far this year with over 120 volunteers participating in the most recent event [records of Coastal Cleanup Day, September 15, 2001]. Lower Putah Creek is prized by local fishermen and Reach 6 (see Figure 1) just below Monticello Dam is considered by many to offer the finest fly fishing in central California.

### 2. Justification

This project tests the hypothesis that local farms can become excellent stewards of riparian properties by implementing a few well proven conservation practices and that the physical, biological and aesthetic value of these practices will become self evident. Key uncertainties lie in how quickly neighboring farms adopt these practices and how proximity to a demonstration site affects adoption of these practices. We can manage these uncertainties over time by celebrating the role of a farmer who practices sound conservation measures as a model environmental steward, seeking grants to extend the use of these practices, montoring their success through such measures as wildlife diversity, suppression of invasive species and adapting them as needed over time. We will also involve local landowners through the stewardship process so that they are aware of the design and implementation and any adaptive management decisions along the way.

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This project tests the hypothesis that the Putah Discovery Corridor can become regarded as a significant local asset, worthy of protection, appreciation and a prominent place in the community's identity through a process of knowledge building and appropriate public access that also is respectful toward private property rights. Key uncertainties are whether this program can begin to change individual behavior such as littering. We can manage these uncertainties by promoting the image of Putah Creek as a place of wonder through its biological diversity and complex interacting processes that welcome and reward curiousity. We can measure the success by a decrease in behaviors that are damaging to the resource and an increase in participation of the community in activities that are appreciative and overtly beneficial to the resource such as community cleanup and planting days.

This project tests the hypothesis that bank stabilization projects can improve water quality by decreasing sediment loading and that a local demonstration project can encourage other landowners to repair their banks before the next major storm does damage to their properties and deposits excess sediments to all points downstream. Key uncertainties are the performance of specific bank stabilization efforts under site specific conditions and weather and acceptance of the need to stabilize banks. We can encourage adoption of successful, locally -proven strategies through a CALFED stakeholder process to begin next February. We can encourage others to participate through Ulatis RCD which has many contacts among local landowners including some board members. We can monitor and adapt strategies as needed.

This project tests the hypothesis that exotic weeds can be eradicated from Putah Creek and that eradication can best be achieved through a snowballing effect of successful projects on individual properties coalescing into increasingly larger invasive-free zones. Key uncertainties include the point at which eradication efforts overtake reproduction.and whether downstream successess can accelerate upstream interest in control measures by creating a demand that eradicated sites not be subject to high invasive pressures from upstream propagules. We can manage these uncertainties by mounting early and ongoing efforts to slow the spread and eventually eliminate most sources and by cooperating with a maximum number of landowners who are ready to begin control measures. We can measure success with each incremental reduction in infested areas that are kept free of invasives.

*Conceptual Model:* A diagram showing the relationship of the major tasks in this proposal to the goals of restoring ecosystem functions as measured by water quality and wildlife habitat quantity and quality is presented in Appendix A Figure 2.

*Adaptive Management:* The Putah Creek Adaptive Mangement Strategy is illustrated in Appendix A, Figure 3. Adaptive management (AM) is widely touted as the best approach for managing regulated streams but there are few examples of it being successfully employed. In Putah Creek, we have an unusually good opportunity to apply principles of AM and make it work. The basic idea is to:

- 1. State the problem and possible management actions to solve it
- 2. Develop a conceptual model of the preferred management action and how it should work. This can be viewed as equivalent to a hypothesis for an experiment.
- 3. Test the model with a pilot experiment
- 4. Monitor the system carefully to see how well the experiment works
- 5. If it works, repeat the action for several years, with monitoring
- 6. If it doesn't work, go back to step 1, 2, or 3 to modify the action
- 7. Once a successful series of pilot experiments has been completed, conduct a larger scale experiment and/or adopt a flexible management strategy that accounts for variation in the system.

*Project Type:* This proposal emphasizes pilot or demonstration projects using well established methods and appropriate expertise on sites with clearly defined problems and willing landowners who are ready to act now. Further assessments are needed and indeed have been funded by CALFED 2001 project #0128, Lower Putah Creek Assessment and Watershed Management Action Plan. Meanwhile, these pilot or demonstration projects are needed to address the "no brainers" and to give the Putah Creek Stewardship Group (funded by a Proposition 204 grant) some early successes to encourage greater participation in ongoing stewardship planning.

Most importantly, pilot projects are needed to take advantage of two outstanding opportunities. The first, Task PIII-6 of this proposal would gain over eight acres of riparian habitat designed to create new wildlife movement corridors while demonstrating proven best management practices for controlling sediments and nutrients in farm runoff. The second

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outstanding opportunity represented by Task PIII-8 would begin to address the severe erosion problems on the Pleasants Creek tributary. A recently commissioned study by the Solano County Water Agency identified sediments from Pleasants Creek to be the primary reason that Lake Solano is classified as sediment impaired. Not only would Task PIII-8 begin to address the ongong problem of sediment loading in Lake Solano, Lower Putah Creek and the Putah Canal municipal and irrigation water supply, but it would strategically coincide with the beginning of a Pleasants Creek stewardship process funded under CALFED 2001 Project 0128. An early success in stabilizing one of the worst stretches of Pleasants Creek, the Hoskins parcel, would encourage other landowners to participate in the stewardship program and ultimately to allow stabilization of their creek frontage as well.

