

# Mill Creek Adaptive Management Fish Passage Improvement Project

## Project Information

1. **Proposal Title:**

Mill Creek Adaptive Management Fish Passage Improvement Project

2. **Proposal applicants:**

James Chandler, Orange Cove Irrigation District  
Harvey Williams, H R Williams Engineering Services  
Serge Birk, Central Valley Project Water Association

3. **Corresponding Contact Person:**

James Chandler  
Orange Cove Irrigation District  
P.O. Box 308 Orange Cove, CA 93646  
559 626-4461  
ocid@psnw.com

4. **Project Keywords:**

**At-risk species, fish  
Flow, Instream  
Water Resource Management**

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:**

Natural Flow Regimes

8. **Type of applicant:**

Local Agency

9. **Location - GIS coordinates:**

Latitude: 40.050  
Longitude: -122.040  
Datum: NAD27

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

The Project is located in the lower 6 miles of the Mill Creek Watershed in the Los Molinos Mutual Water Company (LMMWC) service area of Tehama County, California. It is bounded on the north by Antelope Creek, on the east by the Chico Monocline of the foothills of the Sierra Nevada, on the south by Deer Creek and on the west by the Sacramento River. The project encompasses approximately 9000 acres. The area is located in the Butte Basin Ecological Management Zone. The Project area is shown on USGS 7.5 Quadrangle Los Molinos at Latitude 40 degrees, 3 minutes North and Longitude 122 degrees, 4 minutes West. Mill Creek is a significant Chinook salmon spawning habitat that is tributary to the upper Sacramento River. The stream originates on the southern slopes of Lassen Peak at an approximate elevation of 8,000 feet. It flows to its confluence with the Sacramento River at an approximate elevation of 200 feet, adjacent to the unincorporated community of Los Molinos. The watershed drains approximately 134 square miles through a stream length of about 60 miles. The stream has several unique features that include its course through steep-sided canyons. These make Mill Creek relatively inaccessible in the upper watershed and provide some of the highest elevation-spawning habitat for Chinook salmon known in North America. Mill Creek is one of the few Sacramento River tributaries that support both wild Spring-run Chinook salmon and Fall-run Chinook salmon. Habitat in upper Mill Creek is considered excellent for Spring-run holding, spawning and early life stage development.

**10. Location - Ecozone:**

7.3 Mill Creek

**11. Location - County:**

Tehama

**12. Location - City:**

Does your project fall within a city jurisdiction?

No

**13. Location - Tribal Lands:**

Does your project fall on or adjacent to tribal lands?

No

**14. Location - Congressional District:**

California 4

15. **Location:**

**California State Senate District Number:** SD 4

**California Assembly District Number:** AD 02

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: 30

Total Requested Funds: 1427900

b) Do you have cost share partners already identified?

Yes

If yes, list partners and amount contributed by each:

**Orange Cove Irrigation District 2400000**

c) Do you have potential cost share partners?

No

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

No

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

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

No

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

No

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:**

# Environmental Compliance Checklist

## Mill Creek Adaptive Management Fish Passage Improvement Project

### 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".

CEQA Lead Agency: Orange Cove Irrigation District

NEPA Lead Agency (or co-lead:) US Bureau of Reclamation

NEPA Co-Lead Agency (if applicable): None

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

#### CEQA

-Categorical Exemption

Negative Declaration or Mitigated Negative Declaration

-EIR

-none

#### NEPA

-Categorical Exclusion

Environmental 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.

The draft ES/IS is currently being reviewed prior to the release of the Final EA/IS. The Final EA/IS is expected to be completed before February 1, 2002

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                      Needed

Rezone

Williamson Act Contract Cancellation

Other

**STATE PERMITS AND APPROVALS**

Scientific Collecting Permit              Required

CESA Compliance: 2081

CESA Compliance: NCCP

1601/03

CWA 401 certification

Coastal Development Permit

Reclamation Board Approval

Notification of DPC or BCDC

Other

**FEDERAL PERMITS AND APPROVALS**

ESA Compliance Section 7 Consultation      Required

ESA Compliance Section 10 Permit              Required

Rivers and Harbors Act

CWA 404

Other

## **PERMISSION TO ACCESS PROPERTY**

Permission to access city, county or other local agency land.      Obtained  
Agency Name: Los Molinos Mutual Water Company

Permission to access state land.  
Agency Name:

Permission to access federal land.  
Agency Name:

Permission to access private land.  
Landowner Name:

### **6. Comments.**

Question 7 - Permission to access private land. Written permission will be acquired for any privately owned site that the Project Technical Advisory Committee selects as a needed research site as the Project progresses.

# Land Use Checklist

## Mill Creek Adaptive Management Fish Passage Improvement Project

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

No

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

Yes

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

No

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

The project deals with continued liaison and partnering with stakeholders and agencies dealing with Mill Creek water, land uses issues and evaluation of potential groundwater and surface water supplies. The project shall initiate monitoring, assessment and adaptive management experiments to evaluate program efficacy and test developed hypothesis and conceptual models. It will also initiate groundwater and water conservation studies to determine potential water supplies. The potential water supply and long-term solution studies will be completed in a three-year period. The results of the studies will be used to implement reasonably foreseeable future programs, managed by the local agencies, as funds from other sources are made available.

4. **Comments.**

None



# Conflict of Interest Checklist

## Mill Creek Adaptive Management Fish Passage Improvement Project

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):**

James Chandler, Orange Cove Irrigation District  
Harvey Williams, H R Williams Engineering Services  
Serge Birk, Central Valley Project Water Association

### **Subcontractor(s):**

Are specific subcontractors identified in this proposal? Yes

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

William Bergmann    Kleinfelder Enginerring, Inc.

None                      None

None                      None

None                      None

None                      None

### **Helped with proposal development:**

Are there persons who helped with proposal development?

Yes

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

**Robert Ramirez    Orange Cove Irrigation District**

**James Lowden**   **Los Molinos Mutual Water Company**

**William Berens**   **Los Molinos Mutual Water Company**

**Comments:**

None

# Budget Summary

## Mill Creek Adaptive Management Fish Passage Improvement Project

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
I - A	Research/review of historic fish passage, water quality data, develop adaptive management for instream flow operations and monitoring plan	0	0	0	0	0	28400	0	0	28400.0	8520	36920.00
I - B	Monitor fish presents, fish passage and water operations.	1680	42000	16460	300	1400	9600	63000	0	132760.0	39830	172590.00
I - C	Analysis monitoring and water operation data for hydrologic and biological triggers and revise adaptive management plan.	40	1680	660	1000	0	11200	0	0	14540.0	4360	18900.00
II - A	Research/review area groundwater data and geologic conditions.	0	0	0	1000	0	35200	0	0	36200.0	10860	47060.00
II - B	Establish groundwater monitoring program and coordinate monitoring activities with local entities.	0	0	0	0	400	19200	5000	0	24600.0	7380	31980.00
II - C	Analyze groundwater level data and coordinate results with local entities.	80	3360	1310	0	0	19200	0	0	23870.0	7160	31030.00

III - A	Inventory LMMWC distribution system, engineering records and existing operation policies and procedures.	80	3360	1310	0	0	25600	0	0	30270.0	9080	39350.00
III - B	Establish a real time data collection system to monitor water operations and develop water diversion database.	20	840	330	2000	800	6400	40000	0	50370.0	15110	65480.00
III - C	Determine LMMWC service area land use and develop crop water needs hydrograph.	20	840	330	0	0	6400	0	0	7570.0	2270	9840.00
III - D	Evaluate distribution system capabilities, measures to improve performance, costs and water savings.	0	0	0	0	0	0	0	0	0.0	0	0.00
IV - A	Establish Fund Account and management policies.	24	600	240	0	100	0	0	0	940.0	280	1220.00
IV - B	Obtain and deposit Fund monies.	8	200	80	0	0	0	0	50000	50280.0	80	50360.00
V - A	Project Administration.	310	7750	3030	700	1000	0	0	0	12480.0	3740	16220.00
V - B	Project Management and Coordination.	160	6720	2620	1250	1000	14400	600	0	26590.0	7980	34570.00

V - C	Prepare and present quarterly status reports on status of Project and Project final report.	120	5040	1970	4400	4000	24000	8000	0	47410.0	14220	61630.00
		2542	72390.00	28340.00	10650.00	8700.00	199600.00	116600.00	50000.00	486280.00	130870.00	617150.00

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
I - A	Research/review of historic fish passage, water quality data, develop adaptive management for instream flow operations and monitoring plan	0	0	0	0	0	0	0	0	0.0	0	0.00
I - B	Monitor fish presents, fish passage and water operations.	1680	42000	16460	0	1300	9600	12000	0	81360.0	24410	105770.00
I - C	Analysis monitoring and water operation data for hydrologic and biological triggers and revise adaptive management plan.	40	1680	660	1000	0	17600	0	0	20940.0	6280	27220.00
II - A	Research/review area groundwater data and geologic conditions.	0	0	0	0	0	0	0	0	0.0	0	0.00

II - B	Establish groundwater monitoring program and coordinate monitoring activities with local entities.	0	0	0	0	300	28800	500	0	29600.0	8880	38480.00
II - C	Analyze groundwater level data and coordinate results with local entities.	40	1680	660	1000	0	9600	0	0	12940.0	3880	16820.00
III - A	Inventory LMMWC distribution system, engineering records and existing operation policies and procedures.	0	0	0	0	0	0	0	0	0.0	0	0.00
III - B	Establish a real time data collection system to monitor water operations and develop water diversion database.	0	0	0	0	600	1600	5000	0	7200.0	2160	9360.00
III - C	Determine LMMWC service area land use and develop crop water needs hydrograph.	80	3360	1310	500	0	12800	0	0	17970.0	5390	23360.00
III - D	Evaluate distribution system capabilities, measures to improve performance, costs and water savings.	160	6720	2620	1500	0	24000	0	0	34840.0	10450	45290.00

IV - A	Establish Fund Account and management policies.	0	0	0	0	0	0	0	0	0.0	0	0.00
IV - B	Obtain and deposit Fund monies.	8	200	80	0	0	0	0	50000	50280.0	80	50360.00
V - A	Project Administration.	300	7500	2930	600	1000	0	0	0	12030.0	3610	15640.00
V - B	Project Management and Coordination.	120	5040	1970	1000	1000	14400	0	0	23410.0	7020	30430.00
V - C	Prepare and present quarterly status reports on status of Project and Project final report.	120	5040	1970	4400	4000	20800	0	0	36210.0	10860	47070.00
		2548	73220.00	28660.00	10000.00	8200.00	139200.00	17500.00	50000.00	326780.00	83020.00	409800.00

<b>Year 3</b>												
<b>Task No.</b>	<b>Task Description</b>	<b>Direct Labor Hours</b>	<b>Salary (per year)</b>	<b>Benefits (per year)</b>	<b>Travel</b>	<b>Supplies &amp; Expendables</b>	<b>Services or Consultants</b>	<b>Equipment</b>	<b>Other Direct Costs</b>	<b>Total Direct Costs</b>	<b>Indirect Costs</b>	<b>Total Cost</b>
I - A	Research/review of historic fish passage, water quality data, develop adaptive management for instream flow operations and monitoring plan	0	0	0	0	0	0	0	0	0.0	0	0.00
I - B	Monitor fish presents, fish passage and water operations.	1680	42000	16460	0	1400	9600	12000	0	81460.0	24440	105900.00

I - C	Analysis monitoring and water operation data for hydrologic and biological triggers and revise adaptive management plan.	40	1680	670	1000	0	27200	0	0	30550.0	9170	39720.00
II - A	Research/review area groundwater data and geologic conditions.	0	0	0	0	0	0	0	0	0.0	0	0.00
II - B	Establish groundwater monitoring program and coordinate monitoring activities with local entities.	0	0	0	0	300	9600	500	0	10400.0	3120	13520.00
II - C	Analyze groundwater level data and coordinate results with local entities.	0	0	0	1000	0	6400	0	0	7400.0	2220	9620.00
III - A	Inventory LMMWC distribution system, engineering records and existing operation policies and procedures.	0	0	0	0	0	0	0	0	0.0	0	0.00
III - B	Establish a real time data collection system to monitor water operations and develop water diversion database.	0	0	0	0	500	1600	5000	0	7100.0	2130	9230.00



