

## **Section B**

# **Anderson-Cottonwood Irrigation District Churn Creek Lateral System Improvements Project, Feasibility Study**

**Research and Development; Feasibility Studies,  
Pilot, or Demonstration Projects; Training,  
Education or Public Information; Technical  
Assistance Outline**

**Due January 11, 2005, by 3 pm**

# Section B-15a, Project Information Form

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## Applying for:

1. (Section A) **Urban or Agricultural Water Use Efficiency Implementation Project**  
*Not Applicable—applying for Section B funds*
  - Urban       Agricultural
  - (a) implementation of Urban Best Management Practice, # \_\_\_\_\_
  - (b) implementation of Agricultural Efficient Water Management Practice, # \_\_\_\_\_
  - (c) implementation of other projects to meet California Bay-Delta Program objectives, Targeted Benefit # or Quantifiable Objective #, if applicable \_\_\_\_\_
  - (d) Specify other: \_\_\_\_\_
2. (Section B) **Urban or Agricultural Research and Development; Feasibility Studies, Pilot, or Demonstration Projects; Training, Education or Public Information; Technical Assistance**
  - (e) research and development, feasibility studies, pilot, or demonstration projects
  - (f) training, education or public information programs with statewide application
  - (g) technical assistance
  - (h) other
3. Principal applicant (Organization or affiliation): Anderson-Cottonwood Irrigation District
4. Project Title: ACID Churn Creek Lateral System Improvements Project—Feasibility Study
5. Person authorized to sign and submit proposal and contract
 

Name, title	Mr. Dee Swearingen
Mailing address	2810 Silver Street
	Anderson, CA 96007-4297
Telephone:	530/365-7329
Fax	_____
E-mail	<a href="mailto:aciddee@sbcglobal.net">aciddee@sbcglobal.net</a>
6. Contact person (if different): *NOT APPLICABLE FOR THIS APPLICANT, See #5*

Name, title	_____
Mailing address	_____
Telephone:	_____
7. Grant funds requested (dollar amount):  
*(from Table C-1, column VI)* \$123,000
8. Applicant funds pledged (dollar amount)  
N/A – No matching funds required of a Section B application: \_\_\_\_\_
9. Total project costs (dollar amount):  
*(from Table C-1, column IV, row n )* \$128,000
10. Percent of State share requested (%)  
*(from Table C-1)* 96%

11. Percent of local share as match (%) <i>(from Table C-1)</i>	4%
12. Is your project locally cost effective? <i>Locally cost effective means that the benefits to an entity (in dollar terms) of implementing a program exceed the costs of that program within the boundaries of that entity.</i> <i>(If yes, provide information that the project in addition to Bay-Delta benefit meets one of the following conditions: broad transferable benefits, overcome implementation barriers, or accelerate implementation.)</i>	<input checked="" type="checkbox"/> (a) yes  <input type="checkbox"/> (b) no Feasibility Study to analyze the viability of a WUE project that would contribute to the Phase 8 settlement and local water resource management objectives
13. Is your project required by regulation, law or contract? If no, your project is eligible. If yes, your project may be eligible only if there will be accelerated implementation to fulfill a future requirement and is not currently required. <i>Provide a description of the regulation, law or contract and an explanation of why the project is not currently required.</i>	<input type="checkbox"/> (a) yes <input checked="" type="checkbox"/> (b) no
14. Duration of project (month/year to month/year):	9 months
15. State Assembly District where the project is to be conducted:	2
16. State Senate District where the project is to be conducted:	4
17. Congressional district(s) where the project is to be conducted:	2
18. County where the project is to be conducted:	Shasta County
19. Location of project (longitude and latitude)	40° 26' 49", -122° 17' 58
20. How many service connections in your service area (urban)?	Not applicable to this application; Agricultural
21. How many acre-feet of water per year does your agency serve?	
22. Type of applicant (select one):	<input type="checkbox"/> (a) City <input type="checkbox"/> (b) County <input type="checkbox"/> (c) City and County <input type="checkbox"/> (d) Joint Powers Authority <input checked="" type="checkbox"/> (e) Public Water District <input type="checkbox"/> (f) Tribe <input type="checkbox"/> (g) Non Profit Organization <input type="checkbox"/> (h) University, College <input type="checkbox"/> (i) State Agency <input type="checkbox"/> (j) Federal Agency <input type="checkbox"/> (k) Other <input type="checkbox"/> (i) Investor-Owned Utility <input type="checkbox"/> (ii) Incorporated Mutual Water Co. <input type="checkbox"/> (iii) Specify _____
23. Is applicant a disadvantaged community? If 'yes' include annual median household income.  (Provide supporting documentation.)	<input checked="" type="checkbox"/> (a) yes, \$34,335 (as of 1999) median household income  <input type="checkbox"/> (b) no

**2004 Water Use Efficiency Proposal  
Signature Page**

By signing below, the official declares the following:

The truthfulness of all representations in the proposal;

The individual signing the form has the legal authority to submit the proposal on behalf of the applicant;

There is no pending litigation that may impact the financial condition of the applicant or its ability to complete the proposed project;

The individual signing the form read and understood the conflict of interest and confidentiality section and waives any and all rights to privacy and confidentiality of the proposal on behalf of the applicant;

The applicant will comply with all terms and conditions identified in this PSP if selected for funding; and

The applicant has legal authority to enter into a contract with the State.

  
Signature

DEE E. SWEARINGEN  
GENERAL MANAGER  
Name and title

01-10-05  
Date

# Section B-15c, Statement of Work

## Section 1: Relevance and Importance

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***Project Objective:*** *To evaluate potential operational and infrastructure modifications in the Churn Creek Bottom area of the Anderson-Cottonwood Irrigation District that would result in significant (on the order of 50%-75%) decreases of applied water to irrigated pasture land*

## Background

### The Anderson-Cottonwood Irrigation District

#### Service Area and Distribution System

ACID's service area encompasses approximately 32,000 acres and extends south from the City of Redding within Shasta County to northern Tehama County, encompassing the City of Anderson and the town of Cottonwood (Attachment 1). Although ACID overlaps the service area boundaries of these water purveyors, the District does not currently provide water for M&I uses in these communities. Approximately 90 percent of ACID's customers irrigate pasture for haying or livestock; however, some orchard and other food crops are also grown. In total, ACID's service area accounts for about two-thirds of all irrigated pasture in the Redding Basin.

ACID uses a rotation schedule to deliver irrigation water to District customers. Very little ground-water is used within the District for agricultural purposes, except occasionally during drought years. ACID's facilities and irrigation are significant contributors to groundwater recharge in the Redding Basin. Annual seepage associated with the ACID Main Canal is estimated to be approximately 44,000 acre-feet (ac-ft).

ACID's water supply is diverted from the Sacramento River near Redding. Water is pooled behind the District's seasonal dam and gravity fed through a fish screen tunnel, and ultimately into the ACID Main Canal. The dam's fish ladders and fish screen were replaced in 2001 as part of a CALFED-funded effort to enhance the Sacramento River anadromous fishery. The distribution system designed in 1915 includes unlined canals, laterals, sublaterals, drains, inverted siphons, and pumping plants. A flume, which carried water across the Sacramento River to the Churn Creek Bottom area, is no longer in operation and was replaced with a pumping plant in the 1940s.

Several wasteways are located along the canal route at creek crossings and natural drains. These wasteways return water to the river or local streams when flow exceeds the capacity of the canal, which, when it occurs, is typically in the winter months during storm runoff. Additionally, the District operates five pumping plants that recapture some return flows. A portion of the Main Canal is concrete- or gunite-lined, some automatic gate controls are being installed, and the District has a continuing program of replacing farm laterals with pipe. ACID currently maintains agreements with the City of Redding, Anderson, and Caltrans to accept stormwater-related flows on an as-needed basis.

## Agricultural Land Use

Land use within ACID's service area is primarily pasture, in addition to alfalfa and some deciduous orchard crops. Pasture use is typically in the range of 75 percent of the total crop mix served by the District (DWR, Northern District). Water requirements are typically highest during the summer months (June, July, and August) because of the area's hot, dry climate. Little groundwater is used across the District, although a Groundwater Management Program is being developed and, to date, 12 dual-completion groundwater monitoring wells have been installed within District boundaries, with another monitoring well expected to be installed by summer 2005. The small portion of groundwater that is used is limited primarily to deciduous crops and is pumped by privately owned wells. Annual cropping patterns have not varied significantly since the mid-1970s. Associated on-field crop water requirement needs and diversions have, therefore been more a function of water-year type and climate than changes in cropping.

## Municipal and Industrial Use

ACID's service area coincides with several municipal water purveyors, but the District currently does not serve any major M&I users. Many of these users are projecting increased demands in the year 2020. DWR estimates growth in the M&I sector in the vicinity of ACID to result in an increased annual water requirement of approximately 30,000 ac-ft by the year 2020, which would represent an increase of about 75 percent (DWR, Northern District). A majority of the increase is assumed to be met by surface water taken from the Sacramento River. The District is currently exploring programs that would increase supply to these purveyors.

Examples of programs include direct supply to water treatment facilities, direct supply for municipal irrigation, provision of water for cooling buildings and industrial developments, water marketing, and assisting with the fulfillment of area-of-origin needs. The District is currently working with following entities to identify their potential requirements:

- City of Shasta Lake (to meet long-term growth projections)
- Bella Vista Water District
- Anderson Union High School (use of District water for cooling operations)
- City of Redding (potential South Bonnyview water treatment plant utilizing ACID supplies)

In addition to these potential M&I demands, the District is currently participating in the Phase 3 of the Shasta County Water Resources Master Plan, which is assessing needs through the year 2030. Additional demands, as well as the potential for water transfers, may arise during the process of formulating the plan.

## Environmental Use

Approximately 3,000 acres of riparian vegetation are estimated to be incidentally supplied by irrigation associated with delivery laterals or adjacent lands (Shasta County Water Agency, October 1997). The application of water to pasture lands (historically ranging from 10,000 to 12,000 acres) and associated vegetation provides habitat to common and special-status terrestrial and avian species that use such habitat. Additionally, pasture provides habitat for a number of species of small mammals, ground-dwelling birds, and reptiles and amphibians, all of which provide a prey base for predatory birds. Dryland pasture in the region often supports a vernal pool ecosystem that is occupied by a number of special-status plant and animal species.