Adaptive management strategies will be used to ensure an efficient use of funds and resources. For example, if early stakeholder meetings reveal the need for additional data collection in order to achieve certain objectives, the suggested timeframe and priority list of data collection may be modified in order to be able to proceed with certain planning efforts; if early monitoring of restoration sites reveal that the site is not as successful as expected, possible causes of the failure will be investigated and remedial actions will be taken to influence the development of the site; if certain efforts in bank stabilization or trash removal prove too time consuming or costly, alternative methods will be sought and implemented. Coordination with other watershed groups will ensure that lessons learned in one watershed will be applied in another and that funds available will be managed for the maximum benefit of the watershed and the objectives of CALFED.

### 3. Approach

The three-phase process includes: <u>Phase I</u> (funded and underway): stakeholder facilitation and issue identification; <u>Phase II</u>: (funded by CALFED 2001 proposal #0128) a comprehensive biological and physical resource assessment and development of a stakeholder-based Watershed Management Action Plan (WMAP); and <u>Phase III</u>: (partially funded by CALFED 2001 proposal #0128) implementation of technically-defensible, sustainable, cost-effective restoration and enhancement projects.

### 4. Feasibility

The major action items within this proposal are Bringing Farm Edges Back to Life (Task PIII-6) and Bank Stabilization for Ethel Hoskins Property (Task PIII-8). The several best management practices implemented in this task are drawn or adapted from the Yolo County RCD publication, "Bring Farm Edges Back to Life!"

The erosion problems at Ethel Hoskins property require the services of a fluvial geomorphologist. The proposed use of root wads, that is, excavated trees from orchard removals is highly effective in streambank stabilization and when combined with dense replanting from cuttings of local riparian adapted species provides a highly cost-effective strategy. The uprooted trees are trimmed to leave just a long truck that can be anchored into a trench in the bank, creating an extremely durable revetment. The presence of many orchards in the area makes it likely that root wads can be obtained for a modest cost.

Permits: The following permits and documentation are needed:

CEQA Mitigated Negative Declaration NEPA Environmental Assessment/FONSI 1601/03 CWA 401 certification

We have budgeted to use an environmental consulting firm to obtain permits as Subtask PIII-2.2. For Task PIII-8, the association with Partners for Wildlife may allow work to be performed under an existing nationwide permit.

*Landowner Approvals:* For Tasks PIII-6 and PIII-8 landowner approval letters are attached as Appendix A Figure 8 and Figure 15. Landowner agreements are currently under development by the Putah Creek Stewardship Group for survey and vegetation control work. Meanwhile we have verbal approval from 15 landowners at this time. It is for these 15 landowners that we are requesting funds to control invasive weeds per Task PIII-2. Landowner agreements will be in place by the time of funding.

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**5. Performance Measures:** Performance measures for each task have been developed in the form of deliverables by task in the work plan. These deliverables ensure accountability for each of the tasks funded under this proposal. Quarterly progress reports will also be provided to CALFED and the LPCCC and will provide insight into progress made and tasks accomplished. For resource specific monitoring , monitoring protocols will be developed in cooperation with U.C. Davis specialists in fisheries biology, wildlife biology and vegetation management. Aerial photographs will be used to document baseline conditions.

*Monitoring:* Putah Creek has perpetual funding for monitoring of fish and wildlife secured through the Putah Creek Accord. Beginning this fiscal year (2001), the LPCCC has committed \$110,000 per year to fish and wildlife monitoring indexed to inflation for 20 years (renewable thereafter with subsequent water contracts). The Putah Creek Streamkeeper performs routine monitoring of lower Putah Creek, including monthly inspections by canoe and daily monitoring of flows at multiple Accord compliance points downstream of Lake Solano. Note that Task PIII-3.1

**6. Data Handling and Storage**: Data Standard databases (e.g. DWR fisheries database, NDDB for listed and special status species) will be emulated so that data collected will comply with existing standards. For invasive weeds, we will cooperate in the development of a Team Arundo database, for other weeds, we will work with CDFA weed management areas on prototype Internet databases (like the citizen scientist prototype). We will utilize Internet accessible databases in cooperation with Davis Community Network (DCN) for efficiency in data collection and dissemination. The Streamkeeper will work closely with the Ulatis Resource Conservation District who is proposing and countywide watershed assessment for Solano County and is interested in using the Putah Creek Watershed Assessment as an example or pilot project.