III - C	Determine LMMWC service area land use and develop crop water needs hydrograph.	0	0	0	0	0	0	0	0	0.0	0	0.00
III - D	Evaluate distribution system capabilities, measures to improve performance, costs and water savings.	120	5040	1970	2000	0	22400	0	0	31410.0	9420	40830.00
IV - A	Establish Fund Account and management policies.	0	0	0	0	0	0	0	0	0.0	0	0.00
IV - B	Obtain and deposit Fund monies.	8	200	80	0	0	0	0	50000	50280.0	80	50360.00
V - A	Project Administration.	300	7500	2930	700	400	0	0	0	11530.0	3460	14990.00
V - B	Project Management and Coordination.	80	3360	1310	1250	500	16000	0	0	22420.0	6730	29150.00
V - C	Prepare and present quarterly status reports on status of Project and Project final report.	240	10080	3930	6000	9000	38400	0	0	67410.0	20220	87630.00
		2468	69860.00	27350.00	11950.00	12100.00	131200.00	17500.00	50000.00	319960.00	80990.00	400950.00

**Grand Total=1427900.00**

**Comments.**

The overhead rate is not applied to the "Other Direct Costs" of \$150,000 in Task IV. The following are the five Project Tasks budget totals: Task I - \$ 507,020 Task II - \$ 188,510 Task III - \$ 242,740 Task IV - \$ 152,300 Task V - \$ 337,330 Total - \$1,427,900

# Budget Justification

## Mill Creek Adaptive Management Fish Passage Improvement Project

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

Estimated direct labor hours for OCID staff. Jim Chandler, District Manager Year 1 520 hours Year 2 560 hours Year 3 480 hours Total 1,560 hours Robert T. Ramirez, District Controller/Treasurer and Clerk staff (Average hours). Year 1 342 hours Year 2 308 hours Year 3 308 hours Total 958 hours Temporary Field Technicians. Year 1 1,680 hours Year 2 1,680 hours Year 3 1,680 hours Total 5,040 hours

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

Approximate rate of compensation for OCID employees. Jim Chandler, District Manager - \$42 per hour Robert T. Ramirez, District Controller/Treasurer and Clerk staff (Average wage) - \$25 per hour Temporary Field Technicians - \$25 per hour

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

The OCID benefit rate applicable to each district employee is 39%. The rate includes health, vision, and dental and retirement benefits for the employees.

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

Travel of OCID employees and consultants Los Molinos and/or Sacramento areas from local area and OCID area for the following purposes: Task I, Task II and Task III coordination, reviews and reports. Year 1 - \$4,300 Year 2 - \$4,000 Year 3 - \$4,000 Total - \$12,300 Task V Administration coordination, reviews and reports Year 1 - \$700 Year 1 - \$600 Year 1 - \$700 Total - \$2,000 Task V Management and coordination activities, meetings and reports. Year 1 - \$1,250 Year 2 - \$1,250 Year 3 - \$1,250 Total - \$3,750 Task V quarterly report coordination activities, preparations and meetings. Year 1 - \$4,400 Year 2 - \$4,400 Year 3 - \$6,000 Total - \$14,800 Total yearly travel of OCID employees and consultants for above activities. Year 1 - \$10,650 Year 2 - \$10,250 Year 3 - \$11,950 Total - \$32,850

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

Task I supplies and expendables Report and record keeping supplies and miscellaneous expendable tools and materials. \$1,100 Rental vehicles fuel and maintenance. \$3,000 Task II supplies and expendables Report and record keeping supplies and miscellaneous expendable tools and materials. \$1,000 Task III supplies and expendables Report and record keeping supplies and miscellaneous expendable tools and materials. \$1,900 Task IV supplies and expendables Report and record keeping supplies. \$100 Task V supplies and expendables Office supplies and miscellaneous tools. \$4,900 Materials, coping and printing of 12 quarterly reports. \$12,000 Materials, coping and printing of project final report. \$5,000

**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 I - Fisheries biologist Serge Birk. His primary responsibility is to conduct and coordinate the necessary activities to accomplish the goals of the task. The estimated time required is 1220 hours and the approximate consulting rate is \$80/hour. Task I - H. R. Williams Engineering Services. His primary responsibility is to assist Mr. Birk in evaluating the hydrology on Mill Creek. The estimated time required is 120 hours and the approximate consulting rate is \$80/hour. Task I - Survey Crew. Crew to establish cross sections of Mill Creek at selected monitoring and critical riffles sites. The estimated time required is 75 hours and the approximate surveying rate is \$80/hour. Task II - Hydrogeologist William Bergmann of, Kleinfelder Engineering, Inc. His primary responsibility is to conduct and coordinate the necessary activities to accomplish the goals of the task. The estimated time required is 1360 hours and the approximate consulting rate is \$80/hour. Task II - H. R. Williams Engineering Services. His primary responsibility is to assist Mr. Bergmann in evaluating the conjunctive use opportunities on Mill Creek. The estimated time required is 240 hours and the approximate consulting rate is \$80/hour. Task III - H. R. Williams Engineering Services. His primary responsibility is to conduct and coordinate the necessary activities to accomplish the goals of the task. The estimated time required is 1260 hours and the approximate consulting rate is \$80/hour. Task V - Fisheries biologist Serge Birk serving as the Project Program Coordinator. Mr. Birk shall assemble and conduct and facilitate workshops and other relevant meetings of the TAC. The estimated time required is 560 hours and the approximate consulting rate is \$80/hour. Task V Consultants Serge Birk, H. R. Williams, and William Bergmann preparing and presenting quarterly reports and Project final report. The estimated time required is 1040 hours and the approximate consulting rate is \$80/hour.

**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.

Task I equipment needs: Rental of vehicles for temporary employees. \$12,000 Rental of helicopter aerial observations and watercraft for fish presents observations in Sacramento River. \$23,000 Fish counting acoustic, radio tagging fish trap and other appropriate equipment to be used for counting fish and observing fish migration. \$25,500 Computer, printer, scanner and software. \$5,000 Survey equipment for monitoring critical riffles. \$5,000 Under water video system to monitor fish movement. \$5,000 Under water video system housing. \$6,500 Electronic fish finding equipment \$5,000 Task II equipment needs: Appropriate groundwater-monitoring equipment such as recorders and water level depth sounders. \$6,000 Task III equipment needs: Appropriate water facility-monitoring equipment such as recorders and water meters. \$5,000 Real-time supervisory control system. 5 supervisory control panel boards, radios and sensors with protective shelters. \$35,000 Supervisory control software, computers and printers. \$5,000 Other miscellaneous equipment. \$ 5,000 Task V equipment needs: Report preparation and presentation equipment. Computer, software and printer. \$3,000 Digital slide projector. \$5,000 Other miscellaneous equipment. \$ 600

**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.

Management and administration responsibilities will be to coordinate activates of the present CDFG and CDWR fish enhancement projects with the Adaptive Management of Water Operations and Fisheries Studies, the Groundwater Studies, the Water Conservation Studies and the Conservation Fund components of the Project. The following are the estimated costs of these activities: Project Administration activities - \$46,850 Project management and coordination activities - \$94,150 Project status reports and final long-term solution report - \$196,330 Project total management, administration, coordination and reporting costs - \$337,330

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

Establishment of readily available funds to be used for fish passage education and unscheduled or unfunded fish monitoring, riffle modification, assessment, and research needs.

**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.

The Districts overhead rate for the project is 30%, encompassing general office requirements, such as phones furniture office equipment and energy, office staff and District fixed costs.

# **Executive Summary**

## **Mill Creek Adaptive Management Fish Passage Improvement Project**

**Geographic Location** The Project is located in lower Mill Creek a tributary to the upper Sacramento River in the Los Molinos Mutual Water Company (LMMWC) service area of Tehama County and is within the Sacramento Valley Region of the CALFED solution area near the town Los Molinos.

**Project Type** The Project is a three-year pilot project involving numerous partners engaged in research to advance understanding of fish passage and ecosystem instream needs in lower Mill Creek.

**Project Objective** The principal objectives of this Project are to; identify through testable hypotheses the optimum fish passage flows for Spring-run, Fall-run Chinook salmon and steelhead, identify through adaptive management process, a long term solution for fish restoration in lower Mill Creek and identify potential additional water resources in the watershed which may be available in the future through conservation, groundwater pumping or acquisition for the benefit of the watershed and anadromous restoration and recovery.

**Project Implementation** Critical to the success of this Project is the formation of the Technical Advisory Committee (TAC) and inclusion of peer review of proposed experimental design, protocols, and technology.

**Hypotheses and Uncertainties** The Project incorporates six conceptual models dealing with flow related activities, mechanical manipulation of riffles, groundwater impacts, water conservation, ecosystem functions, and potential additional water supplies and utilization of a Conservation Fund.

**Expected Outcomes and Relationship to CALFED ERP and/or CVPIA goals** The Project is likely to contribute to advancing AFRP doubling goals for endangered Spring-run Chinook salmon and is likely to provide valuable information to support future CALFED and CVPIA water acquisition programs. The Project investigates natural flow regimes, implements fish passage studies, proposes adaptive management experiments that promote ecosystem functions to rehabilitate natural processes, develops and tests hypothesis to support restoration of river, stream and riparian habitat and is likely to contribute to achieve recovery of at-risk native species. The Project is expected to immediately enhance current environmental conditions.

# **Proposal**

## **Orange Cove Irrigation District**

### **Mill Creek Adaptive Management Fish Passage Improvement Project**

James Chandler, Orange Cove Irrigation District  
Harvey Williams, H R Williams Engineering Services  
Serge Birk, Central Valley Project Water Association

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## **A. Project Description, Project Goals and Scope of Work**

### **1. Problem**

Mill Creek is one of the few Sacramento River tributaries that support wild Spring-run Chinook salmon, Fall-run Chinook salmon and steelhead in the CALFED solution area. It is important to note that Mill Creek restoration opportunities are unique as Mill Creek is an unregulated stream and anadromous fish populations in the watershed are not influenced by the presence of federal, state or private fish hatcheries.

**Historically, flows in the lower-most portions of Mill Creek have been documented inadequate during biologically critical migration periods for Chinook salmon and steelhead. There is also considerable scientific uncertainty relative to the amount and duration of instream flows required to recover and restore anadromous populations in the Mill Creek watershed.** Optimal flow regimes for fish passage have not been identified and new research, monitoring and testing of adaptive management experiments is required to determine optimal fish passage flows required for anadromous fish recovery and restoration pursuant to CALFED Ecosystem Restoration Program and Central Valley Project Improvement Act (CVPIA) restoration goals.

Presently, instream flows for fish passage in Mill Creek have been augmented through water leases, groundwater exchange programs and other operational activities and have been provided by Los Molinos Mutual Water Company (LMMWC), California Department of Fish and Game (CDFG) and California Department of Water Resources (CDWR) through existing cooperative agreements with local landowners and support from the CDWR Four Pumps Program. Unfortunately, these agreements are subject to termination, being dependent on State of California continuing extension of non-permanent water supply agreements with local water right holders and cooperation with the LMMWC watermaster.

**The Mill Creek Adaptive Management Fish Passage Improvement Project** (Project) is a three-year pilot project being proposed by the Orange Cove Irrigation District (OCID) in cooperation with LMMWC and private landowners located in the Lower Mill Creek Watershed. (Project area map shown in Attachment page 21.) The Project shall provide necessary water resources required to test hypotheses and evaluate alternative instream flow scenarios which doubles current instantaneous instream flows of established programs. The Project shall also investigate and evaluate alternative instream flow scenarios and experiments to determine future instream flow management and requirements for a long-term solution to the identified fish passage problems in lower Mill Creek. The Project provides an opportunity to implement protective measures for Spring-run Chinook salmon and steelhead and is consistent with the goals and objectives of the following programs:

- Restoring Central Valley: A Plan for Action (CDFG, 1993)
- Recovery Plan for the Sacramento-San Joaquin Delta Native Fishes (USFWS 1996)
- Status of Actions to Restore Central Valley Spring-Run Chinook salmon (CDFG, 1996)
- Mill Creek Watershed Management Strategy Report (CH2MHill, 1997)
- USFWS Anadromous Fish Restoration Plan (USFWS, 2001)
- CALFED Ecosystem Restoration Program Draft Stage 1 Implementation Plan (CALFED, 2001)
- CALFED Ecosystem Restoration Program 2002 Proposal Solicitation Package (CALFED August 2001)
- CALFED Watershed Program (CALFED, 2000)

The Project applicant, OCID has purchased 5.5% of Mill Creek adjudicated and appropriated water rights and is in the final stages of purchasing 2% more for a total of 7.5% of instantaneous instream flow in Mill Creek. The

purchased water will be provided for Mill Creek instream flow enhancement and other environmental purposes that shall advance CALFED Ecosystem Restoration Program (ERP) goals and objectives. On an annual average, the project would provide 8,126 acre-feet of environmental water and up to 1,800 acre-feet of exchange water to benefit passage fish as spring pulse and/or enhancement flows.