# Project Definition—A Feasibility Study and System Analysis

## Overview of Project Intent and Objectives

ACID is considering the feasibility of changed operations and infrastructure modifications within the Churn Creek Lateral service area (Attachment 3). The District would like to further evaluate replacing aging, undersized, or high-seepage conveyance facilities and the potential benefits of facilitating a modification to on-farm operations from flood irrigation systems to sprinkle irrigation. Objectives include restoring original delivery capacity, improving delivery reliability, eliminating conveyance losses, increasing efficiency of irrigation systems, and increasing on-farm efficiencies.

## Project Need

ACID has participated in water needs assessments and water resources management planning on a local and regional level. Current projections show that in less than 10 years, increased demands within the Redding Basin will be difficult to meet given existing infrastructure, water supply, and system inefficiencies. Water use efficiency within the basin and planning for future demand on a local and regional level is mandatory. See Attachment 4.

## Conveyance System

The Churn Creek Lateral is characterized by significant leakage and is undersized. A study by the U.S. Soil Conservation Service (now called Natural Resource Conservation Service) estimated the seepage losses in the 1.3-mile segment of the Churn Creek Lateral that is east of the Sacramento River at 8,700 acre-feet/year<sup>1</sup>. The pre-1920 facilities include open-ditch and piped sections, with an elevated flume over the Sacramento River, to deliver water from the ACID Main Canal to the Churn Creek Bottom on the east side of the river. After the flume was washed out in a major flood in 1937, the Bonnyview Diversion was constructed, consisting of a screened pump station, the Churn Creek Pumping Plant, on the east bank of the river immediately downstream of the South Bonnyview Road Bridge. The Churn Creek Pumping Plant had an original capacity of 75 cubic feet per second (cfs), consistent with historical demands and deliveries on the east side of the river. But as a result of refurbishment, the current Churn Creek Pumping Plant has a maximum capacity of about 60 cfs. The lateral has significant seepage losses and evapotranspiration losses through vegetation along unlined channel.

## On-farm Operations

The majority of irrigation water within the Churn Creek Lateral service area is delivered to fields via flood irrigation. Given the local topography and soils characteristics, this on-farm water delivery method is seemingly inefficient with above-normal application requirements, on the order of 15-acre-feet (ac-ft) per acre in a season. Experiments conducted by California Polytechnical Institute (CalPoly) San Luis Obispo support such observations. More acceptable ranges of irrigation application would be on the order of 5 ac-ft per acre in a season. To achieve such application rates, a change in operations would be required that would necessitate modification to the conveyance infrastructure. To reduce applied water, sprinkler irrigation would be a viable alternative to flood irrigation. However, the existing ACID system does not have the delivery capability (e.g., pressure) to support significant on-farm sprinkler usage. The District will move from scheduled deliveries to

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<sup>1</sup> U.S. Soil Conservation Service. 1982. *Anderson-Cottonwood Watershed Area Study*. Prepared by Redding Field Office and U.S.D.A. River Basin Planning Staff, Davis, California, in cooperation with Western Shasta County Resource Conservation District. December.

on-demand deliveries, resulting in streamlining and increasing convenience to on-farm operations and decreasing applied water.

### **Building upon Accomplishments**

Three significant milestones have been accomplished to support the desire to conduct the proposed feasibility study.

- 1) ACID was previously awarded a CALFED grant to examine possible system improvements to the Churn Creek Lateral to improve system efficiencies. This study was conducted on the premise that the operations (i.e., on-farm deliveries) would remain unchanged. The study considered both the east and west side of the River and replacing the leaking canal infrastructure with gravity fed piping. Significant work went into characterizing this area of the ACID service system, allowing ACID to move forward with a Phase 2 study. The first feasibility study, Phase 1 Feasibility Study—Churn Creek Lateral Improvements Project, was completed in March 2003.
- 2) CalPoly performed a cursory examination of on-farm operations within the Churn Creek Bottom and conducted on-farm flood irrigation uniformity experiments. As a result, ACID began to consider the benefits of sprinkler irrigation. Summer 2004
- 3) The U.S. Bureau of Reclamation (USBR) agreed to cost share with ACID on a pilot program to examine the measured benefits of sprinkler irrigation (through hand trucks) on traditionally flood-irrigated pasture land. This pilot program is expected to take place during the 2005 irrigation season. This program is expected to provide quantitative information and water education outreach opportunities to the stakeholders.

The feasibility study presented in this grant application is needed to continue this path of system improvements and water use efficiency within ACID. It will build upon the above accomplishments and help to reconfigure the goals and recommendations of the initial feasibility study presented in milestone number 1. Recent work by CalPoly and assistance provided by USBR have allowed ACID to re-examine previous assumptions used in the Phase 1 Feasibility Study—Churn Creek Lateral Improvements Project. The Phase 2 Study (subject of this grant) would allow to ACID to enhance the information from Phase 1, the information from CalPoly, and the USBR pilot study and formulate recommendations for capital improvements that would meet the needs of the changed on-farm and District operations, resulting in significantly reduced applied water.

## **Goals, Objectives and Consistency with CALFED ROD**

The proposed project for this grant funding is just one component of a comprehensive ACID program. ACID's overall goals include:

- Meet the water supply and reliability needs of agricultural water users within the ACID service area while practicing optimization principles of responsible water management.
- Meet objectives set forth by the Basinwide Management Plan and the Sacramento Valley Water Management Program while adhering to local management principles such as those set forth in the existing SCWA GWMP and the developing District-specific GWMP.

The proposed project was identified in the Short-term Workplan developed as part of the Sacramento Valley Water Management Agreement (Agreement). This unprecedented agreement was developed by Sacramento Valley water users, downstream water users (e.g., State Water Contractors), the California Department of Water Resources (DWR), and USBR as an alternative to a potentially contentious process within Phase 8 of the State Water Resources Control Board (SWRCB) Bay-Delta Water Rights Hearings. The intent of the Agreement is to establish a framework to meet water supply, water quality, and environmental needs through a cooperative project development process. The intent of the water system improvement projects evaluated under the Agreement, including the project described herein, would provide benefits toward achieving the following **quantifiable objectives** (QO's):

- Provide flow to improve aquatic ecosystem conditions
- Decrease nonproductive evapotranspiration (ET)
- Provide long-term diversion flexibility to increase the water supply for beneficial uses
- Reduce salinity to enhance and maintain beneficial uses of water.

The intent of the Churn Creek Later System Improvement Project, of which the proposed feasibility is just an initial phase, is to specifically meet **Redding Region (CALFED Sub-Region 1) CALFED quantifiable objectives numbers 6, 7, and 8.**

## Consistency with Regional Water Management

### Local and Sub-basin Wide Groundwater Management

ACID is a member of the Redding Area Water Council (RAWC), an association of water purveyors within the Redding Basin. RAWC members executed a Memorandum of Understanding (MOU), dated August 1998, to authorize the member entities to jointly prepare, adopt, and implement an AB 3030 Plan for the Redding Basin. The following entities are members of the RAWC:

- Anderson-Cottonwood Irrigation District
- City of Anderson
- City of Redding
- City of Shasta Lake
- Shasta County Water Agency
- Bella Vista Water District
- Clear Creek Community Services District
- Centerville Community Services District
- Cottonwood Water District
- Shasta Community Services District
- Mountain Gate Community Services District
- Keswick County Service Area
- Jones Valley County Service Area

The Shasta County Water Agency (SCWA) is an authorized groundwater management agency as defined in Water Code Section 10753 (b). SCWA was authorized by the MOU to serve as the lead agency in preparing, adopting, and implementing the AB 3030 Groundwater Management Plan (GWMP) for the Redding Basin. The MOU also designated the RAWC to serve in a policy making oversight capacity for this planning effort. Accordingly, this plan was undertaken by agreement of

the public and private entities comprising the RAWC, as permitted by Water Code Sections 10750.7, 10753, and 10755.2.

SCWA is in the process of updating its existing GWMP to comply with the requirements of SB 1938. RAWC members have unanimously endorsed the proposal to update the plan. In addition to being an active participant in the RAWC and a party to the SCWA GWMP, ACID is signatory to Shasta County's MOU and AB 3030 Plan.

## Regional and Statewide Water Resources Management

ACID, in cooperation with the Sacramento Valley Water Management Program (SVWMP) and in support of RAWC efforts, has been developing a comprehensive water resources management program that would responsibly and efficiently utilize the resources of a full groundwater basin that receives extensive natural recharge and improve its aging system to more efficiently deliver water supply. In conjunction with CALFED, ACID has been working to improve its system for the betterment of fisheries through ecosystem restoration in the form of the successful construction of a state-of-the-art fish screen structure and two fish ladders. The intent of ACID's overall Water Resources Management Program (which includes ecosystem restoration for fisheries, groundwater management, system improvements, etc.) is to primarily develop a reliable water supply for ACID users while potentially creating flexibility in the system to benefit in-basin and out-of-basin users. ACID's water resources management efforts will result in water supply, water quality, and environmental benefits to the mainstem of the river from the Redding Basin to the Bay-Delta. The Churn Creek Lateral Improvement Project (*for which a feasibility study is the subject of this grant application*) is one component of a single regional and statewide supported package designed to help meet the Bay-Delta water quality objectives.

## Sacramento Valley Water Management Program

The SVWMP is a regional and statewide cooperative effort to manage water resources within California. This unprecedented agreement was developed by Sacramento Valley water users, downstream water users (e.g. Metropolitan Water District), the DWR, and USBR as an alternative to a potentially contentious process within Phase 8 of the SWRCB Bay-Delta Water Rights Hearings. The intent of the Agreement is to establish a framework to meet water supply, water quality, and environmental needs through a cooperative project development process. (The Sacramento Valley Water Management Short-term Agreement [Short-term Agreement] signatory pages are provided as Attachment 5. The full agreement is available upon request.) A letter of support from the Northern California Water Association for the ACID program as an integral part of the overall integrated SVWMP is included in Attachment 6.

## Sacramento River Basinwide Water Management Plan

The District has collaborated with other water purveyors within the Sacramento Valley in the formulation of the Sacramento River Basinwide Water Management Plan (finalized in 2004). Within the document, six technical memoranda describe the planned appropriate management of Sacramento Valley water resources. The stakeholders, consisting of 10 water suppliers, recognize the importance of a cooperative groundwater plan to ensure long-term availability of the resource as a supplement to the continually oversubscribed surface water supply. Additionally, USBR and DWR were sponsors and contributors to the preparation of the plan. As one component of the SVWMP, the ACID Program will provide benefits to both local and downstream users.