7. Expected Products/Outcomes Expected products/outcomes are listed by Task (or Subtask) in the Work Schedule.

### 8. Work Schedule:

	Ye	ear 1	Ι	Year2	Ι	Year	3	I
Tasks A1-2 Administration	XXXX	XXXXX	xxxx	xxxxx	XXX	XXXX	XXX	K
Task PI-2 Internet Publishing	XXXX	XXXXX	XXXX	XXXXX	XXX	XXXX	XXX	K
Task PII-7: Conservation and Restoration Plan	XXXX	XXXXX	XXXX	XXXXX	XXX	XXXX	XXX	X
Task PIII-2: Weed Abatement and Streambank Stabilization	XXXX	XXXXX	XXXX	XXXXX	XXX	XXXX	XXX	X
Subtask PIII-3.1: Aquatic Toxicology Outreach Program (ATOP):	XXXXX	XXXXX	XXXX	XXXXX	XXX	XXXX	XXX	X
Subtask PIII-3.2.1 Updates to Putah Discovery Corridor Master Plan	XXXXX	XXXXX	XX					
Subtask PIII-3.2.2 Public Programs and Field Trips	XXXX	XXXXX	XXXX	XXXXX	XXX	XXXX	XXX	X
Subtask PIII-3.2.3 Research and Stewardship Projects	XXXX	ххххх	XXXX	XXXXX	XXX	XXXX	XXX	X
Subtask PIII-6.2 Tailwater and Sediment Recovery System	XXXXX	XXXXX	XX					
Subtask PIII-6.3 Roadside Establishment of Native Grasses			XX	XXXXX	XX			
Subtask PIII-6.4 Riparian Swale Buffers			XX	XXXXX	XXX	XXXX	ХХУ	ζ
Subtask PIII-6.5 Extension of Riparian Forest						XXXX	XXX	ζ
Subtask PIII-6.6 Sediment Traps	XXXX	XXXXX	XX					
Task PIII-8: Bank Stabilization for Ethel Hoskins Property	XXXX	XXXXX	XX					

### Scope of Work:

The proposed scope of work for completion of the project is divided into administrative and reporting tasks, and tasks associated with the three project phases.

#### Administration, Reporting and Presentations:

**Task A-1: Administration.** Project administration and oversight will be provided by the Putah Creek Streamkeeper. The Streamkeeper will also provide guidance to subcontractors, keep detailed records on subcontracts, set up meetings as necessary, and provide any other task necessary to facilitate the implementation of the proposed project.

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**Task A-2: Reporting and Presentations.** This task includes quarterly progress reports, a draft final and final project report and at least one final presentation to CALFED. Preparation of all reports will be overseen by the Streamkeeper and the Streamkeeper or his designee will give the presentation. **Deliverables for Tasks A (1-2):** Records of contracts; meeting minutes; quarterly, draft and final reports; and a final presentation.

Phase I: Watershed Stewardship Program - Stakeholder Organizing, Facilitation and Knowledge Building: consists of Stakeholder Organizing and Facilitation, and Comprehensive Physical and Biological Resource Assessment and Watershed Management Action Plan (WMAP) Development. (Tasks PII-(1-6) have been funded by CALFED 2001 Watershed Program Project # 0128)

### **Supplemental Phase I Requests:**

**Task PI-2 Internet Publishing:** This purpose of this task is to expand and maintain the lower Putah Creek website (www.putahcreek.org) for informational and educational use, posting data findings from mapping and assessment of fish habitats, invasive weeds, erosion, plant communities and associated wildlife habitat, sensitive resources, human impacts.

**Subtask PI-2.1 Website Enhancement:** Expand the Putah Creek website (<u>www.putahcreek.org</u>) for interactive communication with stakeholders and develop accompaning publications that foster stakeholder participation in the watershed stewardship program. This task provides for a web communication expert who can not only manipulate the web site but tailor the assessment data for ease of use for different kinds of stakeholders, including creating interactive web based activities about this data (e.g. in collaboration with Davis Community Network). **Deliverables:** Enhanced web site. **Criteria:** Number of visitors, follow up inquiries.

### **Supplemental Phase II Requests:**

**Task PII-7: Develop Initial Assessment/Habitat Corridor Conservation and Restoration Plan**: The purpose of this task is to provide an initial assessment of opportunities for land acquisition and/or easements along Putah Creek that would be informed by the Watershed Management Action Plan (WMAP) and stewardship planning process concerning priority issues and locations using proven methodologies developed by the Nature Conservancy (TNC). Included in this task would be a habitat corridor assessment with a "threats and opportunities" analysis, using TNC methodologies, for the establishment of a continuous habitat corridor between the Blue Ridge/Berryessa Natural Area and the Yolo Basin Preserve using habitat classifications developed in the WMAP. Evaluate options for coordination with local land trust organizations or other entities such as Yolo Land Trust, Solano County Farmlands and Open Space Foundation concerning holding of easements. **Deliverables for Task PII-7**: Develop Initial Assessment/Conservation Plan.

# Phase III consists of Implementation of Watershed Management Actions and Further Development of Existing Projects. (Tasks PIII-(1,3,4) have been funded by CALFED 2001 Watershed Program Project # 0128)

#### **Supplemental Phase III Requests:**

**Task PIII-2: Weed Abatement and Streambank Stabilization.** Arundo, tamarisk, ailanthus and eucalyptus are the primary invasive weeds affecting ecosystem quality in the lower Putah Creek watershed. Table 1 includes estimated acreages by reach for the primary invasive weeds in the lower Putah Creek watershed based on reconnaissance surveys and aerial photograph interpretation. Over 15 parcels have been identified in the watershed which are prioritized for immediate abatement measures based on threat, location, and landowner interest. These demonstration sites will be used to determine and refine the most efficaceous and cost-effective approaches, and to encourage other landowners to participate.

Among the initially identified sites, an estimate of 1.5 acres of ailanthus, 6.5 acres of eucalyptus, and 1.5 acres of tamarisk are present. Arundo also occurs on these properties but at least a portion of the infestations will be controlled using funding from the CALFED award to Team Arundo del Norte.