OCID shall initiate monitoring, assessment and adaptive management experiments to evaluate program efficacy and test developed hypothesis and conceptual models associated with instream flow scenarios. OCID will also initiate groundwater and water conservation studies to identify potential additional water supplies available for additional instream flow required for restoration and recovery of anadromous fish and ecosystem. The results of these studies will be used to implement future programs, managed by the local agencies, as funds from other sources are made available after completion of this three-year proposal.

During the last three years of conceptual project development, OCID solicited and secured assistance and guidance from representatives of the following agencies and interest groups: United States Bureau of Reclamation (USBR), US Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), CDFG, CDWR, LMMWC, The Nature Conservancy (TNC), Mill Creek Conservancy (MCC), Tehama County and local watershed landowners. This proposal has incorporated critical comments made by technical reviewers and program managers for CALFED ERP, Watershed Program, CVPIA (B3) Water Acquisition Program and CVPIA (B2) Anadromous Fish Restoration Program (AFRP).

OCID, in partnership with the USBR, is preparing a Draft Environmental Assessment/Initial Study (DEA/IS) for the Project in accordance with the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA). USBR and OCID have been designated as federal and state leads respectively for Project implementation. The parties have initiated federal Endangered Species Act (ESA) consultation. They have included sections within the DEA/IS to comply with provisions required by federal ESA mandates (Biological Assessment) for review by NMFS and USFWS. NMFS and CDFG commented on the DEA/IS flow acquisition component and stated that monitoring to evaluate efficacy of the flow augmentation would be required. Tehama County commented that a monitoring program to assess groundwater resources and impacts must be included as part of the project.

OCID and its partners recognize that completion of formal consultation is required to complete finalization of proposed monitoring protocols. Issuance of NMFS research or take permits is also required to facilitate implementation of some of the proposed monitoring aspects dealing with possible handling Spring-run Chinook salmon during monitoring and assessment of causes and effects associated with flow augmentation (increased base flows and pulse flow experiments). Monitoring of biological surrogate parameters appear less problematic, e.g. monitoring of ecosystem attributes, habitat qualities, hydrologic and geomorphic changes resulting from flow augmentation.

## **2. Justification (including conceptual model, hypotheses and selection of project type)**

The Project proposes and demonstrates capacity building for collaborative local partnering, planning and management of additional instream flows for restoration and rehabilitation of lower Mill Creek. It also demonstrates compatibility of Lower Mill Creek Watershed ecosystem restoration through the acquisition of additional instream flows, endangered species restoration objectives with current agriculture land use practices and groundwater management in and adjacent to the watershed (CALFED 2000).

The Project responds to watershed ecosystem and fish and wildlife protection needs identified in the Mill Creek Watershed Management Strategy Report (CH2MHill 1997). OCID has secured water rights on Mill Creek and will provide additional instream flow under this Project for the benefit of the lower Mill Creek watershed, threatened spring-run Chinook salmon and for other environmental purposes. Guiding the Project's development were recommendations contained in state and federal ESA mandates, the AFRP (USFWS 2001) CALFED Ecosystem Restoration Program (ERP) (CALFED 2001), Tehama County Flood Control and Water



Conservation District Coordinated AB 3030 Groundwater Management Plan in addition to recommendations of (CH2MHill 1997).

### ***Conceptual Models and hypotheses***

The *conceptual model* for this action are based on observations and research conducted by Stacy Cepello of CDWR, Alley et al., and other researchers. Cepello documented positive fish passage response by adult Spring-run Chinook salmon when pulse flows were provided in Mill Creek and Deer Creek: An Emerging Ecosystem Management Approach (Cepello 1995). This is the basis for our *conceptual model* that better fish passage in Mill Creek will result in more fish returning to Mill Creek to propagate which will advance an endangered species recovery.

The first proposed *hypothesis* is designed to test migration response of adult Chinook salmon in response to pulse flows or an increase to base flows in Mill Creek. There will be opportunities to reduce diversions in lower Mill Creek to zero through groundwater exchanges and a result provide an unprecedented protection for fisheries as well opportunity for experimentation of flow scenarios and responses

The second proposed *hypothesis* is based on observations made by Alley et al in IFIM Modeling of Critical Passage Riffles, with Recommended Passage Flows for Chinook salmon in Lower Mill Creek, Tehama County, California (Alley et al. 1996). Alley et al. suggests that migration barriers of Spring-run and Fall-run Chinook salmon adults could be mechanically manipulated and fish passage flow requirements could be reduced at riffles sites that appear to have delayed adult fish migration during critical and critically dry conditions in lower Mill Creek This Project shall test this hypothesis and document findings.

The third *hypothesis* suggests that ecosystem functions and processes in lower Mill Creek shall improve as a result of increase of base flows and pulse flows in lower Mill Creek.

The fourth *hypothesis* involves monitoring groundwater impacts and suggests that groundwater impacts will not be negatively impacted by the current CDWR exchange. (Cepello 1995) reported that exchange of groundwater pumped water for agriculture resulted with greater instream flows in lower Mill Creek for the benefit of juvenile and adult Chinook salmon without adverse impact to agriculture users. Researchers will also conduct studies to determine if additional Project area water for fish passage enhancement can be developed. Any additional water will most likely be developed through a conjunctive use program.

The fifth *hypothesis* suggests that potential additional water supplies would be available from water conservation practices of older existing water distribution systems, CALFED Best Management Practices. The potential for additional water supplies from conservation practices will be evaluated by studies of the LMMWC Distribution System.

A sixth *hypothesis*, identified by local community and stakeholders, suggests that readily available monies are needed to facilitate fish passage as a highly desirable competent of the Project. The Project establishes a Conservancy Fund of readily available funds to be used for fish passage activities.

This Project is a three-year pilot project that will demonstrate cause and effect relationships through testing of hypothesis that allow for manipulation of instream flow regimes and other related experiments. OCID and appropriate collaborators shall initiate appropriate monitoring of biological, hydrologic and geomorphic parameters. Through the implementation of these proposed adaptive management experiments researchers may be able to assess and identify biological triggers needed by managers and operators to implement cost and water efficient instream management regimes or release schedules required to promote ecosystem health and contribute to wildlife protection. The pilot Project will also provide a research platform and framework to advance CALFED understanding of ecosystem functions and processes and linkages to fish passage objectives and identification and need for additional water supplies.

### 3. Approach

OCID is requesting funding for the Project under the auspices of the CALFED ERP. The Project addresses and meets strategic goals numbers 1 and 2 as stated in the Draft Stage 1 Implementation Plan (CALFED 2001). Specifically, the project investigates natural flow regimes restoration priorities for the Sacramento Region SR2, SR3 and SR7 as stated in the 2002 Proposal Solicitation Package (CALFED August 2001). These strategic goal and restoration priorities, which are incorporated into this Project, are likely to advance endangered species recovery.

Through acquisition of approximately 7.5% of the instantaneous flow of Mill Creek, the Project will be able to provide a water right entitlement acquired by OCID, for the purpose to test the conceptual model and hypotheses through experimentation to determine appropriate instream flow needs required for successful fish passage of various life stages in the lower Mill Creek watershed.

Funding of this project will insure that the provided water right entitlement shall be used to meet stated CALFED Ecosystem Restoration Program, Watershed Program goals and objectives and demonstrate synergy with CVPIA environmental water acquisition mandates and goals of the AFRP.

- The Project will contribute to advancing our knowledge of ecosystem quality; water supply and water quality components listed as CALFED primary objectives and reduce scientific uncertainty associated with ecosystem restoration.
- The Project shall address primary objectives dealing with improved coordination among agencies, organizations and local watershed groups, initiate development of watershed monitoring and assessment protocols through mutual understanding of partners' limitation and constraints.
- The Project will also promote water conservation measures through studies and educational outreach and will integrate and identify conjunctive use opportunities by implementation of groundwater studies. Water conservation and groundwater investigations will be coupled with hydrologic, geomorphic assessments targeted to promote ecosystem sustainability of watersheds pursuant to stated ERP, Environmental Water Program and CVPIA objectives and goals.

The following five tasks were developed to accomplish the Project goals and objectives:

#### Task I Adaptive Management and Monitoring.

The task initiates baseline studies associated with hydrology, geomorphology, and instream habitat and biological parameters needed to evaluate proposed flow regimes and pulse flow experiments resulting from additional instream flows. It also initiates review, research and development of methods, protocols and instrumentation required to develop appropriate indicators and measure of success to evaluate efficacy of the acquired instream flows. (e.g. fish passage, hydrologic, geomorphic and biological responses). This task is done in conjunction and partnership with CALFED and CVPIA program managers as well as stakeholders and agency technical representatives as described in the project organization chart. (See Project Organizational Chart page 5)

#### Task II Groundwater Potential for Water Supply:

The purpose of the Task is to determine the area's groundwater supply safe yield, potential locations for groundwater recharge and potential groundwater supply extraction areas, identifying the potential water supply from the area's groundwater resource. The study will involve collection and analyzing existing Mill Creek groundwater level and geologic data that has been collected by local, state and federal agencies. Initiates LMMWC Service Area groundwater review, research and development of methods, protocols and instrumentation required to evaluate groundwater basin safe yield and to identify conjunctive use opportunities to determine the potential for additional water supplies in the area.

Task III Distribution System Water Conservation Water Supply Potential:

The Task will also involve reconstructing past diversion records and establishing a real time water diversion database. A real time data collection system would be installed. An up to date LMMWC service area land use report must be developed to determine the area’s crop water needs. Initiates LMMWC water conveyance facilities review, research and development of methods, protocols and instrumentation required to evaluate system efficiencies and to identify water conservation opportunities. An analysis of the distribution system’s efficiency, operational policies and crop water needs is required to determine if additional water supply for Mill Creek could be provided economically through reduced diversions.

Task IV Project Conservancy Fund.

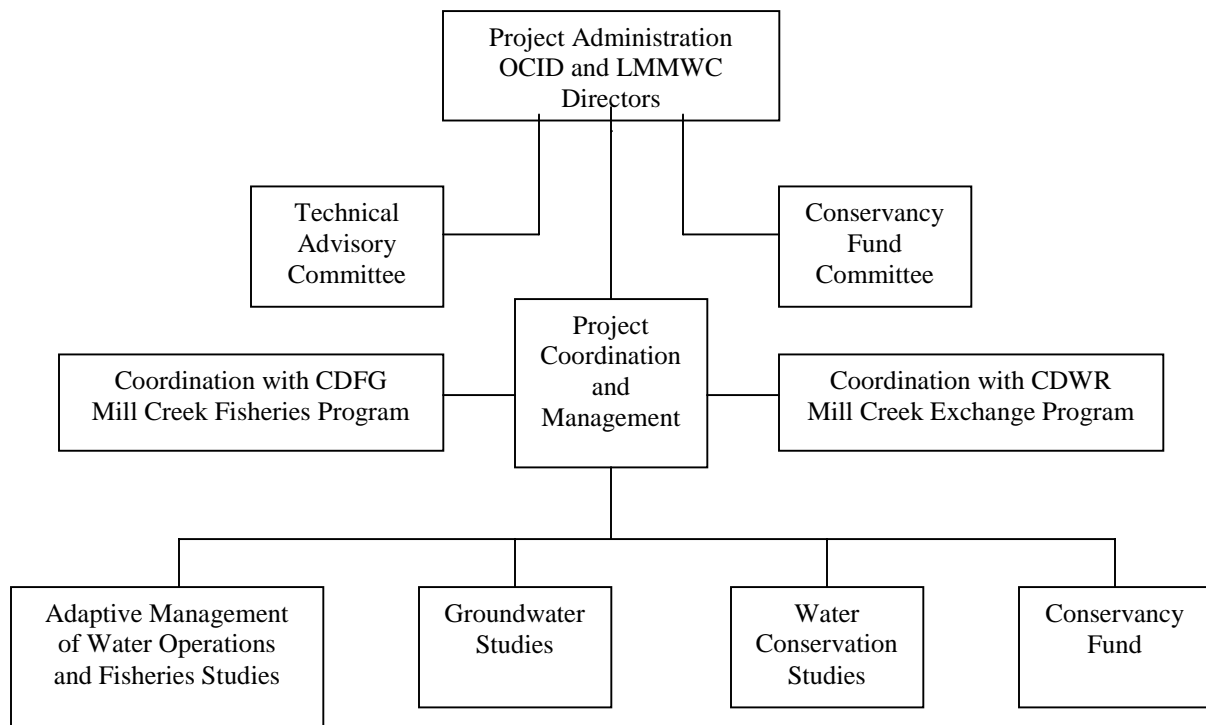
Implementation of this Task establishes a Conservation Fund with readily available funds in “real time” to implement additional actions for unbudgeted or unscheduled fish passage monitoring riffle modification, assessment, and research and education activities. Additionally, it affords local agencies and landowners to manage environmental resources.