## Building upon Previous Regional Efforts

As demonstrated by the following list of reports, significant effort has gone into studying the Redding Basin over the last 8 years in terms of existing and projected land uses and available water resources, opportunities for improving water supply reliability throughout the Basin, and socio-economic limitations. These reports reflect the activities that have been and are being undertaken in conjunction with the GWMP and the accomplishments that these activities represent. Partnerships necessary to a successful conjunctive water management program have been developed and enhanced throughout this process and continue to flourish. The efforts have taken place and continue to take place in an environment of public outreach.

The effort to establish the strong foundation required for efficient use of the local water resource has been forwarded by activities of RAWC members, including ACID. Eight reports have been completed that are directly or indirectly associated with the planned management of Redding Basin water resources. Because of the size and number of these documents, an annotated bibliography is provided as Attachment 7. Copies of these documents, if desired, are available upon request. The reports are listed below.

- ACID Groundwater Monitoring Program—ACID Phase 1a Monitoring Well Installation and Water-level Monitoring Field Plan, Shasta County, California (CH2M HILL, 2003b)
- Shasta County Water Resources Master Plan Phase 1 Report: Current and Future Water Needs (CH2M HILL, 1997)
- MOU and GWMP (Phase 2A)
- Redding Basin Water Resources Management Plan Phase 2B Report (CH2M HILL, 2001)
- Redding Basin Water Resources Management Plan Phase 2C Report (CH2M HILL, 2003)
- Sacramento Valley Water Management Agreement Short-term Work Plan (CH2M HILL, 2001b)
- Sacramento River Basin Wide Water Management Plan (2 volumes) (CH2M HILL 2004)
- Phase 1 Feasibility Study—Churn Creek Lateral Improvements Project (CH2M HILL, March 2003)

## Implementation of Existing Water Management Activities

Implementation of this proposed feasibility study would be consistent with past and ongoing ACID water management efforts as described above. To summarize, this feasibility study would support the following:

- CALFED ROD
- Sacramento Valley Water Management Program
- Basinwide Water Management Plan
- Redding Area Water Council activities
- CalPoly research and experiments
- USBR and ACID sprinkler system pilot program

## Summary

This grant application is to secure funding for a feasibility study (FS) and environmental reconnaissance. The expected outcomes of the FS include stakeholder outreach, data collection (water surface elevation data, typical canal dimensions and profile, and typical widths of existing canal right-of-way and adjacent open space to evaluate project feasibility; cursory-level geotechnical/hydrogeologic field reviews; aerial photo and mapping coverage at a scale appropriate for conceptual design and FS report drawings), hydrologic evaluations (to determine magnitude of achievable water conservation by constructing a simple water balance indicating estimates of Churn Creek lateral deliveries, evaporation, leakage and spills, and seepage for current and proposed facilities), alternatives analysis, conceptual design, identification of environmental documentation and permitting requirements, order-of-magnitude cost estimate for improvements, and Feasibility Report.

This project is needed to restore original ACID conveyance system delivery capacity, improve water supply reliability, eliminate conveyance losses within the project area, and increase efficiency of irrigation delivery method. **Therefore, it will provide water conservation benefits consistent with the following primary CALFED objective: Reduce the mismatch between Bay-Delta water supplies and current and projected beneficial uses dependent on the Bay-Delta system.**

Additionally, the proposed project will be consistent with the following specific objectives of the CALFED Water Use Efficiency Program<sup>2</sup>:

- Reduce existing irrecoverable losses
- Achieve multiple benefits
- Preserve local flexibility
- Use incentive-based actions over regulatory actions
- Build on existing water conservation and management programs

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<sup>2</sup> CALFED Bay-Delta Program. 1999. *Water Use Efficiency Program*. Revised Draft, February 1999.

# Section B-15d, Statement of Work

## Section 2: Technical/Scientific Merit and Feasibility

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***Proposed Activity:*** Feasibility Study to develop a system improvement project that will be ready for the design process and final environmental documentation and permitting, a project that is anticipated to decrease applied water usage in the ACID Churn Creek Bottom service area up to 50-75%

### Introduction

As mentioned in Section B-154c, previous investigations and ongoing pilot studies suggest that replacing the Churn Creek Lateral with a pipeline (on the order of an estimated 60-inch diameter) will eliminate seepage and evaporation losses, potentially saving a minimum of 8,700 ac-ft/year of water for other beneficial uses. Additionally, by piping the flow and increasing system pressures, modification to water delivery and on-farm operations can be facilitated (i.e., flood irrigation changed to sprinkler irrigation). These changes would likely increase system and on-farm efficiencies and decrease necessary diversion per irrigated acre resulting in increased Sacramento River system flexibility.

The FS would evaluate an extension of the alignment proposed in the Phase 1 study on the east side of the river. The Phase 1 study evaluated replacement of the existing canals with gravity pipelines on both the west and east sides of the river, and reconnecting the east and west sides with a siphon or pipe bridge to maintain hydraulic head and discontinue use of the Churn Creek pump station. Phase 2 would evaluate upgrading the pump station (for a pressurized system that would accommodate sprinklers), and extending the pipeline delivery system several miles farther to provide sprinkler-pressure deliveries to individual farms. The ACID system on the west side of the river would remain gravity fed (from the ACID Main Canal) and would not be analyzed for pressurization as part of the Phase 2 study. The Phase 2 study is not intended to replace the Phase 1 study, only to enhance the examination of the eastside system in terms of potential pressurization. Phase 1 findings related to pipeline routes and environmental issues on both sides of the river need not be re-evaluated, and such findings for the east side are still relevant for the applicable reach of the project to be examined during Phase 2.

Only the Phase 2 Feasibility Study is addressed by the work plan and budget. The ACID/USBR pilot program is also part of the Churn Creek Lateral Improvement Project, but is being funded locally by the District and federally by USBR and, therefore, is not addressed in this section.

### Work Plan

Extensive engineering and environmental investigations are necessary to further evaluate the feasibility of this project. The following work plan outlines the tasks anticipated as part of the *Churn Creek Lateral System Improvement Project, Phase 1b Feasibility Study*.

### Task 1: Contract Management and Administration and Quality Control

This task will provide for management of project cost and schedule, administration of grant moneys, coordination and oversight of the project team's activities, and communications with the funding agency contract administrator. Additionally, a quality assurance/quality control (QA/QC) plan will be developed for Phase 1a implementation. The QA/QC plan will require registered professional engineers and geologists to review reports and construction. The plan will provide requirements for project documentation and communications.

**Deliverables:** Monthly billings and one QA/QC plan (delivered electronically)

### Task 2: Quarterly Progress Reports

The applicant will prepare and submit quarterly reports summarizing degree of completion, activities during the reporting period, findings, costs incurred, and project milestones.

**Deliverables:** Quarterly reports delivered to ACID and DWR on the 15<sup>th</sup> of January, April, July, and October as specified in the Solicitation Package

### Task 3: Stakeholder Meeting

Early in the project, a meeting will be held with patrons of ACID that would benefit from or be affected by the project. The purpose of the meeting will be to inform attendees of the purpose and goals of the project, verify permission for access to properties, and identify support/opposition issues. Appropriate city, county, and affected resource agency officials will also be invited to attend to provide input on local and regional planning issues, land use and right-of-way considerations, and other issues.

**Deliverables:** Meeting summary

### Task 4: Data Collection

This task will consist of fieldwork to gather data on the existing Churn Creek Lateral delivery system and data investigation to gather existing information from previous studies. Project staff will gather mapping, photography, and documentation from previous Churn Creek Lateral investigatory work including information from CalPoly, USBR, and ACID consulting engineers. Project staff will also gather water surface elevation data, typical canal dimensions and profile data, on-farm measurements, and typical widths of existing canal right-of-way and adjacent open space as required to evaluate project feasibility. In addition, cursory-level geotechnical/hydrogeologic field reviews will be conducted to gather data for hydrologic evaluations. It is assumed that aerial photography and/or mapping from the previous work in 2002 will be utilized for this study.

**Deliverables:** Annotated bibliography summarizing existing studies/reports and field hydraulic data from the canal, and geotechnical observations, each as presented in the Feasibility Report (Task 9)

### Task 5: Hydraulic Evaluations

This task will focus on developing a hydraulic model and estimating the magnitude of achievable water conservation if the preferred project is implemented. Information gathered during field reviews, such as condition of the canal, general soil types, and location of the groundwater table, will form the basis of the assessment. The findings of the 1982 SCS study on Churn Creek lateral seepage losses (cited above) will also be evaluated relative to current field observations. One of the principal outcomes of this task will be a simple water balance indicating estimates of Churn Creek

lateral deliveries, evaporation, leakage and spills, and seepage for current and proposed future facilities.

***Deliverables:*** Water balance and hydraulic model

#### **Task 6: Alternatives Analysis and Conceptual Design**

Alternatives expected to be considered will primarily involve pipe size and alignment (for lateral improvements) and impacts/recommendation for future operations. These alternatives will be evaluated and developed to a degree necessary to determine feasibility, size facilities, estimate costs, evaluate basic environmental impacts and permitting requirements, and select an apparent best option. Simple drawings of facility locations and typical configurations will also be developed.

***Deliverables:*** Alternatives descriptions and sketches as presented in the Feasibility Report

#### **Task 7: Environmental and Permitting Reconnaissance**

No infrastructure or land disturbance is directly associated with the proposed feasibility study. Biological field surveys, resource database review, and other cursory reconnaissance efforts will be used to determine CEQA and NEPA requirements, as well as key permitting requirements for any project recommended by the feasibility study. Appropriate permissions and rights-of-entry will be acquired for fieldwork and biological surveys. This task will also identify potential areas of special environmental or cultural concern as applicable to site and alignment selection. The principal objective will be to set the course for environmental documentation and permitting in subsequent project phases.

***Deliverables:*** Observations and planning discussions as presented in the Feasibility Report

#### **Task 8: Cost Estimate**

Order-of-magnitude cost estimates will be developed for the lateral improvements and proposed changes to operations. Estimates will be used to aid in alternatives selection and budgeting for future project phases.

***Deliverables:*** Order-of-magnitude cost estimate (also known as Budget estimate)

#### **Task 9: Feasibility Report**

The final outcome of this feasibility study will be a Feasibility Report that documents findings and charts a course for implementing the project. It is anticipated that the following topics will be addressed in the report:

- Anticipated benefits and conservation estimates
- Synopsis of alternatives analysis and preferred alternative
- Cost analysis
- Implementation issues and schedule
- Environmental compliance requirements (permitting and environmental documentation)

The report will be issued in draft form (one iteration) to DWR and, after an adequate review period, comments will be incorporated into a final report.