At parcels belonging to willing landowners, invasive weed infestations will be treated and removed and where necessary, eroding streambanks will be stabilized using techniques appropriate to the site conditions. These will include combinations of grading, protective berm construction, and biorevetment/habitat restoration techniques. All necessary environmental

documentation, permits and approvals will be obtained prior to construction. Anticipated documentation and permits include an initial study (negative declaration) under CEQA, a Finding of No Significant Impact (FONSI) under NEPA, a CDFG Streambed Alteration Agreement, and a Section 404 permit from the US Army Corps of Engineers, and Reclamation Board approval if needed.

**Subtask PIII-2.1: Management and Coordination.** This subtask includes all management tasks, including hiring of implementation subcontractors, obtaining landowner access agreements, permit coordination and accounting tasks. We will closely coordinate with landowners, resource agencies, neighbors and stakeholders, and state and regional weed control organizations (i.e., California Department of Food and Agriculture Integrated Pest Management Branch, Yolo and Solano counties Public Works Departments and Weed Management Areas (WMAs), Team Arundo del Norte) to share data, implementation methods and monitoring approaches. **Deliverables:** Permits, landowner access agreements, contracts.

**Subtask PIII-2.2: Weed Abatement Planning.** This subtask includes site assessments for sensitive resources, preparation of maps and conceptual plans for weed abatement and site rehabilitation, and engineering drawings, if necessary, for bank stabilization. These plans will be used for securing competitive subcontractor bids and obtaining permits. **Deliverables:** Site assessments, maps and plans.

**Subtask PIII-2.3: Weed Abatement Implementation.** This subtask will entail the use of different site-appropriate methods specific to each of the primary weeds to be controlled. Methods will include proven and accepted mechanical and herbicidal treatment approaches (e.g. cutting followed by stump applications of herbicide) that are efficient, effective and not damaging to the environment. **Deliverables:** Site assessments, maps and plans.

**Subtask PIII-2.4: Monitoring.** This subtask will ensure that weed abatement and site rehabilitation criteria, including CALFED objectives are met. The labor and other costs associated with each approach will be analyzed. An adaptive management process will be used to refine treatment timing and methods to maximize efficacy and minimize costs. Information will be shared with all cooperating weed abatement organizations. **Deliverables:** Weed counts, GIS database layers for each of the primary invasive weeds.

#### Task PIII-3: Adopt-A-Reach Community Stewardship Program was funded by CALFED 2001 Project #0128.

#### Supplemental Task PIII-3 Request:

**Subtask PIII-3.1: Aquatic Toxicology Outreach Program (ATOP):** Under this task, the UCD Aquatic Toxicology Outreach Program (ATOP) will collaborate with the USEPA to locate and teach at up to four local high schools, a toxicity test procedure using the invertebrate, *Ceriodaphnia dubia* to assess the potential for toxicity in the watershed. UCD's ATOP program will provide the training of the test procedure to the local high schools. This includes handling the organisms, conducting the test and assessing basic water quality parameters of the test and evaluating the toxicity response data. The teachers and students of the local high school will implement the C. dubia procedures within the local watershed on a regular basis to assess the potential for toxicity within the watershed. The assessment of toxicity is important as it is a key component of the USEPA's water quality program that is implemented throughout the United States to evaluate aquatic resources. **Deliverables:** Project-based learning for students in up to four high schools in watershed aquatic toxicity testing and analysis. Data sharing and coordination with the Phase II Putah Creek resource assessment, the UCD ATOP program and the USEPA's water quality program.

**Task PIII-3.2: Citizen Engagement:** Implement actions that provide for citizen engagement in the implementation of biological and physical (on the ground) projects (Tasks PIII:1-6).

**Subtask PIII-3.2.1 Updates to Putah Discovery Corridor Master Plan:** Links Phase II assessment and data findings (Tasks PII:1-5) to stakeholder knowledge about lower Putah Creek by expanding the Putah Discovery Corridor Master Plan and the Watershed Management Action Plan (both under development 2001-2002) to include additional mechanisms which provide up to date assessment information and opportunities for participation (action projects) to different stakeholders (landowners, decision makers, general public, school children). **Deliverables:** Updated plan, designs for implementation projects, public programs, exhibits and signage.

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**Subtask PIII-3.2.2 Public Programs and Field Trips**: This subtask would implement a public program for school, community and professional groups to visit public and (interested) private sites along Putah Creek that are undergoing assessment, monitoring, restoration or enhancement along Lower Putah Creek. Deliverables: Weekly field trips to view action projects.

**Subtask PIII-3.2.3 Research and Stewardship Projects:** This subtask would implement research and stewardship projects which involve community members (stakeholders) and link to restoration, weed abatement, hedgerow propagation, fish habitat enhancement, erosion control, and similar projects along the creek. **Deliverables:** Weekly public participation of schools and community groups in action projects.