Task V Project Management and Reporting

This Task addresses the need to develop a process and framework for private government partnering compatible with current land and water use of the Mill Creek Watershed and establishes a Technical Advisory Committee (TAC) comprised of stakeholders, agencies and interested parties, and facilitates trust among stakeholders and CALFED agencies engaged in ecosystem restoration and endangered species recovery.

Mill Creek Adaptive Management Fish Passage Improvement Project

Project Organizational Chart



The TAC will recommends actions as part of adaptive management experiments to develop the most efficient and economical long-term solution to the fish passage problem on Lower Mill Creek. The TAC shall also

recommend methodology, monitoring protocols and technology required to document fish responses to pulse flow, ramping and other flow manipulation experiments. Specifically this task is proposed to document effective and economical conjunctive use and water conservation opportunities for the long-term solution to the fish passage problem that can be managed in the future by the local community.

#### *Technical Advisory Committee*

The TAC will be as recommended by participants during a meeting held at TNC Office on 4/9/01 in Red Bluff, California. The TAC will be a committee of representatives from OCID, LMMWC, CDFG, CDWR, MCC, TNC, USBR, USFWS, NMFS and Tehama County. The committee is envisioned to identify appropriate baseline monitoring, assessment protocols and methods to evaluate efficacy of acquired instream flows targeted for Lower Mill Creek

OCID and LMMWC will appoint a Project Program Coordinator shall Chair the TAC and be responsible for developing meeting schedules, agenda and recording of meeting findings. The TAC shall review current hypothesis and available science and recommend monitoring and assessment tools and protocols required to evaluate efficacy of proposed restoration actions not limited to instream flow augmentation, manipulation of flows and pulsing, riffle modification and other measures that advance knowledge of ecosystem functions and processes. The TAC will assist with planning and implementation of adaptive management experiments and selection of appropriate biological, indicators or surrogates and appropriate fish counting tools and gear to evaluate cause and affect relationships. Additionally, the TAC shall review and recommend hydrological, geomorphic indicators that elucidate responses resulting from instream flows.

The Project will be administrated under the direction of the OCID and LMMWC Board of Directors. The TAC and a Conservancy Fund Committee will advise these boards. The Conservancy Fund Committee will be a committee of representatives from OCID, LMMWC, CDFG, CDWR, MCC and TNC. OCID and LMMWC Managers will coordinate Project activities. Their responsibilities will be to coordinate activates of the present CDFG and CDWR fish enhancement projects with the Adaptive Management of Water Operations and Fisheries Studies, the Groundwater Studies, the Water Conservation Studies and the Conservation Fund components of the Project.

Fisheries Biologist Serge Birk will be appointed as the Project Program Coordinator. Mr. Birk, a resident of Tehama County and employed by Central Valley Project Water Association, is an experienced fisheries biologist involved in the Central Valley ecosystem restoration and surface and groundwater issues. Mr. Birk shall assemble and conduct and facilitate workshops and other relevant meetings of the TAC. He will also oversee Project field activities for implementation of hypothesis testing and survey work.

OCID is in the process of finalizing a cooperative partnership agreement with LMMWC for the Project, which includes access to LMMWC property to conduct the Project. The partnership agreement will be completed before the start of this Project. When access to private property is required to conduct research or monitoring projects and groundwater level monitoring, OCID or LMMWC will obtain written permission from affected landowners for access.

OCID and LMMWC will work closely with the MCC to supplement that organization's education program. Presentations will also be made to governmental agencies, water organizations, environmental organizations and other interested groups as requested. OCID will also publish a semi-annual newsletter on the Project's progress.

Project Ecosystem Restoration actions are intended to monitor and mitigate for potential adverse environmental impacts associated with any phase of planning, construction, operation and maintenance activity. The following on-going watershed actions, conducted by CDFG and CDWR, are associated with and will be continued in the proposed Project:

- The CDFG would continue to monitor responses of fishery resources to the proposed adaptive management plan.
- LMMWC and CDFG would continue to cooperate and coordinate water operations on Mill Creek to enhance fish passage.
- CDWR would continue its groundwater level-monitoring program in the Sacramento Valley Groundwater Basin, Tehama County.

Groundwater levels in the LMMWC service area fluctuate on an annual basis due to extraction operations, infiltration and downward percolation from precipitation, surface water sources and irrigation, and subsurface inflows and outflows. Monthly measurements of groundwater levels show that spring water levels start dropping when irrigation begins (usually April) and continue to decline until about mid-July. Later in the summer, starting in late August to early September, levels begin to rise steadily. Maximum levels are usually reached by February. The groundwater levels in this area show an approximate seasonal variation of less than 10 feet throughout the year.

Groundwater developed for this Project by water right holders will not be pumped directly into Mill Creek. The groundwater will be applied to farmland adjacent to the well for crop production. Close coordination with Tehama County will be required to adequately address local groundwater concerns if any new groundwater wells are to be installed as a result of this plan. Any new groundwater wells required as a result of the Project will be installed and operated in accordance with the Tehama County Aquifer Protection Ordinance 1617 They will also conform to the Tehama County Flood Control and Water Conservation District coordinated AB 3030 Groundwater Management Plan and Tehama County water well construction, rehabilitation, repair and construction standards, Chapter 15.56. The well's uppermost perforations will start at a minimum of 150 feet below ground surface to prevent pumping Mill Creek and Sacramento River sub flow.

#### **4. Feasibility**

This project is feasible because a total of 7.5% of the Mill Creek Water Right Decree water supply required for implementation has been secured by OCID. This project is unique and timely because water is available for the explicit benefit to the environment resources and for research opportunities. However, without a commitment for funding of necessary research, monitoring, studies and adaptive management experiments proposed in this Project proposal, full benefits to the Mill Creek Watershed can not be assessed or achieved despite the obvious and apparent immediate benefits of doubling base flow in lower Mill Creek during likely future drought years.

Studies conducted by Cepello demonstrated positive responses from similar actions proposed in the Project. The current programs, as described below, conducted by LMMWC, CDFG and CDWR have proven positive but would benefit with the additional instream flows provide by this Project. It is unlikely that current hydrologic models and tools available to CVPIA and CALFED water acquisition program managers are adequate to ascertain the instream flow needs for anadromous fish in Mill Creek. These uncertainties as well as quantifying flows to support ecosystem attributes in the watershed could be advanced with funding and implementation of this Project proposal.

The acquired water will be provided for instream use in Mill Creek for salmon runs from October 16<sup>th</sup> through June. The fish run periods identified by CDFG and AFRP documents are included in this period. Mill Creek hydrologic records for the period 1928-1997 indicate that an April through June target base instream flow of 50 cfs, for the reach below Ward Dam, would be achievable and available for implementation of this Project. Records for the period indicate that an October 16<sup>th</sup> through November 15<sup>th</sup> target base instream flow of 25 cfs, for the reach below Ward Dam, would also be achievable with implementation of this Project. The increased instream flows may be beneficial for fish passage in average, dry and critically dry water years. These instream target flows are proposed as starting points to begin the process of adaptive management until such time as the actual flows required for unimpaired passage can be determined.

The Project provides the opportunity to evaluate instream flows or pulse flows in dry years under a water exchange agreement between OCID and LMMWC. The water right purchased in the July through October 15<sup>th</sup> period will be available to LMMWC in exchange for pulse flow water to meet existing irrigation demands and to provide a more reliable water supply in dry years. As proposed, fish pulse flows would be requested by CDFG personnel and scheduled by LMMWC generally for a three-day period. LMMWC would make arrangements with its water users to reschedule their crop irrigations in order to reduce or eliminate the diversion of flow from Mill Creek during this period. In return, users would receive additional surface water during the summer months to meet peak demands. This reduced or suspended diversion of flow from Mill Creek would leave most or all of the natural flow in Mill Creek to trigger fish migration below Ward Dam.

The water supply for this operation will be developed through use of OCID's purchased water rights during the period in which there is no salmon run from July first to mid-October, and/or groundwater from the current groundwater exchange program. The yield would be exchanged with LMMWC for its water right entitlement that may be contributed for instream pulse flows and enhancing instream flows during the fish-run migration period. The program will formalize the fish-run pulse flows concept. The concept is currently an informal arrangement between LMMWC and CDFG.

LMMWC, CDFG and CDWR have demonstrated that manipulating spring pulse flows in addition to providing adequate transportation flows has resulted in suitable, temporary, and hydrologic riffle conditions for juvenile and adult Chinook salmon passage. CDFG personnel can request pulse flows (up to the entire creek flow) if conditions warrant, which LMMWC will try to accommodate on a voluntary basis. Spring-run pulse flows appear to generate positive environmental cues to enhance the migration. Additional benefits have resulted from reduction in adult salmon straying to the Sacramento River and other tributaries. However, it is recognized that these steps have not provided the desired quantity of assured flow conditions for reliable salmon transportation in the drier water years.

Past attempts to manipulate instream flow by CDWR, CDFG and LMMWC suggest that manipulation of spring pulse flows have generated suitable, temporary hydrologic conditions for fish passage in addition to generating positive environmental cues to facilitate and enhance salmon passage. Cepello, 1995 reported that adult Spring-run Chinook salmon migration stopped due to low flows (approximately 10 cfs and 8.3 cfs immediately below Ward Dam and at the mouth of Mill Creek respectively). Furthermore, when flows were manipulated in May 1990, as many as 200 fish moved upstream during a 22-hour period. Salmon did not move upstream in numbers until after daylight and flows of 115 cfs were provided for 36 hours (432 acre-feet). This activity is a major milestone in fish passage research in Mill Creek and is the basis for future adaptive management in the watershed. This Project will confirm or dispute previous observation and assumptions.

The Project is consistent with the existing exchange and lease agreements in which the CDFG and CDWR have engaged to enhance Mill Creek flows. These agreements, signed in 1990 and 1996, are for a period of 10 years with an option to extend for an additional five years. However, these current agreements on Mill Creek are subject to cancellation. If this were to occur, a reliable supply of water for protection of fish passage would be jeopardized. The currently leased water right would be available to existing water right holders on Mill Creek for irrigation as water previously diverted or available for diversion for irrigation purposes from Mill Creek under the *correlative* provision of the Decree.

Alley (et. al., 1996) reported that at critical riffle sites in lower Mill Creek, instream flows of at least 157 cfs and 27 cfs were needed for successful adult and juvenile migration. However, Alley also reports that if critical riffles were modified, flows could be reduced to 89 cfs and 20 cfs respectively to facilitate migration. This study also provides guidance for future adaptive flow management for lower Mill Creek and will contribute to meeting a project goal of reestablishing a Spring-run salmon adult population of at least 4,400 adult fish.

Noteworthy, OCID and the USBR are preparing a DEA/IS. The OCID is the lead agency for CEQA and the USBR is the lead agency for NEPA. The DEA/IS addresses and analyzes relevant environmental issues

associated with Project implementation and analyzes alternatives. The DEA/IS is intended to meet disclosure requirements of NEPA and CEQA and to inform federal, state, and local decision-makers and the public. The process will be completed before the Project goes into operation. To satisfy requirements of federal ESA, USBR informally consulted with the USFWS and NMFS regarding the effects of the Project on Federally listed species, and developing specific compliance measures. To satisfy requirements of CEQA, OCID informally consulted with the CDFG regarding the effects of the Project on State listed species, and developing specific compliance measures.