***Deliverables:*** Feasibility Report

## Schedule

The grant and contract is expected, per the application instructions, to be in place by December 01, 2005. Therefore, the program is scheduled to begin the following Monday, December 05, 2005. The Feasibility Study is anticipated to be completed within 9 months of the start date. The 9-month schedule is to enable the project team to make observations, measurements, and surveys during the 2006 irrigation season. An implementation schedule is provided as Attachment 8 listing the same tasks as provided in the work plan.

## Budget

The budget for the implementation of the proposed feasibility study is presented in Table 1.

Table 1 Proposed Feasibility Study Budget Breakdown ACID Churn Creek Lateral Improvement Project	
Task	Budget
Task 1: Contract Management and Administration and Quality Control	<b>\$7,000</b>
Senior Engineering Advisor (QA/QC Manager)	\$2,000
Project Manager	\$3,000
Project Accountant	\$2,000
Task 2: Quarterly Progress Reports	<b>\$5,000</b>
Project Manager	\$1,000
Junior Engineer	\$1,500
Project Support <sup>a</sup>	\$2,500
Task 3: Stakeholder Meeting	<b>\$8,000</b>
Senior Consultant	\$800
Project Manager	\$2,400
Junior Engineer	\$3,600
Project Support	\$1,200
Task 4: Data Collection	<b>\$15,000</b>
Senior Ag/Civil Engineer	\$1,000
Mid-Level Engineer	\$4,000
Junior Engineer	\$8,000
Project Support	\$3,000
Task 5: Hydraulic Evaluations	<b>\$30,000</b>
Senior Water Resources Engineer	\$4,000
Mid-Level Engineer	\$9,500
Junior Engineer	\$13,500
Project Support	\$3,000

Table 1 Proposed Feasibility Study Budget Breakdown ACID Churn Creek Lateral Improvement Project	
Task	Budget
Task 6: Alternatives Analysis and Conceptual Design	<b>\$35,000</b>
Senior Mechanical Engineer	\$2,000
Senior Civil Engineer	\$5,500
Senior Electrical Engineer	\$1,500
Mid-Level Engineer/Project Manager	\$7,800
Junior Engineer	\$7,600
Drafter	\$6,600
Task 7: Environmental and Permitting Reconnaissance	<b>\$10,000</b>
Project Support	\$4,000
Senior Environmental Planner	\$1,000
Mid-Level Environmental Planner	\$3,000
Biologist	\$4,000
Project Support	\$2,000
Task 8: Cost Estimate	<b>\$12,000</b>
Senior Civil Engineer	\$2,500
Project Manager	\$2,000
Junior Engineer	\$6,000
Project Support	\$1,500
Task 9: Feasibility Report	<b>\$22,000</b>
Environmental Planner	\$2,000
Mechanical Engineer	\$2,500
Civil Engineer	\$2,500
Electrical Engineer	\$2,000
Senior Reviewer	\$2,500
Junior Engineer	\$4,600
Drafter	\$1,400
Project Support	\$4,000
<b>Total Feasibility Study Cost</b>	<b>\$144,000</b>
<sup>a</sup> Project Support = Project assistants, editors, word processors, graphics support, document production materials	

## Environmental Documentation

No infrastructure or land disturbance is directly associated with the proposed feasibility study. Biological field surveys, resource database review, and other cursory reconnaissance efforts will be

used to determine CEQA and NEPA requirements, as well as key permitting requirements for any project recommended by the feasibility study. Appropriate permissions and rights-of-entry will be acquired for fieldwork and biological surveys. This task will also identify potential areas of special environmental or cultural concern as applicable to site and alignment selection. The principal objective will be to set the course for environmental documentation and permitting in subsequent project phases.

# Section B-15e, Statement of Work

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## Observation

The majority of the ACID system is pre-1920s. There are significant conveyance losses throughout the ACID canal system. The Churn Creek Lateral is recognized as a significant contributor to the system losses. Pasture lands within this area have high rates of applied water, on the order of 15 ac-ft per acre.

## Hypothesis

Operational and infrastructure modification in the Churn Creek Bottom area of the District could potentially result in significant (on the order of 50%-75%) decreases in applied water to irrigated lands and decrease system conveyance losses.

## Background

### Pre-project Conditions

The project is a feasibility study and, therefore, after completion of the study, there will have been no alterations to the service area or conveyance system. However, this study will allow ACID the opportunity to fully describe existing conditions prior to the implementation of any recommendations resulting from the Phase 2 Feasibility Study. The work being proposed through this grant application will also allow ACID to consolidate analysis and Churn Creek Bottom descriptions that resulted from the Phase 1 study, CalPoly, UC Davis, and the pilot program efforts.

### Basis for Hypothesis

Three significant milestones have been accomplished to support the desire to conduct the proposed feasibility study:

- 4) ACID was previously awarded a CALFED grant to examine possible system improvements to the Churn Creek Lateral in order to improve system efficiencies. This study was conducted on the premise that the operations (i.e., on-farm deliveries) would remain unchanged. The study considered both the east and west side of the River and replacing the leaking canal infrastructure with gravity fed piping. This study, Phase 1 Feasibility Study—Churn Creek Lateral Improvements Project, was completed in March 2003.
- 5) CalPoly performed a cursory examination of on-farm operations within the Churn Creek Bottom and conducted on-farm flood irrigation uniformity experiments. As a result, ACID began to consider the benefits of sprinkler irrigation. Summer 2004
- 6) USBR agreed to cost share with ACID on a pilot program to examine the measured benefits of sprinkler irrigation (through hand trucks) on traditionally flood-irrigated pasture land. This pilot program is expected to take place during the 2005 irrigation

season. This program is expected to provide quantitative information and water education outreach opportunities to the stakeholders.

The feasibility study described in this grant application is needed to continue this path of system improvements and water use efficiency within ACID. It will build upon the above accomplishments and help to reconfigure the goals and recommendation of the initial feasibility study present in milestone number 1. Recent work by CalPoly and assistance provided by USBR have allowed ACID to re-examine previous assumptions used in the Phase 1 Feasibility Study—Churn Creek Lateral Improvements Project. The Phase 2 Study (subject of this grant) would allow ACID to enhance the information from Phase 1, the information from CalPoly, and the USBR pilot study and formulate recommendations for capital improvements that would meet the needs of the changed on-farm and District operations, resulting in significantly reduced applied water.

## Evaluation of Project Success

A successful Phase 2 Feasibility Study—Churn Creek Lateral Improvements Project will achieve the following:

- **Data Consolidation**—The FS will consolidate work done by ACID, CalPoly, UC Davis, SVWMP, DWR, and USBR.
- **Hydraulic Evaluation**—The FS would evaluate delivery requirements for on-farm sprinkler irrigation and compare them with existing system delivery parameters presented in the Phase 1 study.
- **Alignment Evaluation**—The FS would evaluate an extension of the alignment proposed in the Phase 1 study on the east side of the river for pressurization (to accommodate sprinkler irrigation).
- **Pump Station Evaluation**—The FS would make a preliminary evaluation of the viability of the existing pump station to feed a pressurized system on the east side of the river.
- **Applied Water Analysis**—The FS would compare applied water through flood irrigation in Churn Creek vs. applied water through sprinkler irrigation in Churn Creek.
- **Identification of Local Water Resources Ramifications**—The FS would begin to identify potential ramifications to local water resources and, potentially, any other purveyors should the project be pursued.
- **Project Conclusions and Recommendations**—The FS would make conclusions and recommendations that would address the following questions:
  - 1) Would there be potential water savings should irrigators within the Churn Creek Lateral section of ACID switch from flood irrigation to sprinkler irrigation?
  - 2) Are there production and operations impacts to irrigators by switching from flood irrigation to sprinkler irrigation?
  - 3) What is the proposed path forward and what is the recommended configuration of the proposed improvements project?

- 4) How might the proposed project impact ACID long-range water resources plans as identified within the Redding Basin Water Resource Management Planning effort?

## Information Dissemination

DWR will receive a final copy of the Phase 2 Feasibility Study—Churn Creek Lateral Improvements Project and also quarterly reports during contract execution. See also Section B-15g.

## Quality Assurance/Quality Control

To achieve the highest standards of QA/QC, all project work will be supervised by District consultants, who are registered professional engineers (P.E.), some consultants with more than 20 years experience working within the Redding Basin, and report deliverables will undergo a review process involving P.E.s who are familiar with the project. Data quality will be checked for accuracy and consistency. Assumptions will be approved by qualified senior professional registered engineers. Deliverable documents, including the final report, will also be reviewed by technical editors to ensure a consistent product.

The fieldwork will be conducted under the requirements of an established project Health and Safety Plan. A QA/QC plan will be prepared at the start of the project. Development and execution of the QA/QC plan is estimated to cost \$2,000. It is listed as part of Task 1 in the Budget Table under Section B-15d and as item (1) in the Section B-15i budget table.

# Section B-15f, Qualifications

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## Applicant

### Project Manager

The resume of Dee Swearingen, ACID General Manager, is attached (Attachment 9). Mr. Swearingen will administer the contract, oversee the work, and provide all required documentation to DWR.

## External Cooperators

It is not anticipated that the project will require additional assistance from any other entity or agency. ACID will coordinate with landowners who may be affected by project construction.

# Section B-15g, Outreach, Community Involvement and Acceptance

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ACID has been working locally and regionally for more than 8 years to evaluate its system in terms of water use efficiency. It has worked with the USBR to evaluate efficiencies and water needs through the Basinwide Management Plan and Settlement Contract negotiations. The District has worked through CALFED to obtain funding for studying its aging infrastructure, resulting in recommendations for automation and modernization improvements. ACID has worked with consultants, local agencies, and experts from academia to analyze its system and formulate a path forward to best manage the local water resource.

## Local Outreach

ACID's recent efforts at improving water use efficiency within the District have focused on the Churn Creek Bottom area, where system losses are highest and on-farm irrigation efficiencies are lowest. ACID and District landowners have worked with CalPoly and the University of California at Davis to characterize the problems that cause these inefficiencies. Presentations have been made by attorneys and irrigation system experts to the ACID Board of Directors and ACID landowners to explain the status of water rights in California, on-farm water needs vs. system water supply requirements, and possible means of improving efficiencies within ACID's delivery system and in the on-farm application systems. On October 28, 2004, Dr. Stuart Stiles of CalPoly and Mr. Stuart Somach (a water rights attorney with extensive California water rights experience) spoke at a public meeting held at the Anderson High School to discuss general water conservation and water rights issues within California and specifically how those issues relate to the ACID system with the Churn Creek Lateral service area in the spotlight.