**Task PIII-6 FARMS Program – Bringing Farm Edges Back to Life Demonstration Site:** Sierra Orchards, which has over a mile of creek frontage on a 300 acre parcel that actively farms walnuts, field crops and row crops on the south side of Putah Creek has offered to convert over eight acres of farmland and road frontage to a variety of projects that demonstrate proven conservation practices. These practices include widening the riparian forest, planting of hedgerows, riparian swales and grassy road borders, installation of tailwater ponds and sediment traps. All of these features were inspired by the Yolo Resource Conservation District (Yolo RCD) publication, "Bring Farm Edges Back to Life" and Yolo RCD participated in the proposed design and layout as shown in Figure 1. The parcel is divided into three fields with the western-most field, consisting of 90 acres, hosting the FARMS program. The FARMS program sponsors field trips to give urban school children an opportunity to learn about farming and restoration through hands-on training. The central location of Sierra Orchards along mainstem lower Putah Creek provides an outstanding opportunity for local farmers to conveniently see state-of-the-art agricultural conservation practiced in thier own community. The proposed projects benefit CALFED objectives by providing new wildlife habitat and movement corridors that are contiguous with and expand the existing riparian forest, and that provide substantial reduction in sediment and nutrient loading of Putah Creek from this working farm.

### Subtask PIII-6.1 Hedgerows: Installation of Hedgerows (already funded by EQUIP grant and landowner).

**Subtask PIII-6.2 Tailwater and Sediment Recovery System:** This subtask would allow two tailwater ponds (1/2 acre each) to be constructed as shown by the blue polygons in Figure 1. The tailwater ponds would provide multiple benefits, providing wildlife habitat, trapping sediment, reducing non-point source pollution from farm runoff and promoting groundwater recharge. The ponds would be constructed according to proven designs from the Yolo County Resource Conservation District publication, "Bring Farm Edges Back to Life." **Deliverables:** Two tailwater ponds.

**Subtask PIII-6.3 Roadside Establishment of Native Grasses:** This subtask would allow planting of native perennial bunch grasses along Putah Creek Road as shown by the yellow line in Figure 1. Planting of grasses along roadsides provides multiple benefits including creation of upland wildlife habitat, especially for small mammals, game birds, songbirds and insects, reduced need for herbicides, competitive displacement of invasive plants, capture of nutrients and sediments, anchoring of soil during heavy rainfall events, increased percolation and trapping of pollutants that runoff from paved roads. Deliverables: A 2000 foot long, 15-foot wide grassy roadside buffer strip.

**Subtask PIII-6.4 Riparian Swale Buffers:** This subtask would provide for planting of swale buffers as shown by the dark green lines in Figure 1. Swale buffers consist of a 15-foot wide strip of native grasses bounded on one side by a 15-foot strip of other mixed native plants of varying heights providing a diverse wildlife movement corridor for wildlife. These buffer areas should increase the populations of small mammals, reptiles and amphibians by providing cover and migration routes. One swale buffer would be planted in Fall, 2003 on the western boundary of the Sierra Orchards property (2400 feet x 30 feet = 1.65 acres). A second swale buffer would be planted in Fall 2003 along the eastern edge of the Sierra Orchards property (40 x 500 feet = 0.46 acres) to continue a vegetated drainage channel that flows into Putah Creek. Sierra Orchards has already invested \$17,000 in grading and installation of native plants to create the first 2/3 of this channel. A third swale buffer (2000 x 30 feet = 1.38 acres) would be installed in Fall 2004 along the eastern edge of the western-most field as shown in Figure 1. Riparian swale buffers would significantly extend the existing riparian woodland habitat and provide natural filtration for farm runoff. **Deliverables:** Two new riparian swale buffer strips and an extension of a third buffer strip.

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**Subtask PIII-6.5 Extension of Riparian Forest:** This subtask would widen the riparian forest along Putah Creek by 50 feet (two acres) as shown by the light green boundary in Figure 1. The area would be permanently removed from agricultural production to provide for enhanced upland habitat consisting of oaks and native grasses. The site would adapt a tomato plug planting implement for use to plant native grass plugs. This technique could provide a very cost effective means of establishing native grasses on large parcels. A widened riparian corridor was among the recommendations of a 1993 U.S. Fish and Wildlife Service reconnaissance survey of Putah Creek to improve habitat quality and the diversity of species. **Deliverables:** A significant addition to the local riparian corridor and a report on an innovative planting technique for native grasses.

**Subtask PIII-6.6 Sediment Traps:** This subtask would provide for installation of two sediment traps along Putah Creek Road as shown by the brown rectangles in Figure 1. The Sierra Orchards property drains south and east toward Putah Creek Road along the southern boundary and into a partially completed swale buffer along the eastern boundary of the property that carries ag drainage into Putah Creek. The sediment traps would be placed in the southeast corner of each of the middle and eastern-most fields. The traps would consist of small unvegetated basins that would be periodically dredged with the same equipment used to construct them. These sediment traps would benefit water quality in Putah Creek by retaining sediments that would otherwise fill in the swale buffer on the eastern boundary and eventually be transported into Putah Creek. Note that these traps are an adaptive management strategy to account for unexpectedly large amounts of sediment that have been captured in the partially completed swale buffer on the eastern edge of the property. **Deliverables:** Installation of two sediment traps. **Criteria:** Amount of sediment collected is a measure of reduced sediment loading in Putah Creek.