## **5. Performance Measures**

The Project TAC will approve a real-time monitoring program to monitor stream diversions and instream flows, water quality and temperatures, critical riffles and flows at the riffles, fish presence and fish passage. It will also involve collection and analyzing existing Mill Creek hydrologic and biological data collected by local, state and federal agencies. The TAC will investigate and recommend appropriate sites for the installation of fish counter (electric, sonar, video, snorkeling, aerial and other acceptable methods) devices. The TAC shall also assist with development of landscape and site specific measures of success or indicators.

The development of additional monitoring tools to measure indicators and triggers that measure the effectiveness of the Project shall also be pursued. The Program Coordinator will collaborate with current agencies and stakeholders monitoring fish passage on lower Mill Creek. This task shall be complementary to the existing Spring-run Protection Plan, CVPIA Comprehensive Assessment and Monitoring Program (CAMP), CALFED Science Program and current AFRP and CDFG monitoring programs in place.

OCID proposes that the environmental water purchased be utilized in an adaptive management and monitoring plan with the following goals:

- Manage the Project's additional instream flow to provide enhanced fish passage conditions for juvenile and adult Spring-run and Fall-run Chinook salmon. CDFG will advise LMMWC and the TAC on preferred flows downstream scenarios at Ward Dam during salmon migration periods. These scenarios or flow alternatives will be utilized to test hypotheses of different fish passage responses as function of instream flow release.
- Analyze water use strategies of additional instream water supply to maximize migration success of juvenile and adult Spring-run and Fall-run Chinook salmon and efficient use of a limited water supply. Example: reduce delay of migration and stress associated with delay.
- Monitor, collect and analyze hydrologic and biological data to manage fish flows and improve fishery flow strategies on Mill Creek in conjunction with current CDFG monitoring programs. Example: Timing and quantity of pulse flow required to trigger fish migration.
- Identify future water supply needs and water sources to expand this program through groundwater monitoring and conjunctive use opportunities.

It is the intention of adaptive management to identify opportunities and actions which maximize benefits whenever possible and to initiate a program on Mill Creek that addresses existing biological uncertainty. Benefits from implementation of base target flows will be assessed and determined through the adaptive management approach.

The Project proposes to examine cause-and-effect relationships associated with flows and fish passage. Specifically, analysis of passage at critical riffles will be initiated to determine appropriate hydraulic conditions required for fish passage. Observers will monitor critical riffles to ascertain if adult Spring-run Chinook salmon respond to pulse flows and will record hydrologic and biological data. As a result, managers will be able to consider the benefits derived from potential modification of riffles and will be better prepared to manage the resources as appropriate.

Discussions with CDFG indicate that monitoring of Spring-run Chinook salmon in Mill Creek is difficult and dangerous because of turbid and high water conditions in the spring months. Opportunities to monitor these fish are limited to suitable environmental conditions. An electronic fish counter at the Clough Dam no longer exists. Researchers must rely on visual observations to document fish presence and movement at riffle and diversion sites as well as test other innovative methods.

Institutional constraints also exist and limit documentation of cause and effect of flow manipulation on adult fish passage because some of the targeted population are federally and state listed pursuant to ESA mandates. It is unlikely that the NMFS and CDFG would approve handling and marking of spring run Chinook salmon for adaptive management cause and effect experiments. As a result, methods involving fish marking either by pit tags or radio telemetry devices are not anticipated as part of the adaptive management strategy but will be explored through the consultation process. However, every effort to enhance visual capability by incorporating video or sonar technology would be pursued in the adaptive management strategy and the use of helicopters as proven effective in Battle Creek shall be reviewed.

An unprecedented opportunity exists with the implementation of this Project to accrue immediate environmental benefits despite the environmental and institutional constraints explained previously. Restoration of the Mill Creek Spring-run Chinook salmon fishery is vital to all parties involved in this plan and to the public. Installation of a fish counter (electric or sonar) at an appropriate site should be investigated and an appropriate site recommended by the TAC.

Biological and biological triggers from evaluation of supplemental instream flows in lower Mill Creek may result with identification of environmental cues and hydrologic required for future adaptive management decisions. The Project shall focus on the need to define scientific uncertainties of the Mill Creek natural flow regime and to develop a long-term solution to the fish passage problem based on water year types. A peer review program will be established as part of the program to review and analyze monitoring protocols, assumptions, hypotheses and adaptive management actions developed during the three-year pilot program proposed.

The lower reach of Mill Creek also has a problem of natural armoring of the streambed with large rocks and sediment-laden gravel that cements the material together, making it undesirable for spawning beds. Sediment deposits also occur at the confluence with the Sacramento River following high runoff storms. During low flows these deposits may block salmon passage. The lower stream reach also has sites in which vegetation and shaded riverine habitat beneficial to fish and wildlife were damaged during the 1997 floods. The Conservancy Fund, established as a part of the project, may be used for fish passage monitoring, riffle modification, assessment and research for this type of problem

The Project will conduct conjunctive use studies to determine the safe yield for the LMMWC Service Area groundwater basin. The studies will evaluate groundwater-surface water conjunctive use opportunities for additional water supplies in the area. The studies will also determine if additional groundwater supplies, if available, could be included as part of an efficient and economical long-term solution to Mill Creek's fish passage problem. These studies will be completed in the plan's three-year period. The results will be used to implement reasonably foreseeable future programs, as funds from other sources are made available. This will help establish a long-term solution to the Mill Creek fish passage problem. Groundwater will be evaluated to determine the area's groundwater supply, safe yield, potential locations for groundwater recharge, potential groundwater supply extraction areas and identification of potential groundwater supply that can be used conjunctively with surface water. This task will involve collection and analysis of existing groundwater level and geologic data collected by local, state and federal agencies with close coordination with Tehama County.

The Project will conduct water conservation studies of LMMWC water facilities to determine what water conservation opportunities may exist for additional water supplies. The studies will also determine what water conservation opportunities are the most efficient and economical as part of long-term fish passage solutions.



The studies will be completed in the Project's three-year period. Study results will be used to implement reasonably foreseeable future programs, as funds from other sources are made available, to establish a long-term Mill Creek fish passage problem solution. A study of the LMMWC's Distribution System will inventory the present system, document existing operating policies and procedures, reconstruct past diversion records, establish a real time water diversion database, determine the area's crop water needs and determine opportunities to improve water distribution systems' efficiency. A real time data collection system will be installed to monitor and manage the water operations of the distribution system. The system will be evaluated by applying CALFED Best Management Practices. The Project will also monitor and conduct an evaluation of on-farm irrigation systems and trends to provide growers information on options for increasing on-farm water conservation.

## **6. Data Handling and Storage**

The OCID District Manager will be the Project Manager. He will be responsible for preparing progress and annual reports for local, state and federal agencies. These reports will address both the benefits and shortfalls of the Project. The Project Manager will also closely monitor and continue to assess the effectiveness of the Project. The purpose of the Project is to develop an adaptive management program, identify future water supply needs and water sources to provide a long-term solution to the Mill Creek fish passage problem. It is also developing the capacity for the local agencies and stakeholders to manage the environmental resources in the future. Reports and data will be submitted to CALFED in hard copy and in an electronic format compatible with Microsoft Access, Excel, Word or Portable Document Format (PDF).

Project Management, Operation and Reports are essential elements of the Project. LMMWC, as Watermaster for Mill Creek, would continue to manage water diversions in accordance with the Decree except as modified by this Project, the LMMWC-CDFG Mill Creek Water Right Lease and LMMWC-CDFG-CDWR Water Exchange programs. CDFG would determine the most appropriate timing for pulse releases. OCID, in cooperation with CDFG and LMMWC, would prepare annual reports summarizing the trials and results of the adaptive strategies tested.

OCID and LMMWC will work closely with the MCC to supplement that organization's education program. Presentations will also be made to governmental agencies, water organizations, environmental organizations and other interested groups as requested. OCID will also publish a semi-annual newsletter on the Project's progress.

## **7. Expected Products/Outcomes**

The Project brings an additional instream flow to the stream in a manner of complete harmony with the local community and is likely to provide immediate protection and environmental benefits. The Project will or is expected to determine what works or what doesn't work on a biological basis, in order to strengthen the scientific basis for making future management decisions. The Project also determines if additional environmental water may be available to the lower reach of Mill Creek through water conservation, conjunctive use and available funding.

The Project basic goal is to identify opportunities for a long-term solution to the fish passage problem utilizing adaptive management, water conservation, and conjunctive use and funding plans. It provides the capacity and framework for the local agencies and landowners in the Lower Mill Creek Watershed to manage the environmental resources to protect wildlife and their livelihoods in the future.

The following is a listing of the expected products and outcomes of the five tasks to be completed under this Project:

Task I - Adaptive Management and Monitoring.

Products - Compile hydrologic, geomorphic and biological data and identify fish passage/flow relationships through analysis of data sets and observation made.

Outcome - Identify hydrological and biological triggers for future flow experiments in collaboration with TAC and develop alternative flow regimes and adaptive management plan to maximize Mill Creek fish passage.

Task II – Groundwater Potential for Water Supply.

Products - Identify the area’s groundwater supply safe yield, potential locations for groundwater recharge, potential groundwater supply extraction areas and identify potential additional groundwater supplies.

Outcome - Establish the basin groundwater safe yield and identify an additional water supply potential that may developed through a conjunctive use program.

Task III – Distribution system Water Conservation Water Supply Potential.

Products - Inventory the present system, document operating policies and procedures, establish a real time water diversion database, and determine the area’s crop water needs and opportunities to improve water distribution systems' efficiency.

Outcome - Identify water conservation opportunities for the LMMWC water distribution system and identify an additional water supply that is developed through effective and economical water conservation practices.

Task IV – Project Conversancy Fund.

Products – Establish readily available funds to be used for fish passage education and unscheduled or unfunded fish monitoring, riffle modification, assessment, and research needs.

Outcome - Funds available to provide for immediate fish passage needs and develop the capacity for local agencies and stakeholders to manage resources necessary for the Mill Creek fishery.

Task V – Project Management.

Product- Establish TAC. Manage and coordinate Project’s adaptive management program, water conservation studies, conjunctive use studies and funding plans. Peer review of data collected, evaluations and conclusions. Document fish responses to pulse flow, ramping and other flow manipulation and ecosystem benefits resulting from flow alternatives tested. This task will document effective and economical conjunctive use and water conservation opportunities.

Outcome - Identify flow regimes and ecosystem requirements by water year type. Document a program that provides a long-term solution to the Mill Creek fish passage problem that can be managed in the future by the local community.

**8. Work Schedule**

The Project goals will be accomplished by completing the following five tasks:

Task I Adaptive Management and Monitoring.

Task II – Groundwater Potential for Water Supply.

Task III – Distribution system Water Conservation Water Supply Potential.

Task IV – Project Conversancy Fund.

Task V – Project Management.

A work schedule has been developed for each task. The schedules are shown in Attachment pages 22 through 24. The schedules show the annual time line with expected start dates, end dates and due dates for the major activities of each task.

## **B. Applicability to CALFED ERP and Science Program Goals and Implementation Plan and CVPIA Priorities**

### **1. ERP, Science Program and CVPIA Priorities**

This Project provides an unprecedented opportunity to provide valuable information relevant to emerging CALFED ERP, Environment Water Program an opportunity to test water acquisition tools and models developed under the auspices of CVPIA (B3) Water Acquisition Program. It is unlikely that a similar opportunity exists elsewhere in the CALFED solution area. The Project is also consistent with the CALFED Science Program goals and objectives, which link restoration actions and research needs.

The Project directly responds to stated CALFED restoration priorities for the Sacramento Region SR-2, SR-3 and SR-7 (CALFED August 2001). These are to “Restore fish habitat and fish passage particularly for spring-run Chinook salmon and steelhead trout and conduct passage studies”, “Conduct adaptive management experiments in regard to natural and modified flow regimes to promote ecosystem functions or otherwise support restoration actions” and “Develop conceptual models to support restoration of river, stream and riparian habitat” respectively. This also meets CALFED’s Stage 1 Implementation Goal 1 “At-Risk Species” to achieve recovery of at-risk native species natural processes and Goal 2 “to rehabilitate natural processes” (CALFED 2001). As mentioned previously, this Project is timely and is expected to accrue immediate environmental benefits, particularly in expected dry year water cycle forecasted.