## Local Implementation Challenges

ACID is working with the USBR and individual landowners to develop partnerships to fund the installation of sprinkler systems on individual parcels to reduce water supply requirements and improve application efficiencies. Flood irrigation has been the standard for water application for more than 80 years. As such, it is familiar and well understood. The idea of completely restructuring localized operations (and some infrastructure) to accommodate a new way of applying water (i.e., using sprinklers) is unsettling to some. Additionally, there is resistance to the idea that the state is looking more closely at water use and efficiencies.

The District recognizes that there are cultural hurdles to jump given such a long history of water use and delivery. As such, a dedicated effort to educate the landowners through public meetings like the one described above and through the USBR/ACID pilot program has been implemented. The main goal of the pilot program is to demonstrate to landowners that their operations will not be negatively impacted by utilizing a different water application system where appropriate.

## County, Valley-wide, and State-wide Regional Outreach

The project is an outgrowth of the Sacramento Valley Water Management Agreement among the Sacramento Valley water users, DWR, USBR, and export water users. The ongoing process that resulted in the Agreement has a strong public outreach component to inform agencies, environmental and other interests, and the public on the Agreement. Numerous presentations have been made to the CALFED Management Team and associated staff, county supervisors in all affected counties, water districts and their customers, and other organizations and agencies, including the SWRCB, Trust for Public Lands, The Bay Institute, U.S. Fish and Wildlife Service, Natural Heritage Institute, The Nature Conservancy, and the public. Additional meetings will occur as the planning and implementation process proceeds.

As the project moves forward past the study to implementation, it and all other capital outlay projects associated with the Agreement will be subject to CEQA and NEPA documentation. The CEQA and NEPA statutes and implementing guidelines ensure that the public and all affected agencies will be fully informed of the project and its effects and receive meaningful opportunities to provide input and review and comment on the project through the CEQA and NEPA public review process.

## Information Dissemination

### Public and Interested Parties

ACID will continue to keep landowners apprised of the District's activities through public hearings and board meetings. Further, ACID activities, as appropriate, will be posted on the Sacramento Valley Water Management Program's public web-site and ACID's public web-site ([www.acidwater.org](http://www.acidwater.org), expected to be up and running by summer 2005). Landowners will be notified of receipt of funding and scheduled activities. The SVWMP will be conducting local public comment sessions on the public draft of the Programmatic EIR/EIS, and this too will be a forum for discussion of local water issues.

The planning effort associated with the Agreement provides a formal framework for disseminating project information. Feedback on benefits achieved through the management and conservation measures recommended in the Agreement will be made available to all Sacramento Valley water contractors, USBR, and DWR through the planning partnership. The participants are aware of the need to share this information to ensure successful water supply management throughout the Sacramento Valley. ACID activities will be discussed during Phase 3 of the Redding Basin Water Resources Plan and as appropriate through the RAWC.

### DWR

DWR will receive a copy of the finalized feasibility study as well as quarterly reports during execution of the contracted work.

# Section B-15h, Innovation

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Sprinkler irrigation is not a new concept in agriculture. Use of agricultural sprinkler irrigation within the Redding Basin, specifically ACID, is something that has never been attempted on a large scale. Studies by CalPoly San Luis Obispo indicate that the switch from flood irrigation to sprinkler irrigation could reduce water application by 50 to 75 percent. Savings in these amounts would be a significant innovation in pasture irrigation. This new use of existing technology could result in significantly supporting the water management objectives of the Redding Basin.

## Existing Conditions

Land use within ACID's service area is primarily pasture, in addition to alfalfa and some deciduous orchard crops. Pasture use is typically in the range of 75 percent of the total crop mix served by the District (DWR, Northern District). Water requirements are typically highest during the summer months (June, July, and August) because of the area's hot, dry climate. Little groundwater is used across the District; the small portion used is limited primarily to deciduous crops. Annual cropping patterns have not varied significantly since the mid-1970s. Associated on-field crop water requirement needs and diversions have, therefore, been more a function of water-year type and climate than changes in cropping.

Pasture within Churn Creek Bottom is typically flood irrigated. Flood irrigation has been the standard for water application for more than 80 years. As such, it is familiar and well understood. It is well documented and widely known that the ACID system is aging and leaking, resulting in poor conveyance efficiencies. The system is usually the focus of efforts to increase agricultural water use efficiency within the Basin. Until recently, serious consideration had not been given to factors such as on-farm irrigation practices that could potentially compound the system inefficiencies.

Many of the irrigators have been efficiently using their supply as flood irrigation would allow. They have leveled their lands and honed their water application techniques. ***What hadn't been considered was a more radical and locally innovative approach to water delivery, a significant change in operations by switching to sprinkler irrigation.***

## The Innovation

The Phase 2 Feasibility Study will examine the potential to replace and, in some cases, retrofit the ACID Churn Creek Lateral system on the east side of the Sacramento River (from the Churn Creek Pump Station) to help irrigators accommodate on-farm sprinkler systems. The District is working with USBR to demonstrate how on-farm operations may change by implementing hand truck sprinkler systems on the lands of one or two willing irrigators in the 2005 season. Although, sprinkler irrigation technology is not new globally, it may as well have been invented yesterday, locally. The Feasibility Study will look at changed District operations, new infrastructure, impacts to pumping costs, and impacts to capacity. Indications of previous work (Phase 1 study, CalPoly work, etc.), show that this innovative proposed Churn Creek Lateral Improvement Project could reduce the area's water usage by 50 to 75 percent. Original estimates of annual water savings were on the order of 20,000 ac-ft. The Phase 2 study would re-examine this estimate given new proposed system parameters.

# Section B-15i, Costs and Benefits

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## Benefits

The proposed construction of new facilities is expected to generate numerous benefits for both the local and regional water users. The initial phase of the project being addressed in this proposal will demonstrate the project's feasibility and set the course for future phases by helping to better define costs, benefits, and environmental compliance requirements. The beneficiaries of this program include ACID, downstream users, the environment, and the Sacramento-San Joaquin Delta. The following benefits are discussed in this section:

- Water Supply Benefits
- Water Management Benefits
- Environmental and Water Quality Benefits
- Overview of Socio-economic Benefits

### Water Supply Benefits

The proposed project would provide the capability to more efficiently manage diversions from the Sacramento River. It would reduce diversions, thereby increasing in-stream flows, and also would reduce evapotranspiration (ET) and seepage losses. Water supply benefits include:

- **Piping**—The piping component would drastically reduce seepage in the Churn Creek Lateral. A 1982 study by the Soil Conservation Service (cited above) indicated that seepage along the east reach of the river may be as much as 8,700 acre-feet/year.
- **Water shortages**—Several Redding Basin municipal and industrial (M&I) Central Valley Project (CVP) water service contractors face shortages during dry years. The project could produce water that could be used to meet water needs. The project would potentially increase the seasonal supply in the Sacramento River downstream of the diversion point. This water could then be made available for other beneficial uses under appropriate short-term or long-term water transfer arrangements with ACID.

### Water Management Benefits

Water management benefits include:

- **System efficiency**—The predominant goal of the project is to increase water use efficiency and conserve water. The installation of underground piping in ACID's Churn Creek Lateral would substantially improve the District's ability to more efficiently utilize its supply. The District, its patrons, and adjacent landowners would benefit by virtue of the new pipeline eliminating seepage onto adjacent property and requiring less maintenance.
- **On-farm Efficiencies**—By reconfiguring part of its system, ACID would be able to help irrigators to better utilize their supply for on-farm application by allowing irrigators to switch from flood irrigation to sprinkler irrigation.

## Environmental and Water Quality Benefits

As ACID's primary source of supply, the Sacramento River would be directly and most beneficially influenced by the District's efficient use of its water supply. The potential decrease in surface water diversions (currently estimated at 8,700 ac-ft) as a result of water conservation has the potential for increasing available seasonal in-stream flows to the Sacramento-San Joaquin Delta. This additional water would contribute to addressing Delta water quality concerns that have been at the core of CALFED and other programs' efforts for the past several years.

## Overview of Socio-economic Benefits

The project does not directly involve training, employment, or capacity building, but through more efficient agricultural water supply management, it potentially makes more water available for beneficial uses. According to the *Community Assessment Project Report* (Shasta Regional Community Foundation and United Way of Northern California, 2000) Shasta County (i.e., Redding Basin and CALFED Sub-Region 1) typically has higher unemployment (6.6 percent in 1999) and lower average per capita income (31<sup>st</sup> out of 58 California counties in 1999) and median family income (19 percent lower than 1997 state average) than the rest of the state. A better managed water supply will help sustain the gains being made in the northern California economy by accommodating growth in industry and agriculture, providing growth in employment opportunities in all economic sectors.

## Costs

A breakdown of the project costs anticipated for the Phase 2 Feasibility Study presented in Section B-15d is presented in **Table X** formatted from the Solicitation Packet's Appendix C. Matching funds are not a requirement of Section B of this grant application. However, ACID and USBR are funding a sprinkler system pilot program that is also part of the Churn Creek Lateral Improvements Project.

Administration Costs were approximated. There are no administration costs associated with this grant request. These costs will be incurred by the project applicant, ACID. Minimal project management (District consultants) costs are anticipated as part of the feasibility study development. These are presented as Task 1 in Section B-15d and as part of the planning cost under (b) in Table C-1.