**Task PIII-8: Bank Stabilization for Ethel Hoskins Property:** The Ethel Hoskins property on 8212 Pleasants Valley Road lies on the banks of Pleasants Creek, a tributary of Lake Solano (where Pleasants Creek meets mainstem Putah Creek, see Figure 1). The parcel has severe bank erosion problems associated with a heavy infestation of Arundo that blocked Pleasants Creek, diverting the flows against the banks causing severe lateral erosion. The property is the site of a current Arundo control project in partnership with the U.S. Fish and Wildlife Service Partners for Wildlife program and the Bureau of Reclamation. An initial assessment has been performed by Stream Wise, a fluvial geomorphology consulting firm in cooperation with the U.S. Fish and Wildlife Service. Aerial Photographs of the site are included as Figure 9.

**Subtask PIII-8.1 Field Assessment:** A field survey of the channel segment that flows through the Hoskins property would be conducted including estimates of channel incisement, lateral erosion and vegetative condition in the riparian area including additional survey in the areas proposed for revetment or floodplain enhancement. This work will consist of laser level transects to define the current conditions and calculate the volume of materials needed for revetments. A longitudinal profile of the entire segment will be surveyed to define thalweg depths, water surface elevation, channel slope, bankfull indicators and bank height. A report will be prepared that illustrates channel conditions and specifies locations for root wad and other revetment techniques, including total materials needed. The report products include assessment of channel conditions, volume estimates of erosion, determination of active vs inactive channel erosion, fishery habitat condition, analysis of channel and floodplain function, recommendations for restoration or protection design, cost estimates for implementation, project construction schedule. **Deliverables:** Assessment report.

**Subtask PIII-8.2 Implement Bank Stabilization**: Contour banks as needed, install revetments using 100 root wads, 50 anchor rocks and 100 logs for footers and log vanes, plant 12,000 cuttings. **Deliverables:** Stabilized banks on the Hoskins property.

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#### Addressing CALFED Objectives

The proposed project is consistent with CALFED's goals and objectives as described below.

### A1. Water Supply Reliability

Putah Creek is a model to showcase how watersheds can achieve agreement on minimum creek flows balancing municipal, agricultural and fisheries water demands. In May, 2000, after 10 years of litigation, a Settlement Agreement (see www.putahcreek.org) was reached among water users and environmental plaintiffs wherein Putah Creek has guaranteed minimum flows for at least 20 years, renewable, essentially in perpetuity with community oversight of watershed management and a permanent Streamkeeper. Water users benefit by resolving regulatory issues, decreasing risk of legal challenges over water use.

### A2. Water Quality

Putah Creek has overall good water quality, but it has levels of mercury that can accumulate in certain fish at levels that could pose risks to pregnant women. In the winter months it is laden with sediments from unstable banks aggravated by Arundo. Putah Creek has numerous unprotected culverts, many filled with trash in makeshift efforts to combat soil erosion. Illegal dumping is rampant with evidence of industrial, agricultural and municipal wastes, chemical drums, submerged vehicles, countless tires, appliances, furniture, etc. The incised channel is littered with trash in many places, especially where the county roads approach the creek . In many places these sites resemble small landfills. Agricultural dumping especially of walnut processing wastes has periodically made the creek run black. All of these problems would be assessed and systematically combated through an Internet based information system (see www.putahcreek.org). The abatement of invasive weeds in the watershed and the re-establishment of a continuous riparian corridor will provide lasting water quality benefits by creating a perpetual vegetation filter to airborne pollutants. Instream and riparian habitat restoration will also minimize erosion, increase percolation, and minimize runoff.

### A3. Ecosystem Quality

Putah Creek is an amazingly rich fishery in numbers of species with both cold water and warm water species represented. The creek corridor is still scarred from the 1950s when all vegetation was periodically removed. Many invasive species have begun to dominate the landscape in certain areas. Arundo, Tamarisk, Eucalyptus and Ailanthus are present in large numbers and numerous locations. Putah Creek hosts many protected species including Swainson's hawks, valley elderberry longhorn beetle, southwestern pond turtles and possibly steelhead. The riparian corridor has significant vegetation gaps that impede migration of wildlife. This proposal will result in a budget and full documentation of locations and extent of problem species and restoration opportunities and begin prioritized restoration projects with willing landowners (many identified already).

### A4. Levee System Integrity

Putah Creek has approximately 30 miles of levees. Levee integrity has not generally been a problem on Putah Creek. We will coordinate with DWR concerning levee maintenance and ecological goals.

These objectives will be pursued in ways that reduce conflict in the system and that are equitable, solving problems in all problem areas. We will pursue affordable solutions that are durable politically and economically, that are ready to implement and that do not result in significant redirected impacts.

The use of Internet databases for all data gathering will promote collaboration through instantaneous data access, and integration among watershed efforts with the potential to rapidly ramp up successful internet database applications for use by other watersheds and even on a statewide scale.

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#### Relationship to other projects:

*Stewardship Planning:* A stewardship planning process is underway under a Proposition 204 grant to Solano County. The LPCCC Streamkeeper coordinates closely with the Solano County Department of Environmental Management and with the consultant facilitator and the LPCCC plans to maintain the stewardship process when the facilitated meetings are completed.

*Team Arundo del Norte:* The LPCCC currently implements the Putah Creek portion of the Team Arundo del Norte project by Sonoma Ecology Center. The Streamkeeper represents the LPCCC on Team Arundo del Norte committees and assists with project-wide issues.

*Requests for next phase funding clearly state relationship to previously funded phases:* This project request is primarily for implementation projects but also requests supplemental funding to infill stewardship and assessment needs of Phases I and II.