The CVPIA, signed into law on October 30, 1992 as Title 34 of Public Law 102-575, mandated changes in Central Valley Project (CVP) management, particularly to protect, restore and enhance fish and wildlife habitat. Section 3406(b)(1) of the CVPIA requires the development of a program that will make all reasonable efforts to ensure that, by the year 2002, the natural production of anadromous fish in the Central Valley rivers and streams will be sustainable on a long-term basis, at levels not less than twice the average levels attained during the period of 1967-1991. To meet this requirement, the USBR and USFWS have developed the AFRP. The AFRP production target for Spring-run Chinook salmon in Mill Creek is 4,400 naturally produced adult fish, based on doubling the baseline of 2,200 adult fish presented in the USFWS AFRP (USFWS, 2001).

This Project demonstrates potential to advance progress to meet the following AFRP goals and objectives to:

- At least double the natural production of anadromous fish in California Central Valley Rivers from average levels attained during the period of 1967-1991.
- Improve habitat for all life stages of anadromous fish through provision of flows of suitable quality, quantity and timing.
- Improve habitat for all life stages of anadromous fish through improved physical habitat.
- Improve the opportunity for adult fish to reach their spawning habitats in a timely manner.
- Collect fish population, health and habitat data to facilitate evaluation of restoration actions.
- Involve partners in the implementation and evaluation of restoration actions.

The NMFS has proposed Mill Creek as critical habitat pursuant to federal ESA for the Central Valley Spring-run Evolutionary Significant Unit (ESU). ESU’s identify distinct population segments and are subject to federal ESA requirements and protection. Habitat in upper Mill Creek is considered excellent for Spring-run Chinook salmon holding, spawning and early life stage development. The juvenile and adult Spring-run migration will typically commence in March with the predominant run complete by mid-June.

NMFS adopted a 4(d) rule in June 2000 that designates critical habitat for Central Valley Steelhead ESU and includes the Mill Creek watershed. Historically, this species spawned and reared in the most upstream portions of the Upper Sacramento River and most of its perennial tributaries.

The “Recovery Plan for the Sacramento/San Joaquin Delta Native Fishes” USFWS, 1995b) states that “the only essentially wild populations of Spring-run Chinook salmon remaining in California are in Deer and Mill creeks in the Sacramento drainage. During wet or normal years, natural flows are sufficient to enable salmon to surmount diversion dams in lower reaches of these streams and reach holding pools. In dry years, however, diversions of water for irrigation may decrease flows in the lower reaches to such an extent that adults are unable to negotiate dams”. This Project shall identify instream flow needs required by wild populations of Spring-run salmon in Mill Creek and should advance our knowledge of fish passage needs of other streams.

## **2. Relationship to Other Ecosystem Restoration Projects**

LMMWC has historically cooperated with CDFG to limit exercising Mill Creek water rights when water is needed to provide transport flows below Ward Dam, and to maintain flows in the fish ladder at Ward Dam. LMMWC has proactively engaged innovative partnerships with state resource agencies. LMMWC and CDFG lease water from a Mill Creek water right holder in order to provide additional instream flows to enhance salmon migration in lower Mill Creek. LMMWC, CDFG and CDWR have an agreement for operation, and maintenance of a Fisheries Restoration Project on Mill Creek.

The existing Fisheries Restoration Project on Mill Creek has leased about 7% of the Decree yield to improve instream flows. The lease relies on exchange water from LMMWC’s water right on Mill Creek to augment instream flows as determined in consultation with CDFG. When LMMWC’s water right is used for these increases, CDWR pumps groundwater from two wells into LMMWC canals in exchange for the water used from the LMMWC water right.

LMMWC, CDFG and CDWR have demonstrated, through these operations over past years, that manipulation of spring pulse flows in addition to adequate transportation flows has resulted in suitable, temporary, hydrologic and geomorphic conditions for juvenile and adult chinook salmon passage. Spring-run pulse flows appear to generate positive environmental cues to enhance the migration. Additional benefits may have resulted from reduction in adult salmon straying to the Sacramento River and other tributaries. However, it is recognized that these steps have not provided the desired quantity of assured flow conditions for reliable salmon transportation in the drier water years.

The current agreements and operations by LMMWC and CDFG target a base instream flow of 25 cfs below Ward Dam in the April through June period, but experience of LMMWC and CDFG has shown that an instream flow greater than 25 cfs below Ward Dam is more desirable than is possible under the current operations. The increased instream flow would be very beneficial for fish passage in below average and dry water years.

CVPIA has funded land acquisition projects in lower Clear Creek managed by The Nature Conservancy (TNC). Acquired flows may generate additional environmental benefits to TNC managed properties, which are currently restoring riparian river corridors.

The Clough Dam diversion is currently being consolidated with other diversion operations as a result of the removal of the dam due to 1997 flood damage. CALFED and CVPIA programs have funded this effort. Consolidation of these diversions is beneficial for implementation of this Project, albeit a valuable fish-monitoring site needs replacement. The Project through consensus of the TAC will recommend and install a replacement monitoring facility.

## **3. Requests for Next-Phase Funding**

Does not apply to this Project at this time.

#### **4. Previous Recipients of CALFED Program or CVPIA funding**

Does not apply to this Project.

#### **5. System-Wide Ecosystem Benefits**

It may be difficult, if not impossible, to forecast the long-term benefits from this Project in terms of fish or increases in population of particular species. However, the Project does bring a guarantee of water to the stream in a manner of complete harmony with the local community. The Project will or is expected to determine and recommend future actions that are likely to contribute to meeting goals and objectives of CALFED, CVPIA and ESA.

The Project not only will add environmental water to the lower reach of Mill Creek but also provide environmental water to the Sacramento River and Bay/Delta system that may be used conjunctively for wildlife refuge water supply and for Bay- Delta water quality needs. Furthermore, the involvement of OCID, LMMWC and the local community increases the number of people and entities working together in cooperative partnership to solve problems without relying solely on understaffed state and federal government agencies. Most importantly, the project shall reduce scientific uncertainty associated with water acquisition benefits and is likely to develop valuable indicators and metrics to measure restoration success and efficacy.

#### **6. Additional Information for Proposals Containing Land Acquisition**

Does not apply to this Project.

### **C. Qualifications**

#### **Orange Cove Irrigation District**

OCID, an irrigation district in Fresno and Tulare counties, is organized and operates in accordance with Provision 11 of the Water Code of the State of California. OCID is a contractor for federal project water via the Friant Division of the CVP. OCID is strongly committed to full compliance under Reclamation Law and in serving its constituents in the best manner possible. In that regard, OCID recognizes that a CALFED and AFRP project directly developed and managed by contractors is preferable because funds will go directly to beneficial use within the shortest time possible while complementing efforts of agencies responsible for implementing CALFED and CVPIA. Furthermore, OCID is committed to providing expertise and resources necessary to make this a viable CALFED and AFRP project. OCID has been and will continue to be proactive in protecting and promoting actions that are in the best immediate and long-term interests of OCID constituents.

#### **James Chandler (Engineer-Manager, Orange Cove Irrigation District)**

James Chandler received a Bachelor of Science Degree in Agricultural Engineering from Cal Poly San Luis Obispo in 1966. He is a registered Professional Agricultural Engineer and is OCID's General Manager/Engineer. He has held this position since June 1986. Mr. Chandler has led the 28,000-acre District through extensive renovation and reorganization. As a result it now serves as a model district for customer service. The \$20 million, state-of-the-art water distribution system was privately financed and constructed in-house by District forces under Mr. Chandler's supervision. He has also led the District through development of two hydroelectric power plants that provide additional revenue for payment toward the new water distribution system. The District has also been innovative in using reclaimed water generated from the City of Orange Cove.

Prior to employment with the OCID, Mr. Chandler spent 21 years as a professional engineer with USDA, Soil Conservation Service (currently, National Resources Conservation Service). He served in various engineering capacities. Those have included Project Engineer for a \$10 million water distribution system in Kern County, Area Engineer serving seven counties in the southern San Joaquin Valley and Owens Valley areas, Engineering Specialist with emphasis on irrigation and drainage projects and Field Office Engineer with duties covering a various on-farm conservation practices.

**Robert T. Ramirez** (Controller / Treasurer, Orange Cove Irrigation District)

Robert Ramirez received a Bachelor of Science Degree in Business from California State University, Fresno in 1971 and is a licensed Certified Public Accountant. He has 29 years of agricultural related accounting experience, including ten years of Public Accounting experience.

Mr. Ramirez has been employed with the Orange Cove Irrigation District since January 1, 1996. His duties include the preparation and monitoring of departmental budgets. He prepares monthly reports to the Board of Directors, reporting the financial standing of the District and other related accounting activities.

Prior employment included engagements with Riverbend International, and Jack L. Woolf Enterprises as Controller and Director of Accounting.

**Harvey Williams** (H. R. Williams Engineering Services)

Harvey Williams received a Bachelor of Science Degree. in Agricultural Engineering from Washington State University in 1958 and is licensed as a Professional Agricultural Engineer in California. He has 39 years of experience in all phases of water supply management and irrigation system operations and maintenance.

Mr. Williams worked 26 years as an Engineer for the USBR at Project and Regional levels. He worked at the Columbia Basin Project in Washington State as a Division Engineer, the Denver Regional Office in Denver, Colorado as a General Engineer and the Central Valley Project's Fresno Office in California as a Supervisory Civil Engineer. His USBR experience was in engineering, management and supervision, including responsibilities for operation and maintenance activities on dams, canals and open and closed lateral systems. His experience included management of surface and groundwater supplies and water user relations.

For 11 years, Mr. Williams managed the Shafter-Wasco Irrigation District, a CVP contractor. District responsibilities included implementation of policies, financial management and efficient and dependable water service to water users. His duties included management of the District's 110-mile pipeline lateral system and surface and groundwater supplies.

Mr. Williams has devoted the last three years to working as an engineering consultant with irrigation district clients in the development of environmental restoration water projects.

**Serge Birk** (Program Coordinator)

Mr. Birk has been a Fisheries Biologist for over twenty-eight years and holds a Bachelors of Science Degree in Fisheries from Humboldt State University in 1973. He has spent the last ten years working in and out of government agencies responsible for planning and implementation of fish and wildlife restoration initiatives in the California Central Valley and the Klamath -Trinity River Basin. He currently employed by the Central Valley Project Water Association as the Ecosystem Restoration Coordinator. As a former employee of the Department of Interior and the USBR, Mr. Birk was recognized numerous times for helping assist with identifying and implementing solutions to assist endangered Winter-run Chinook salmon. In the Sacramento River, he was responsible for substantial annual budgets (\$7 million).

Mr. Birk is qualified as an "expert witness" in Federal District Court and has testified on instream flow issues and methodologies. He served as USBR Program Manager for the Western Canal Siphon Project, Spring Run Chinook Salmon Work Group, Salmon Stamp Program, Keswick Trench, East Sand Slough, Trinity River Salmon and Steelhead Hatchery and Coleman National Fish Hatchery. He served as USBR expert witness on water quality issues dealing with the Iron Mine litigation and testified on instream flow issues and temperature standards at State Water Control Board hearings.

He has considerable experience in facilitating and organizing partnerships and has served as program manager of numerous CVPIA initiatives. Mr. Birk is active as a senior technical representative in the CALFED Ecosystem Restoration Program, and Water Acquisition and Science programs. He has served as Co-chairman of the Battle

Creek Working Group and Chairman of the Adaptive Management Committee of the Trinity River Task Force. Mr. Birk is a resident of Tehama County and currently Chairs the Tehama County Flood Control and Water Conservation District Coordinated AB3030 Groundwater Management Plan. He serves on the Technical Advisory Committee and is a Steering Committee Member in the Northern California Water Forum.

**William Bergmann** (Hydrogeologist, Kleinfelder Engineering, Inc)

Mr. Bergmann has more than 17 years of experience with planning, management and performance of hydrogeologic studies related to water resources, subsurface environmental investigations, geotechnical, and solid waste projects. He has conducted numerous automated aquifer performance tests. He has obtained regulatory closure for numerous underground storage tank sites and assisted many clients in obtaining reimbursement from the California State Water Resource Control Board Underground Storage Tank Cleanup Fund. He has developed closure plans for landfill projects involving the preparation of Report of Disposal Site Information, CEQA scoping documents, landfill gas migration monitoring, and quarterly groundwater monitoring. Mr. Bergmann also has extensive experience with environmental regulatory compliance at both the State and Federal levels.