## PROJECT IMPLEMENTATION COSTS TABLE

**APPLICANT: ANDERSON-COTTONWOOD IRRIGATION DISTRICT**  
**PROJECT TITLE: PHASE 2 FEASIBILITY STUDY—CHURN CREEK LATERAL IMPROVEMENTS**  
**PROJECT: FEASIBILITY STUDY**

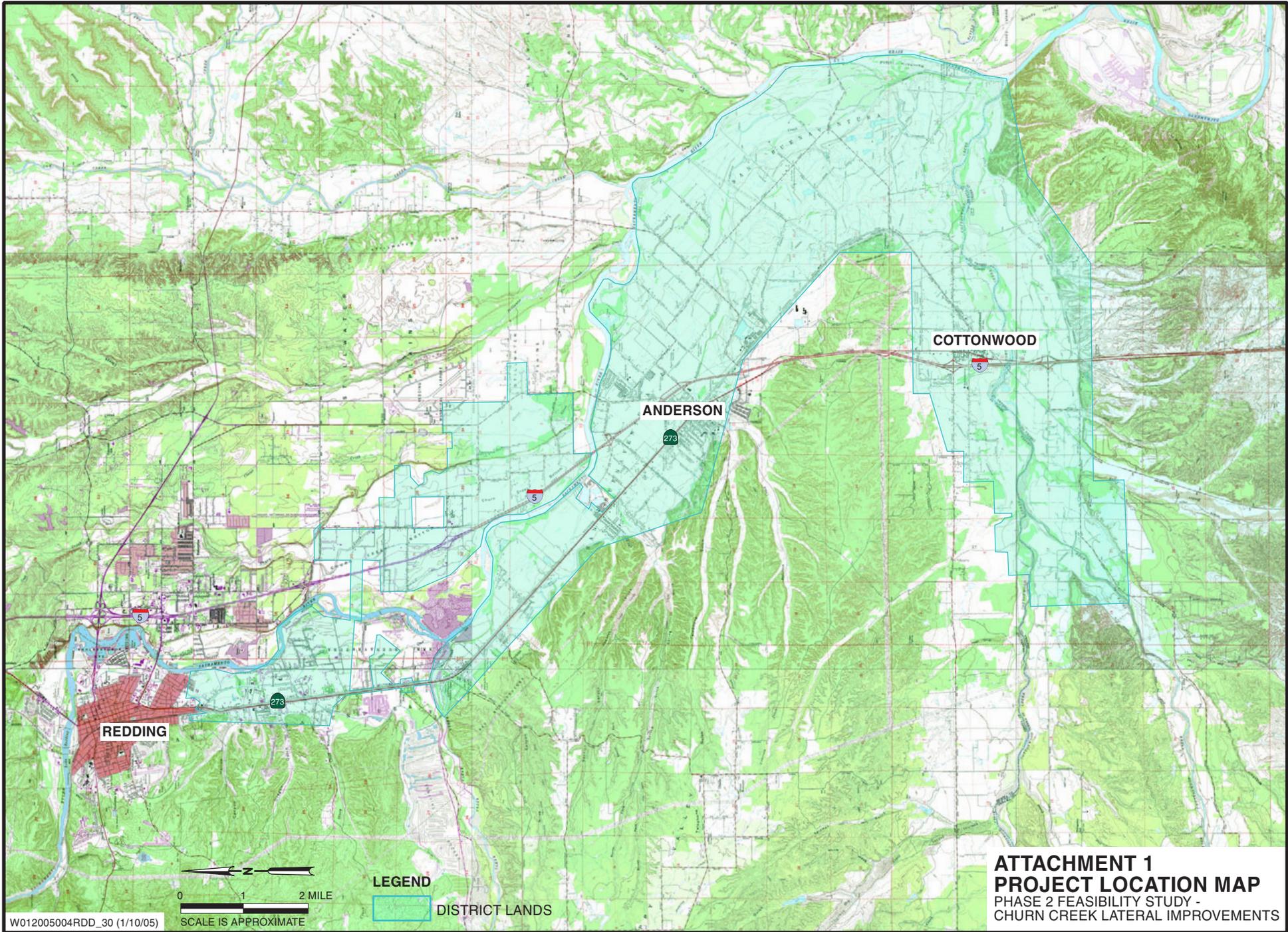
**Table C-1: Project Costs (Budget) in Dollars**

	Category (I)	Project Costs (\$) (II)	Contingency % (ex. 5 or 10) (III)	Project Cost + Contingency (\$) (IV)	Applicant Share (\$) (V)	State Share Grant (\$) (VI)	Life of investment (years) (VII)	Capital Recovery Factor (VIII)	Annualized Costs (\$) (IX)
	Administration <sup>1</sup>								
	Salaries, wages	\$0	0	\$0	\$0	\$0	0	0.0000	\$0
	Fringe benefits	\$0	0	\$0	\$0	\$0	0	0.0000	\$0
	Supplies	\$0	0	\$0	\$0	\$0	0	0.0000	\$0
	Equipment	\$0	0	\$0	\$0	\$0	0	0.0000	\$0
	Consulting services	\$5,000	0	\$5,000	\$0	\$5,000	0	0.0000	\$0
	Travel	\$0	0	\$0	\$0	\$0	0	0.0000	\$0
	Other	\$0	0	\$0	\$0	\$0	0	0.0000	\$0
(a)	Total Administration Costs	\$5,000		\$5,000	\$5,000	\$0			\$0
(b)	Planning/Design/Engineering	\$120,000	0	\$120,000	\$0	\$120,000	0	0.0000	\$0
(c)	Equipment Purchases/ Rentals/Rebates/Vouchers	\$0	0	\$0	\$0	\$0	10	0.0000	\$0
(d)	Materials/Installation/ Implementation	\$0	0	\$0	\$0	\$0	0	0.0000	\$0
(e)	Implementation Verification	\$0	0	\$0	\$0	\$0	0	0.0000	\$0
(f)	Project Legal/License Fees	\$0	0	\$0	\$0	\$0	0	0.0000	\$0
(g)	Structures	\$0	0	\$0	\$0	\$0	0	0.0000	\$0
(h)	Land Purchase/Easement	\$0	0	\$0	\$0	\$0	0	0.0000	\$0
(i)	Environmental Compliance/ Mitigation/Enhancement	\$0	0	\$0	\$0	\$0	0	0.0000	\$0
(j)	Construction	\$0	0	\$0	\$0	\$0	0	0.0000	\$0
(k)	Other (Specify)	\$0	0	\$0	\$0	\$0	0	0.0000	\$0
(l)	Monitoring and Assessment	\$2,000	0	\$2,000	\$0	\$2,000	0	0.0000	\$0
(m)	Report Preparation	\$22,000	0	\$22,000	\$0	\$22,000	0	0.0000	\$0
(n)	<b>TOTAL</b>	<b>\$149,000</b>		<b>\$149,000</b>	<b>\$5,000</b>	<b>\$144,000</b>			<b>\$0</b>
(o)	Cost Share -Percentage				3	97			

1- excludes administration O&M.

**Attachment 1**  
**Location Map**

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REDDING

ANDERSON

COTTONWOOD

LEGEND

DISTRICT LANDS

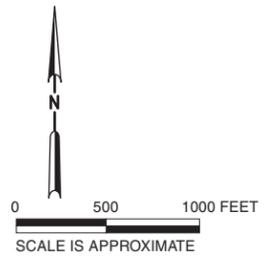
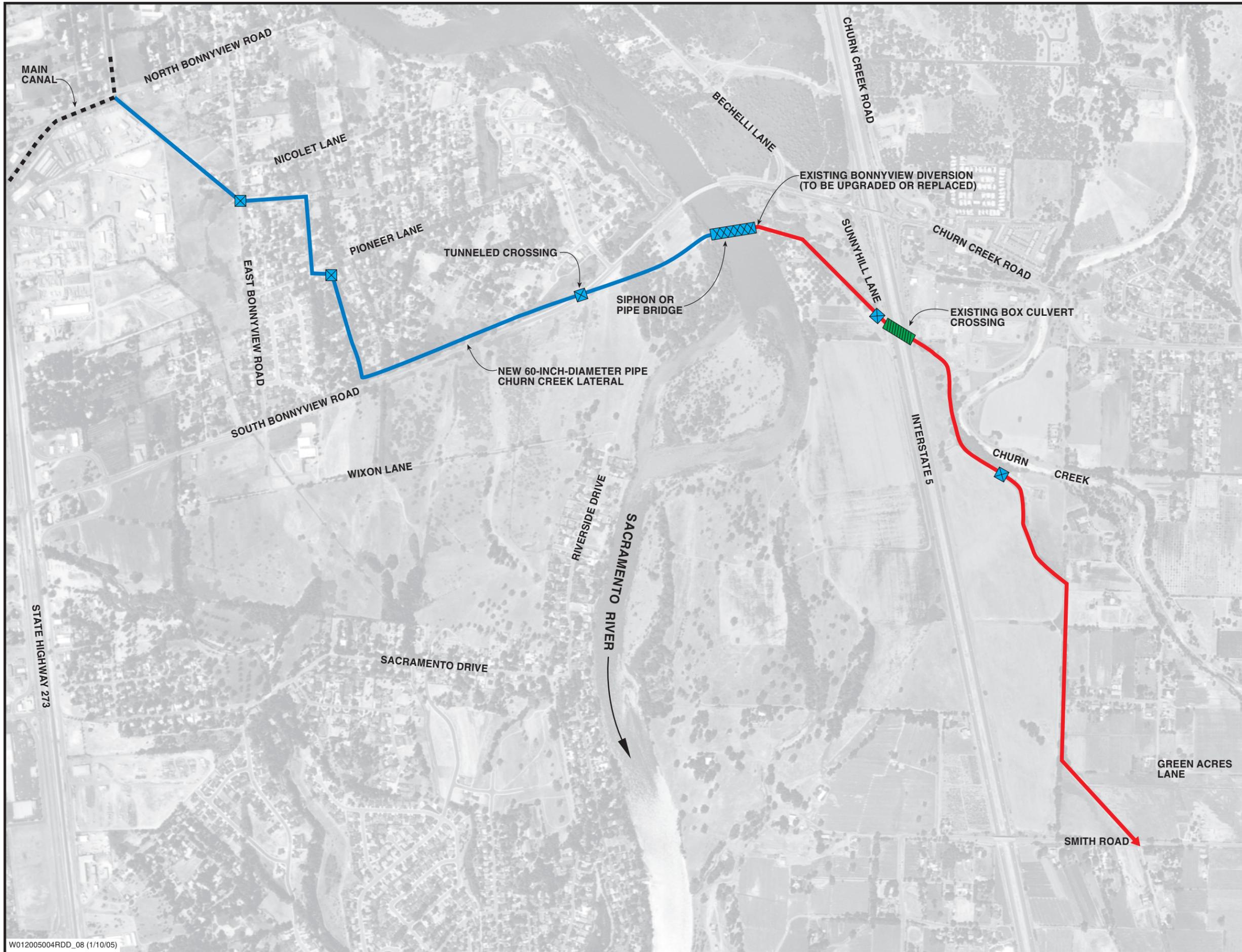
0 1 2 MILE