**System Wide Ecosystem Benefits**: Controlling invasive species, nutrients and silt in runoff benefit downstream areas. Creating more habitat adds to regional habitat inventories. Citizen involvement benefits appreciation of watershed issues on a larger scale.

### **Qualification and Readiness to Implement the Proposed Project**

#### a) Administration of Funds

The fiscal agent for this project will be the Solano County Water Agency (SCWA). The agency has adequate support staff and is very experienced in handling similar large contracts. The LPCCC, Putah Creek Streamkeeper, and the Solano County Department of Environmental Management (SCDEM) are jointly overseeing implementation of the CALFED -funded Putah Creek Stewardship Grant originally awarded to SCDEM. SCWA has reviewed the terms and conditions provided with the Proposal Solicitation Package for this proposal and agrees to comply with all terms and conditions set forth in that package. Project management and oversight of all aspects of the project will be provided by the Putah Creek Streamkeeper. The Streamkeeper is experienced in the coordination of multiple events and very familiar with issues pertaining to the creek. The Streamkeeper is also personally known by the majority of landowners, both public and private, along the creek. Several landowners have requested his help in dealing with issues pertaining to the creek including weed abatement and trash removal. The Streamkeeper position was derived from the historic Putah Creek Accord. The Streamkeeper has a permanent office, computer, support staff and long term funding, Streamkeeper hours will contribute matching funds to this proposal. The Streamkeeper will be supported by the LPCCC and professional consultants, as described below.

#### b) Technical Support

A variety of technical support is available for this project. A professional environmental consulting firm (EDAW) will be retained to provide environmental compliance and permitting services for the implementation projects proposed during Phase III of this project. EDAW is a multidisciplinary firm specializing in environmental compliance, ecological restoration, and design. EDAW will also aid in the watershed assessment, compilation of data on natural resources along the creek, and development of protocols for weed abatement and habitat restoration and will be available to provide other contract services as requested by the Streamkeeper and the LPCCC.

Other technical support available includes multiple specialists from the University of California at Davis, specializing in environmental toxicology, fisheries, wildlife managements and GIS. Office space and equipment for project administration, technical tasks and the physical library of watershed information is provided at the facilities of SCWA in Vacaville. A website that will be used to publicly post data gathered during the assessment of physical and biological resources in the watershed is currently being developed by the Streamkeeper (see <a href="https://www.putahcreek.org">www.putahcreek.org</a> ) and is housed by Davis Community Network (DCN).

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Low altitude high resolution color aerial photographs of the entire watershed planning area including Pleasants Creek and other tributaries were commissioned by SCWA and recently flown in April, 2001. Higher altitude georectified images are being commissioned by SCWA and will be available in June 2001. The low altitude images were timed to capture the optimal identification signature of Arundo in the understory before overstory deciduous trees leafed out, and tamarisk (*Tamarix* sp.) during its peak blossoming period. These aerial photographs will be available to begin mapping of physical and biological resources in the watershed immediately following the award of a contract.

*Roles:* The streamkeeper will manage the project with technical advice from environmental consulting firms. Contractors will be selected to implement key components. The LPCCC will screen and select contractors according to its bylaws including rules concerning conflict of interest.

#### B. Cost: \$1,098,269

Cost Sharing:	
Cost sharing consists of the following:	
Land removed from production (Task III-6)	\$ 42,000
EQIP for hedgerows (Task PIII-6.1)	9,000
Landowner match for hedgerows	3,000
IWMB Farm and Ranch Cleanup Grants	180,000
LPCCC Streamkeeper *	120,000
LPCCC Wildlife Monitoring*	165,000
LPCCC Fisheries Monitoring*	165,000
LPCCC Vegetation Management*	30,000
USFWS Partners for Wildlife (Task PIII-8)	6,600
Bureau of Reclamation (Task PIII-8)	6,600
Volunteers and students	250,000
Total cost sharing*	\$977,200

\*except as claimed for CALFED 2001 Project 0128 match

**Local Involvement:** The LPCCC consists of representatives of 7 local government entities and the University of California, Davis and Putah Creek Council (over 1,000 members) and three water agencies thus assuring close coordination with local government and water supply infrastructure. This project will be implemented with regular input from the stakeholder planning group (e.g. landowner agreements are being developed by a landowner subcommittee of the stakeholder group). Tasks PIII-3.1 and PIII-3.2 are designed to broaden stakeholder participation.

Landowners along the creek have been identified in the stakeholder planning process and they receive regular mailings and updates from the Streamkeeper at stakeholder meetings.

Third Party Impacts: No adverse third party impacts are inticipated.

### **Compliance with Standard Terms and conditions**

The LPCCC and Solano County Water Agency (SCWA) have reviewed the terms and conditions provided with the Proposal Solicitation Package for this proposal and agree to comply with all terms and conditions set forth in that package.