**James Lowden** (Los Molinos Mutual Water Company)

James Lowden owns and operates his own farm in the Los Molinos area. He received a Degree in Farm Management from Cal Poly San Luis Obispo in 1971. Mr. Lowden has served on the Los Molinos Mutual Water Company Board of Directors for 6 years. He served as Board President for four of those years. He was employed as the General Manager/Secretary of the Los Molinos Mutual Water Co from 1986 to 1999. His duties included planning and implementing the annual budget, director of personnel and coordinator of water distribution and canal/ditch maintenance. He also served as the Mill Creek Watermaster. As Mill Creek Watermaster he has developed extensive knowledge and experience in dealing with Mill Creek water diversions and instream flows. During that time he has worked closely with the CDFG and the CDWR to implement a water exchange program and to provide fish passage flows for Spring-run salmon on Mill Creek.

He is a past director of the Mill Creek Conservancy Board. He is presently employed as the District Manager for the Corning Water District. He also serves as an advisor to the LMMWC Board on the Mill Creek Anadromous Fish Adaptive Management Enhancement Plan Project.

**William S. Berens** (General Manager, Los Molinos Mutual Water Company)

William S. Berens received a Bachelor of Science Degree in Agriculture from California State University, Chico in 1971. He had one year of graduate work in Agricultural Education at the University of California, Davis, receiving a lifetime teaching credential.

He has owned and operated his own ranch and farm for the last 26 years. He has served for 20 years on the Stanford Vina Ranch Irrigation Co., either as Water Superintendent, Secretary or President of the Board. The Stanford Vina Ranch Board has been working with the Department of Water Resources and the CDFG to implement a water exchange program to provide flows for Spring-run salmon and steelhead on Deer Creek. He has served on the Deer Creek Watershed Conservancy Board for the past six years, the last two as President. The Conservancy has completed a watershed assessment and watershed strategy for enhancement of Deer Creek. Some of the strategies that have been completed include a water quality and rangeland improvement program, a contingency spill program and a fire plan. The Board is working on a flood plan.

Since April 1, 2000 to date Mr. Berens has served as the General Manager/Secretary of the Los Molinos Mutual Water Co. His duties include planning and implementing the annual budget, director of personnel and coordinator of water distribution, canal/ditch maintenance and Mill Creek Watermaster.

## **D. Cost**

### **1. Budget**

The Project budget was developed by defining 5 tasks to accomplish the goals of the Project. The method for estimating costs for each task is based on determining and estimating the type and quantity of work and level of expertise needed to accomplish the task. . The Project has a three-year duration with a yearly budgets of approximately \$617,150 (year 1), \$409,800 (year 2) and \$400,950 (year 3) for a total of \$1,427,900 to accomplish the 5 Project tasks:

The District's overhead rate for the project is 30%, encompassing general office requirements, office staff and District fixed costs. The District's benefit salary ratio is 0.39%. The estimated following OCID staff, Subcontractors, Travel, Supplies and Equipment is needed to accomplish the Task: A yearly break down of the Project and Task budget is presented in the attached Project Budget Spreadsheets.

### **2. Cost-Sharing**

The Project applicant, OCID has purchased 5.5% of Mill Creek adjudicated and appropriated water rights and is in the final stages of purchasing 2% more for a total of 7.5% of instantaneous instream flow in Mill Creek. The purchased water will be provided for the Project Mill Creek instream flow enhancement and other environmental purposes that shall advance CALFED Ecosystem Restoration Program (ERP) goals and objectives. The provided water supply is valued at \$800,000 annually for a Project total of \$2,400,000.

## **E. Local Involvement**

This project is predicated on a willing seller/willing buyer concept in which all parties have an opportunity for beneficial gain. Sellers of their water rights will be provided funding with which to change farm operations to groundwater supplies, given positive results or groundwater monitoring and often more reliable in meeting irrigation needs. OCID has secured necessary water rights for the project and has negotiated a cooperative partnership agreement with LMMWC, the local irrigation water purveyor. OCID is an agricultural district serving 28,000 acres and LMMWC is an agricultural water provider serving approximately 8,500 acres. The two agencies have developed a partnership to enhance salmon migration on Mill Creek in a Project that is beneficial to the environment, the local community and agriculture. LMMWC will be provided with additional water during the peak irrigation season and with increased flexibility. Furthermore, the Project keeps LMMWC and MCC in a leadership role in the community, working to solve the Mill Creek fish passage problem while relieving, at least to some extent, pressures for reduced water diversions from Mill Creek at times when agricultural customers need water. The Project will provide capacity for the local community to resolve fishery problems in a non-contentious manner and without economic harm. Tehama County will be provided economic benefits that protect the local agricultural economy and tax base. CALFED and AFRP goals and objectives will be achieved in a timely manner for the state and federal agencies. It also builds the capacity for the local agencies to provide for "adaptive management of a provided water supply for salmonid restoration and recovery".

OCID and LMMWC have met several times with representatives from the local offices of CDFG and CDWR to discuss Mill Creek fish passage needs and the operation and results of their current fish passage enhancement programs. The Project was developed to collaborate with current programs and to find a long-term solution to Mill Creek fish passage problem. The two agencies have been very supportive of the project in reviewing the project with federal agencies.

OCID have met several times with the Tehama County Public Works Department and members of the County AB 3030 Groundwater Management Committee to review the plan and incorporate their concerns into the plan. An AB 3030 Groundwater Management Plan, coordinated by the Tehama County Flood Control and Water Conservation District, regulates the groundwater in Tehama County. Tehama County has also enacted



Ordinance 1617, establishing Tehama County Aquifer Protection. The primary purpose of the plan is to prevent long-term overdraft of groundwater within the plan area and to balance long-term average annual replenishment with extraction and other losses to the basin as may be consistent with the public interest of the plan area population. The Ordinance prohibits mining of groundwater and requires County permits for the installation and operation of any groundwater well installed for extraction of groundwater for off-site use. The objective of Tehama County is to protect the County’s groundwater supply and quality to provide local users with a reliable long-term water supply.

Groundwater developed for this Project by water right holders will not be pumped directly into Mill Creek. The groundwater will be applied directly to farmland, on-site to the well, for crop production. Close coordination with Tehama County will be required to adequately address local groundwater concerns if any new groundwater wells are to be installed as a result of this plan. Any new groundwater wells required as a result of the Project will be installed and operated in accordance with the Tehama County Aquifer Protection Ordinance 1617 They will also conform to the Tehama County Flood Control and Water Conservation District coordinated AB 3030 Groundwater Management Plan and Tehama County water well construction, rehabilitation, repair and destruction standards, Chapter 15.56. The well’s uppermost perforations will start at a minimum of 150 feet below ground surface to prevent pumping Mill Creek and Sacramento River sub flow.

OCID has met with MCC, a local watershed group comprised of landowners and interested parties. MCC has published the Mill Creek Watershed Strategy Report (CH2M Hill 1997) that identifies numerous resource issues in the Mill Creek Watershed. OCID has used this report to develop its strategy for improving fish passage in Mill Creek.

The following is a list of Project Participants and Supporters

<u>Agency</u>	<u>Participation</u>
Orange Cove Irrigation District	Project Management
Los Molinos Mutual Water Company	Project Management
US Bureau of Reclamation	Technical Advisory Committee
US Fish and Wildlife Service	Technical Advisory Committee
California Department Fish and Game	Technical Advisory and Conservation Fund Committees
California Department of Water Resources	Technical Advisory and Conservation Fund Committees
Mill Creek Conservancy	Technical Advisory and Conservation Fund Committees
The Nature Conservancy	Technical Advisory and Conservation Fund Committees
Tehama County Flood Control and Water Conservation District	Technical Advisory Committee
Tehama County Reclamation Conservation District	Supporter
Tehama County Board of Supervisors	Supporter

**F. Compliance with Standard Terms and Conditions**

OCID understands and will comply with the federal and state standard terms outlined in the 2002 Proposal Solicitation Package.

## **G. Literature Cited**

Alley D.W., R.C. Chapman, S. Meyer and Y. Sherman (Allen et al) 1996. IFIM Modeling of Critical Passage Riffles, with Recommended Passage Flows for chinook salmon in Lower Mill Creek, Tehama County, California, 1995. June 1996. 62 pp. with appendices

CALFED Bay-Delta Program. CALFED Ecosystem Restoration Program Draft Stage 1 Implementation Plan 2001

CALFED Bay-Delta Program. CALFED Ecosystem Restoration Program 2002 Proposal Solicitation Package August 2001

CALFED Bay-Delta Program. CALFED Watershed Program 2000.

California Department of Fish and Game. 1993 Restoring Central Valley: A Plan for Action.

California Department of Fish and Game. 1996 Status of Actions to Restore Central Valley Spring-Run Chinook salmon.

Cepello 1995. Mill Creek and Deer Creeks: An Emerging Ecosystem Management Approach, Proceedings of the 20<sup>th</sup> Biennial Ground water Conference, J.J. DeVries, J. Woled, editors. Water Resources Center report No. 88. University of California, Davis.

Mill Creek Watershed Management Strategy Report Lassen Watershed Project, 1997. prepared by CH2MHILL.

US Fish and Wildlife Service. 2001. Comprehensive Assessment and Monitoring Program (CAMP) Annual Report 1999

US Fish and Wildlife Service. 2001 - USFWS Anadromous Fish Restoration Plan.