SCALE IS APPROXIMATE

**ATTACHMENT 1**  
**PROJECT LOCATION MAP**  
PHASE 2 FEASIBILITY STUDY -  
CHURN CREEK LATERAL IMPROVEMENTS

**Attachment 2**  
**Study Areas Map**

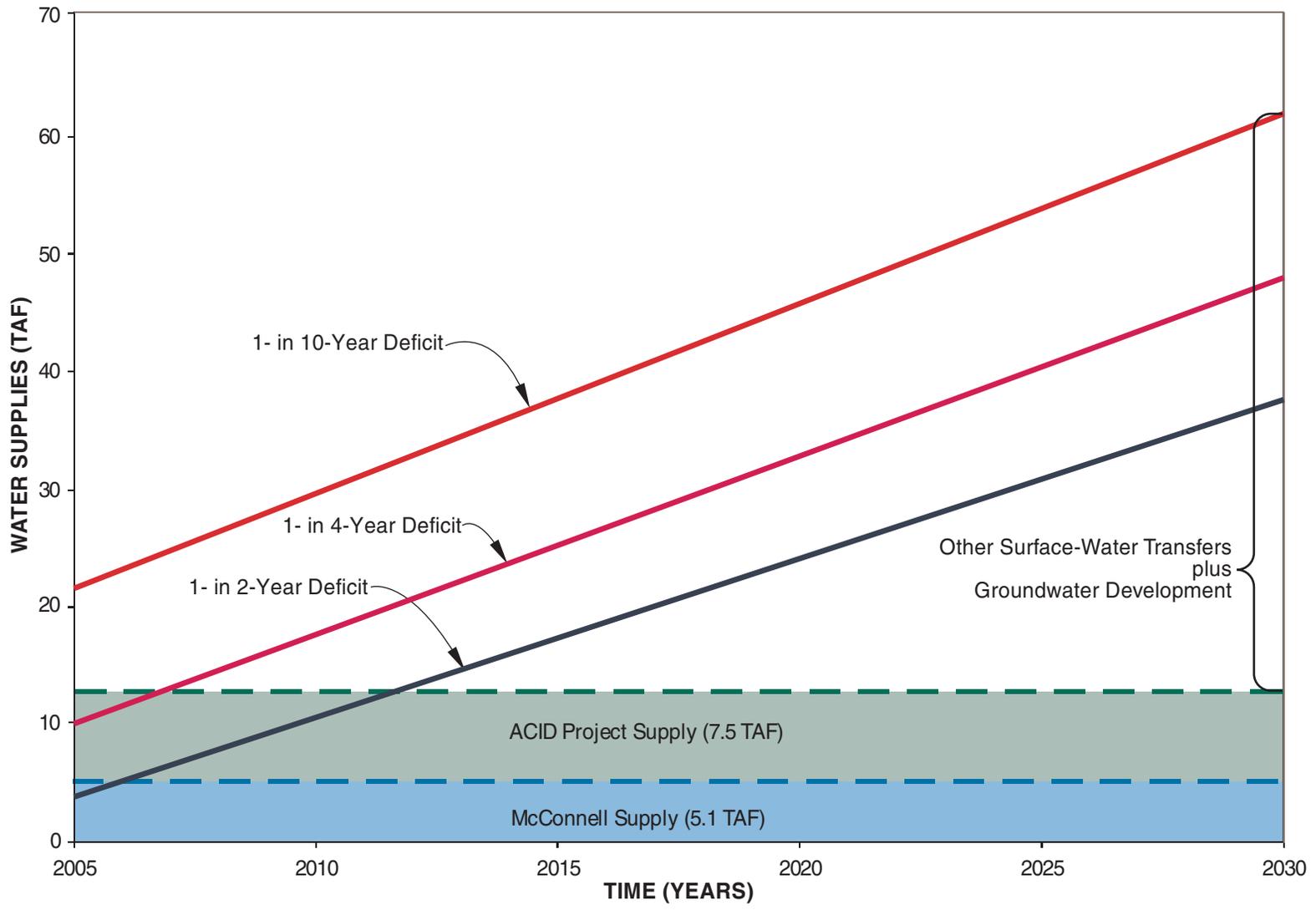
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- LEGEND**
- PHASE 1
  - PHASE 2
  - ▣ CROSSINGS TO BE CONSTRUCTED
  - ▣ EXISTING STRUCTURE

**Attachment 3**  
**Future Water Supply vs. Water Use**

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**ATTACHMENT 3**  
**FUTURE WATER SUPPLY**  
**VS. WATER USE**  
 PHASE 2 FEASIBILITY STUDY -  
 CHURN CREEK LATERAL IMPROVEMENTS

**Attachment 4**  
**Short-term Agreement**

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**Short-Term Agreement to Guide Implementation of Short-Term Water Management  
Actions to Meet Local Water Supply Needs and to Make Water Available to the SWP and  
CVP to Assist in Meeting the Requirements of the 1995 Water Quality Control Plan and to  
Resolve Phase 8 Issues**

To avoid prolonged litigation and to promote better management of California's water resources the Upstream Water Users, Downstream Water Users, the California Department of Water Resources, the United States Bureau of Reclamation, the California Department of Fish & Game, and the United States Fish & Wildlife Service agree to the terms of this Short-Term Settlement Agreement.

**1.0 Definitions:**

- 1.1 "1995 Water Quality Plan" means the Water Quality Control Plan for the San Francisco/Sacramento-San Joaquin Delta Estuary adopted May 22, 1995.
- 1.2 "Agreement" means this Short-Term Settlement Agreement.
- 1.3 "AOP" means the Annual Operating Plan to be developed pursuant to the provisions of Article 19.3 hereto.
- 1.4 "Capacity" as used in Articles 15 and 16 hereto means having the physical capability to produce the volumes of water projected for the respective projects during a designated period of time.
- 1.5 "CVP" means the Federal Central Valley Project, California.
- 1.6 "D-1641" means the State Water Resources Control Board Water Rights Decision 1641, dated March 15, 2000.
- 1.7 "DF&G" means the California Department of Fish and Game.
- 1.8 "DWR" means the California Department of Water Resources.
- 1.9 "Downstream Water Users" means collectively the Contra Costa Water District, the State Water Project contractors, and the Central Valley Project contractors that receive water from the Banks or Tracy pumping plants.
- 1.10 "Effective Date" means the date by which all parties to the Stay Agreement execute this Agreement, but no sooner than December 20, 2002.

**1.11** “Long-Term Projects” means projects developed pursuant to the Program that will be implemented under contracts that will have a term that exceeds the ten-year term for Short-Term Projects.

**1.12** “Long-Term Settlement Agreement” means the agreement among the Parties dealt with in Article 6.3.

**1.13** “Management Committee” means the committee formed pursuant to the provisions of Article 19.1 hereto.

**1.14** “Operation and Maintenance” or “O&M” costs means those costs necessary for upkeep, power, operation and environmental mitigation of that portion of fixed assets dedicated to the Program and recurring costs or payments required to obtain consents necessary to make water available under this Agreement. O&M costs will exclude general district overhead charges.

**1.15** “Out-of-Pocket Costs” means the incremental costs incurred by a district pursuant to the provisions of Article 16.5.3 to acquire water when the fixed assets of the Short-Term Workplan projects are inadequate to meet the objectives specified in Article 2.0.

**1.16** “Parties” or “Parties to this Agreement” means the Upstream Water Users, Downstream Water Users, DWR, Reclamation, DF&G, and USFWS.

**1.17** “Phase 8” means the eighth phase of SWRCB water rights hearings associated with allocation of responsibility to meet the objectives in the 1995 Water Quality Control Plan.

**1.18** “Program” means the Sacramento Valley Water Management Program described in Article 4.0 hereto.

**1.19** “Reclamation” means the United States Bureau of Reclamation.

**1.20** “Remedial Workplan” means the workplan described in Article 19.2.4 hereto.

**1.21** “Settlement Water” means the water developed from the 92,500 acre feet of Capacity described in Article 15.1 that will be made available for the purposes set forth in Article 16.2.

**1.22** “Short-Term Project Implementation Agreement” means the agreements between Upstream Water Users, DWR and Reclamation as specified in Article 6.2 hereto.

**1.23** "Short-Term Projects" means projects developed pursuant to the Program that will be implemented under contracts, or through other appropriate arrangements, that will have a term not to exceed ten years.

**1.24** "Short-Term Workplan" means the workplan first completed on October 26, 2001 that identified integrated water management projects that will enhance the Upstream Water Users', Downstream Water Users', DWR's and Reclamation's ability to use their existing supplies to meet their existing and future needs and enhance their water management flexibility as it may be augmented over time.

**1.25** "Sites Reservoir" means the North of Delta Offstream Surface Water Storage Reservoir generally dealt with in the so-called "Sites Memorandum of Understanding" executed in November 2000, and in the August 28, 2000 CALFED Bay Delta Program Programmatic Record of Decision.

**1.26** "Stay Agreement" means the "Agreement Regarding Resolution of Phase 8, Development and Management of Water Supplies, and a Binding Commitment to Proceed Pursuant to Specified Terms" entered into by DWR, Reclamation Mid-Pacific Region, State Water Contractors, San Luis & Delta-Mendota Water Authority, Contra Costa Water District, and Northern California Water Association effective April 26, 2001.

**1.27** "SWP" means the California State Water Project.

**1.28** "SWRCB" means the California State Water Resources Control Board.

**1.29** "Technical Measurement and Monitoring Committee" means the committee formed pursuant to the provisions of Article 19.2 hereto.

**1.30** "Upstream Water Users" means those individuals and entities that possess water rights or are water users within the watershed of the Sacramento River and its tributaries, who execute this Short-Term Settlement Agreement by December 15, 2002 or who execute Short-Term Project Implementation Agreements consistent with Article 13.1.

**1.31** "USFWS" means the United States Fish and Wildlife Service.

**2.0 Statement of Intent.** In the implementation of this Agreement, the Parties intend to further the following objectives:

**2.1** To implement and accomplish the goals and principles of the Stay Agreement, including meeting the flow-related objectives of D-1641, thereby avoiding the need to litigate Phase 8 issues.

**2.2** To implement a series of Short-Term Projects, owned and operated by Upstream Water Users, that will: (i) meet unmet demands in the Sacramento Valley, and (ii) provide at least 92,500, and up to 185,000 acre-feet of water to augment SWP and CVP water supplies during certain year types. The objectives described in 2.2(i) and 2.2(ii) will be accomplished in a manner that does not adversely impact water supplies that would, in the absence of this Agreement, otherwise be available to the SWP, CVP, or Upstream Water Users.

**2.3** To develop and implement monitoring programs that will provide the necessary technical information to ascertain whether the Short-Term Projects are meeting the objectives set forth in subparagraph 2.2.

**2.4** To establish milestones for developing the Long-Term Workplan and a Long-Term Settlement Agreement that will enable the parties to fully meet the terms and conditions of the Stay Agreement.