### Literature Cited

Robbins, Paul. "Bringing Farm Edges Back to Life!" Yolo County Resource Conservation District. November 1999

# Appendix A: Figures and Tables

- Figure 1: Overview Map of the Watershed
- Figure 2: Conceptual Model
- Figure 3: Watershed Adaptive Management Action Plan
- Figure 4: Parcels of Landowners Ready to Act Now
- Figure 5: Bringing Farm Edges Back to Life
- Figure 6: Roadsides of Native Perennial Grasses
- Figure 7: Tailwater Ponds for Water Quality,

Habitat and Farmland Benefits

- Figure 8: Landowner Authorization for Task PIII-6
- Figure 9: Hoskins Parcel Aerial Photography Index

Figure 10: Hoskins Parcel Photograph PV-16

Figure 11: Hoskins Parcel Photograph PV-17

Figure 12: Hoskins Parcel Photograph PV-18

- Figure 13: Hoskins Parcel Photograph PV-19
- Figure 14: Hoskins Parcel Photograph PV-21
- Figure 15: Landowner Authorization for Task PIII-8
- Table 1: Distribution of Primary Invasive Weeds







# Figure 3: Watershed Adaptive Management Action Plan





Figure 4: Distribution of landowners who are ready to act now to combat invasive weeds

Figure 5: FARMS Program Healthy Farm Boundaries Demonstration Site











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Figure 8: Landowner Authorization for Task PIII-6



October 1, 2001

Rich Marovich Putah Creek Streamkeeper Solano County Water Agency

Dear Rich,

I would like to express my support for the Solano County Water Agency's 2002 CALFED Ecosystem Restoration Program proposal for implementation of restoration projects along Putah Creek.

Sierra Orchards owns approximately one mile of Putah Creek frontage property, and I have been working closely with the Lower Putah Creek Coordinating Committee in the last year to control invasive exotics such as Tamarisk and Arundo. We have also been working together to remove trash buildup along the entire creekside property. I want to continue these efforts of invasive weed removal, and work to replace these species with native riparian vegetation.

I am absolutely supportive of the major restoration projects proposed on my property, which include; 1) extending the oak woodland/upland planting to extend Putah Creek's buffer area, 2) two (2) tailwater ponds, with accompanying riparian habitat, 3) three (3) separate riparian buffer strips that act as wildlife corridors, reduce soil erosion (and thereby sediment running into Putah Creek), provide pathways for surface water to percolate into the soil, and provide beneficial insect habitat, 4) grassed roadsides, and 5) two (2) sediment traps to slow down irrigation water and trap sediment before it runs into Putah Creek. All of these projects will take approximately 8.5 acres of land to implement, and will require approximately six (6) acres to be taken out of agricultural production (\$36,000 in value). As a part of this project, I permit access by Solano County Water Agency's staff to help plan an implement all of these projects.

As a landowner, I have been practicing sustainable agriculture for over 15 years. I am very excited to be involved in furthering this process by adding more wildlife-friendly agricultural practices (such as ponds and riparian buffers) to my farming operation. I am also looking forward to this farm being a demonstration site for other farmers in Yolo and Solano Counties who are interested in implementing these kinds of practices on their own land.

Sincerely,

have monan

Craig McNamara Sierra Orchards

Sierra Orchards Cratg McNamara D264 Royce Road Winters, CA 95694 Phone: (530) 795-3824 Fax: (530) 795-4035





Figure 10:

Hoskins Parcel

Photograph PV-17



Figure 11:

Hoskins Parcel

Photograph PV-18



Figure 12:

Hoskins Parcel Photograph PV-19



Figure 13:

Hoskins Parcel

Photograph PV-21

Figure 14: Landowner Authorization for Task PIII-8

8212 Pleasants Valley Road Vacaville, CA 95688 October 4, 2001

Rich Marovich Lower Putah Creek Coordinating Committee 508 Elmira Road Vacaville, CA 95687

Dear Rich,

Thank you for offering to include the ranch's portion of Pleasants Creek in your Cal Fed grant as it pertains to post arundo removal work. I would whole heartedly agree to allow stream bed restoration work be done as funded by your grant. Rick Poore would be a great resource for the planning and supervision of this process.

We are starting our arundo removal this fall, and are planning to be done before the winter rains come. Following this removal, we look forward to this restoration work, and helping the creek "find its peace" through stream bed restoration. Thank you, again, for including this portion of Pleasants Creek in your grant proposal.

Sincerely yours,

Ethel R. Zheteine

Ethel R. Hoskins

Table 1:	Estimated Infestation Area in Acres of Primary Invasive Weeds by Reach from Preliminary
	Interpretation of Aerial Photographs and Reconnaissance Surveys (Compare with Reaches in Figure 1)

	Mainstem Putah Creek by Reach										
	Reach 7:	Reach 6:	Reach 5:	Reach 4:	Reach 3:	Reach 2:	Reach 1:				
Weeds	Pleasants Creek	Monticello Dam to Putah Diversion Dam	Div. Dam to Hwy 505	Hwy 505 to Stev. Bridge	Stev. Bridge to I-80	I-80 to Mace	Mace to DWR Dam	Total			
Ailanthus	1.54	1.33	1.59	2.64	1.08	0.61	0.82	9.61			
Arundo	3.31	0.60	11.33	3.42	1.92	1.09	1.64	23.31			
Eucalyptus	-	0.49	4.40	13.52	15.33	4.88	1.84	40.46			
Tamarisk	-	-	-	1.25	2.73	1.26	2.46	7.70			
Total Weeds by Reach	4.85	2.42	17.32	20.83	21.06	7.84	6.76	81.08			
Total Riparian Area	77	363	319	251	219	244	328	1801			