PSP PROPOSAL ATTACHMENTS

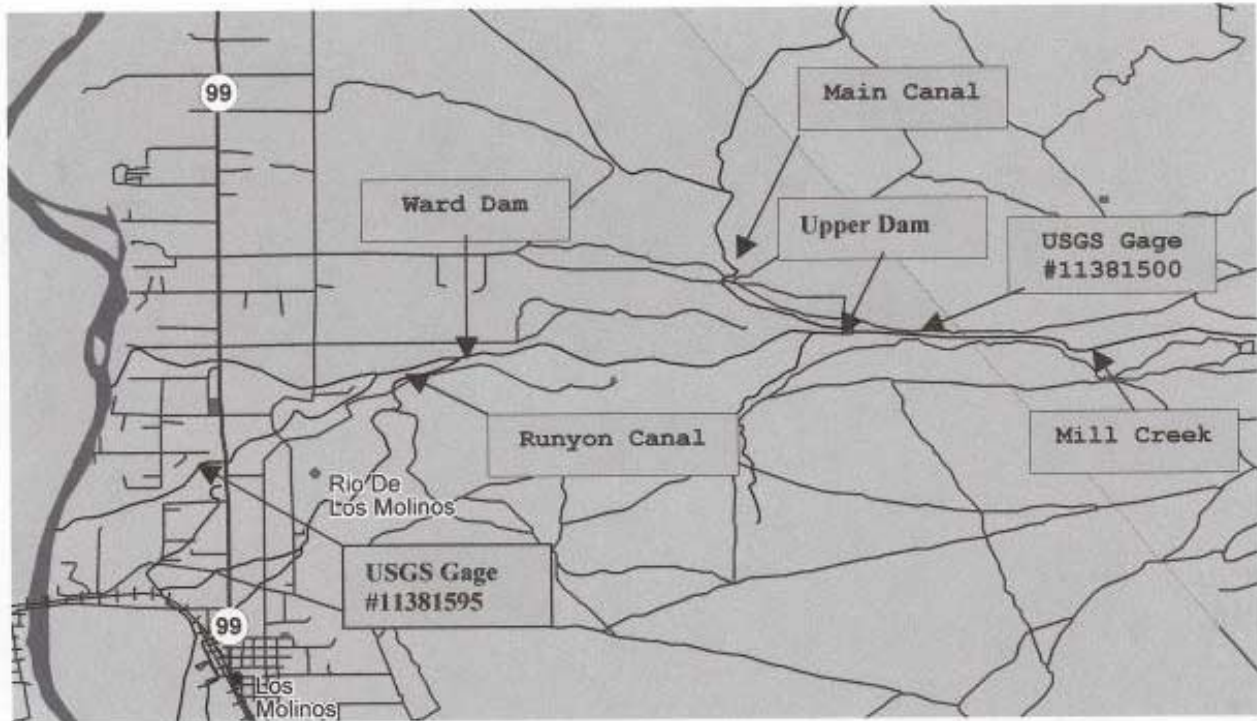
Project Area Map



Location Map



Area Map

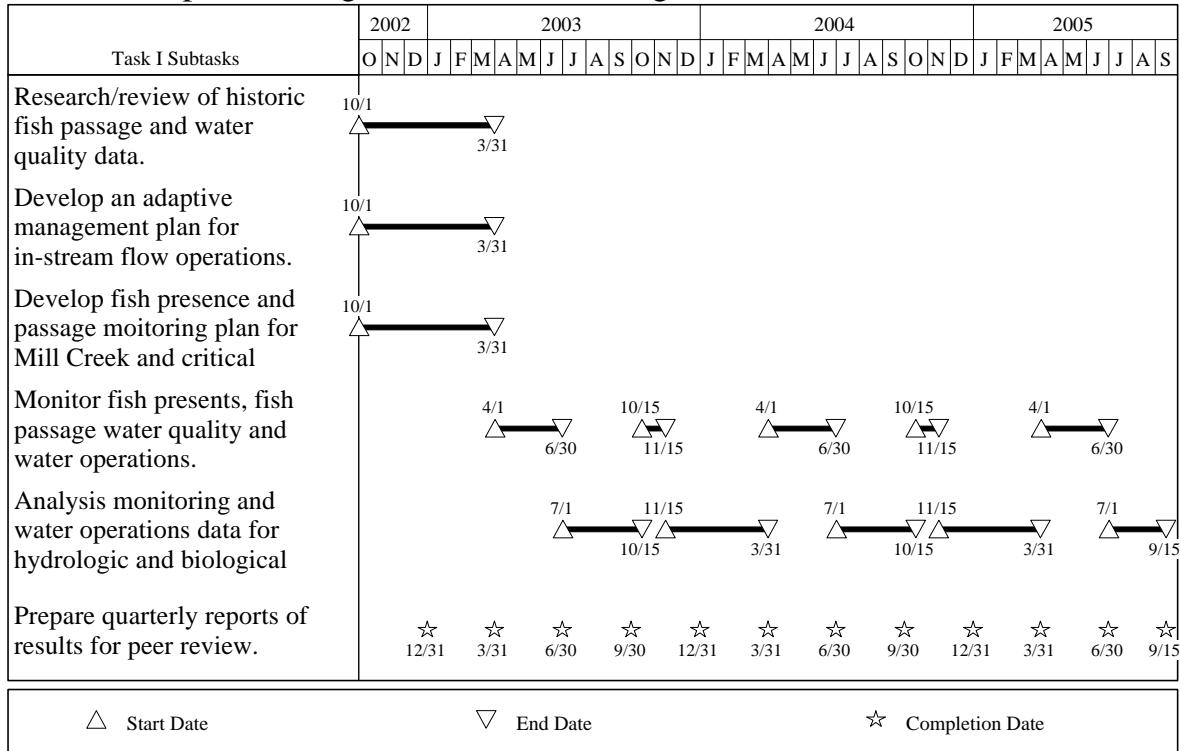


Mill Creek Adaptive Management Fish Passage Improvement Project Map

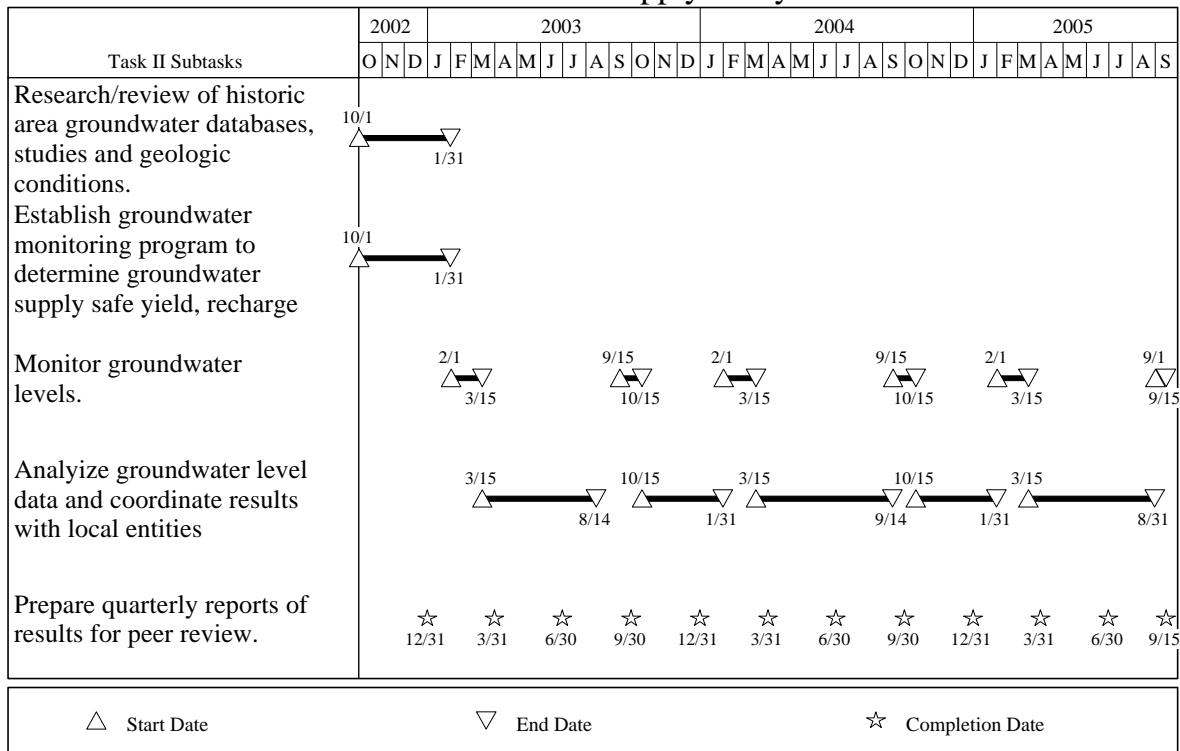
## PSP PROPOSAL ATTACHMENTS

### Work Schedules

#### Task I - Adaptive Management and Monitoring

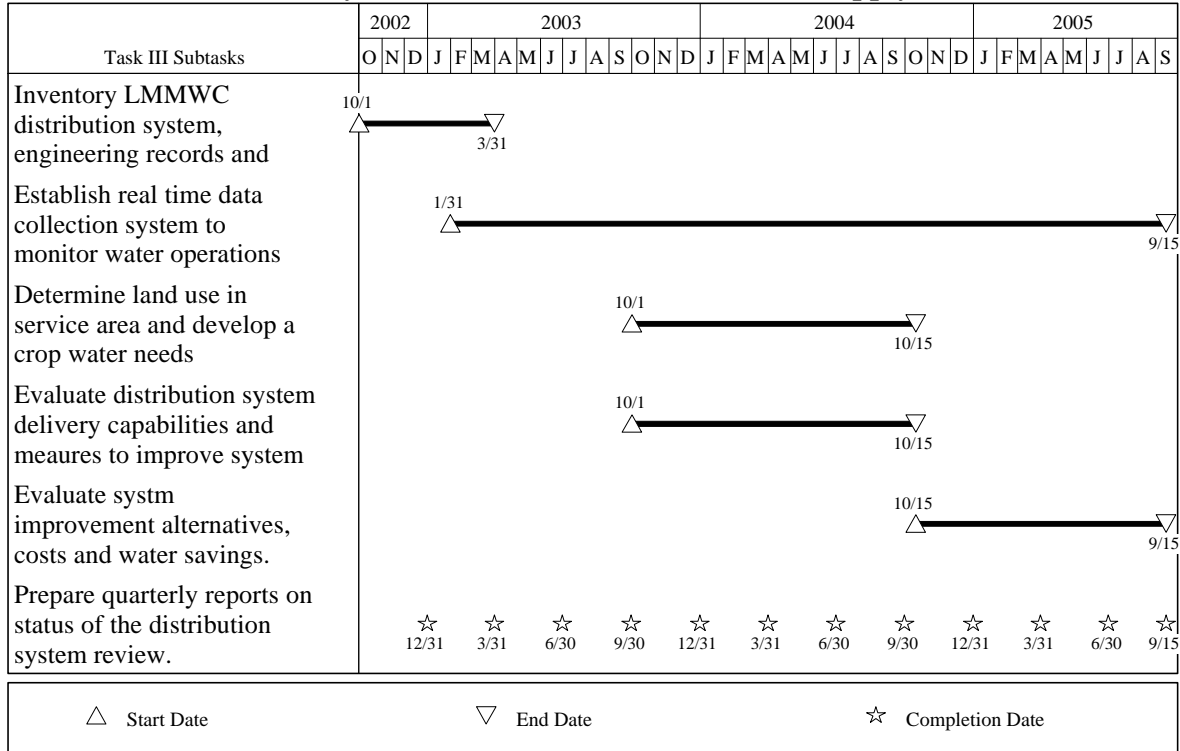


#### Task II - Groundwater Potential for Water Supply Study

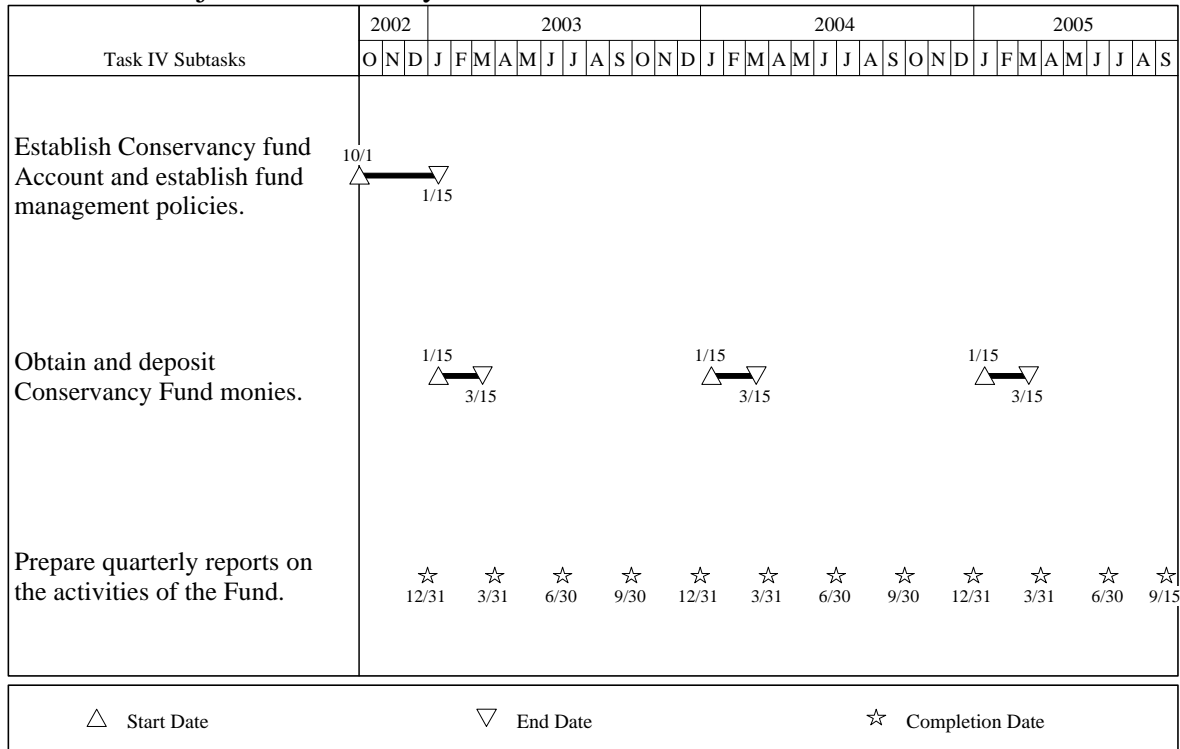


**PSP PROPOSAL ATTACHMENTS**  
**Work Schedules**

**Task III - Distribution System Water Conservation Water Supply Potential**



**Task IV - Project Conservancy Fund**



## PSP PROPOSAL ATTACHMENTS

### Work Schedules

#### Task V - Project Management and Reporting.