**2.5** To provide procedures to implement remedial actions as necessary to meet these objectives.

**2.6** To jointly secure funding for Program implementation.

**3.0 Integration and Coordination.** Except as specifically modified by this Agreement, the Stay Agreement is incorporated herein by reference. The Stay Agreement allowed the SWRCB to issue an order staying Phase 8 of the Bay-Delta water rights hearings, thereby allowing the Parties to work together to develop programs that, if implemented successfully, will avoid the adversarial Phase 8 or similar proceedings. The Stay Agreement was the first of anticipated successive agreements, including this Agreement.

**4.0 Sacramento Valley Water Management Program.** The Sacramento Valley Water Management Program is an integrated effort by the Upstream Water Users to provide water as a mechanism for meeting the “Goals and Principles” established in the Stay Agreement and the objectives of Article 2.0 of this Agreement and to implement the workplans described in Articles 5.0 and 7.0. The governing boards of directors of the parties to Short-Term Project Implementation Agreements, or their ultimate decision-makers, will retain the final authority to approve or disapprove all subsequent project-specific agreements associated with the Program.

**5.0 Short-Term Workplan.** Notwithstanding the definition of “short-term projects” provided in the Stay Agreement, the term “Short-Term Project” will hereinafter have the meaning provided in Article 1.22 hereto. In this regard, consistent with the provisions of Article 5(a) of the Stay Agreement, the Parties have developed and approved a Short-Term Workplan related to Short-Term Projects. The Short-Term Workplan, which has been modified, now includes groundwater management and planning, conjunctive management, reservoir re-operation, system improvement and other projects, and may be further augmented and amended as other Short-Term Projects are identified. The Short-Term Workplan, as augmented, will serve as the technical basis for implementing the Program and the Short-Term Projects.

**6.0 Successive Agreements.** Implementation of the Short-Term Workplan projects and the full Program may involve three types of agreements in addition to the Stay Agreement, which are:

**6.1 Short-Term Settlement Agreement.** This Agreement is intended to provide guidance for the development of “Short-Term Project Implementation Agreements” and, in this context, guide the implementation of short-term water management actions and projects to meet local water supply needs and to make water available to the SWP and CVP, which, for the purposes of the Short-Term Settlement Agreement, will be jointly responsible for meeting the Sacramento River and its tributaries portion of flow-related requirements of D-1641.

**6.2 Short-Term Project Implementation Agreements.** Short-Term Project Implementation Agreements will be executed between a local sponsoring Upstream

Water User(s) and DWR and Reclamation. Short-Term Project Implementation Agreements will be executed and implemented in a manner consistent with the provisions of this Agreement. Each Short-Term Project Implementation Agreement will have a provision that both ratifies and incorporates by reference the Stay Agreement and this Agreement. Each Short-Term Project Implementation Agreement will control as to the specific year types and the time when water will be made available and the monitoring program that will be implemented to evaluate the degree to which providing this water meets the objectives set forth in Article 2.0 hereto. Each Short-Term Implementation Agreement will have a provision that describes the ongoing obligation to operate, including terms and conditions associated with operation in the event that this Agreement terminates or the Long-Term Agreement is not executed. Each Short-Term Implementation Agreement that involves reservoir reoperation will include provisions relating to refill criteria. This Short-Term Settlement Agreement will not be interpreted to require any individual water user to provide water until it has executed a Short-Term Project Implementation Agreement. Notwithstanding the specific terms of any Short-Term Project Implementation Agreement, nothing in this Article 6.2 will affect the Upstream Water Users' collective obligation to develop projects to make the required Capacity and quantities of water available under Articles 15 and 16. The sole remedy for failure of the collective obligation will be termination of the Agreement pursuant to Article 11.

**6.3 Long-Term Settlement Agreement.** A Long-Term Settlement Agreement may be executed among the Parties to this Agreement. The Long-Term Settlement Agreement will be for a term that exceeds the term of this Agreement. Notwithstanding the definitions of "medium and long-term Projects" provided in the Stay Agreement, the term "Long-Term Projects" will hereafter have the meaning provided in Article 1.10 hereto.

**7.0 Long-Term Workplan.** Notwithstanding the milestones within the Stay Agreement, the workplan for Long-Term Projects is to be completed by March 31, 2005. Long-Term Projects may include projects that are the subject of Short-Term Project Implementation Agreements.

**8.0 Additional Reservoir Storage.** The Parties recognize that the mix of resources available and, consequently, the form and content of a Long-Term Workplan and a Long-Term Settlement Agreement, pursuant to the provisions of Articles 6.3 and 7.0, hereto, will depend upon whether Sites Reservoir, Enlarged Shasta Dam or other North of Delta surface water storage reservoir(s) are to be built. Accordingly, adherence to milestones and completion dates associated with the Long-Term Workplan and Long-Term Settlement Agreement may need to be adjusted depending on when decisions associated with these reservoirs are, in fact, made.

**9.0 Signatories to the Agreement.** This Agreement will be effective when all parties to the Stay Agreement execute it, but no sooner than December 20, 2002. This Agreement may be executed by any of the Upstream Water Users that elect to become signatories to this Agreement; provided, however, that such election will occur on or before December 15, 2002. The duty of each of the signatory Upstream Water Users to provide Block 1 or 2 water under Article 16 of this Agreement is expressly conditioned on the execution of a Short-Term Project Implementation Agreement by the Upstream Water User, as specified in Article 6.2.

**10.0 Term.** The term of this Agreement will be from the Effective Date of this Agreement until December 31, 2014, unless earlier replaced by a Long-Term Settlement Agreement, terminated as set forth in this Agreement and the Stay Agreement, or unless otherwise limited by applicable law.

**11.0 Termination.** Consistent with the Stay Agreement, this Agreement may be subject to early termination: (i) if the 1995 Water Quality Plan flow objectives are increased or decreased; (ii) if after annual review the Downstream Water Users, DWR or Reclamation determines the objectives of the Program are not being substantially achieved and cannot be revised to do so; or (iii) matters outside this Agreement or Program materially affect the Upstream Water Users' ability to implement this Agreement or the Program, including, without limitation, a failure to renew Sacramento River Settlement Contracts or renewal of such contracts on terms that make performance of this Agreement infeasible. If the USFWS or DF&G determines that its continued participation in this Agreement or successive agreements under Article 6.0 abridges or conflicts with its duties as a trustee or regulatory agency, the USFWS or DF&G may withdraw from this

Agreement after providing the Parties with written notice which allows at least thirty days to resolve the conflict. Withdrawal from the Agreement by USFWS or DF&G will not terminate this Agreement. Consistent with Article 27, issues that may give rise to termination of this Agreement will first be submitted to a mediator to attempt to resolve the issues and avoid termination.

**12.0 Extension of Term of Stay Agreement.** Article 6(a) of the Stay Agreement is hereby amended to extend the term of the Stay Agreement from December 31, 2010 until December 31, 2014, unless the Stay Agreement is earlier terminated as set forth in this Agreement and the Stay Agreement, or unless otherwise provided by applicable law.

**13.0 Additional Milestones.** The following are added to the Milestones set forth in Article 5 of the Stay Agreement, and are subject to the termination provisions found at Article 6(c) of the Stay Agreement.

**13.1** The relevant parties will negotiate and execute the Short-Term Project Implementation Agreements in a timely manner, but in no case later than a date that will allow for implementation of projects sufficient to meet the schedule established in Article 15.2.

**13.2** Notwithstanding the provisions of the Stay Agreement, the Parties will develop a Long-Term Workplan by March 31, 2005.

**13.3** The Parties will negotiate and execute the terms of a Long-Term Settlement Agreement, either by amending this Agreement or executing a separate agreement by December 31, 2005.

**14.0 Upstream Water Users' Ownership of Projects and Obligations.**

**14.1 Upstream Water Users' Ownership of Projects.** Notwithstanding any other provision of this Agreement, the projects set forth in the Short-Term Workplan and the Short-Term Project Implementation Agreements are local projects to be locally developed and owned by Upstream Water Users. The termination of this Agreement or failure of the Parties to execute a Long-Term Settlement Agreement will have no effect on the ownership of projects by the respective Upstream Water Users. In that event, the

respective Upstream Water Users will continue to control the water developed by those facilities subject to the continuing obligation to operate the projects under Articles 14.2 and 16.2.

**14.2 Upstream Water Users' Obligations to Continue to Provide Water.** In the event that this Agreement is terminated, or in the event a Long-Term Settlement Agreement is not executed, Reclamation and DWR at their discretion may, after consultation with the Downstream Water Users, elect to continue in effect one or more of the Short-Term Project Implementation Agreements, consistent with the provisions of those agreements, for a period not to exceed December 31, 2014. In the event of termination of this Agreement and an election by Reclamation and DWR to continue in effect a Short-Term Implementation Agreement, any Bay-Delta obligation imposed upon the Upstream Water User that continues project implementation to provide water to meet the 1995 Water Quality Plan, will be deemed satisfied during the period of time associated with the continued operation of such project. In the event that this election is not made, the Short-Term Project Implementation Agreement will be terminated.

**14.3 Projects to Be Controlled by Upstream Water Users.** A project sponsor will have the final decision-making role with respect to the manner in which it operates and manages Program projects to meet, consistent with the AOP as defined in Article 19.3, the requirements of this Agreement. In this regard, the Parties recognize that many of the Short-Term Projects are pilot projects that are intended to assist in determining their long-term capabilities. Consequently, if the Upstream Water User project sponsor determines, after consultation with the Management Committee, that development of water from these projects must be ceased or modified, such determination will be final, but the provisions of Article 14.4 will apply to the operation of that project.

**14.4 Obligations in the Event Project Implementation is Ceased or Modified.** In the event that a project sponsor, pursuant to the provisions of Article 14.3 of this Agreement, ceases project implementation or modifies the project in a manner that materially diminishes its benefits, and funding was obtained and utilized pursuant to Article 16.5 of this Agreement for the implementation of the project, the project sponsor will nonetheless be responsible to provide its allocated contribution of water sufficient to meet the Article 16.2 obligations; Provided that, if cessation of production or

modification of project operation was caused by a legal limitation or documented material adverse impact on the affected groundwater basin, then there will be no further obligation under this sub-article 14.4 during the duration of these limitations. Nothing in this Article 14.4 will affect the Upstream Water Users' collective obligation to develop projects to make the required Capacity and quantities of water available under Articles 15 and 16 or to implement an AOP pursuant to Article 19.3.

**15.0 Development of Project Capacity Necessary to Deliver Water and Related Schedule.**

**15.1 Development of Project Capacity.** The Upstream Water Users will implement projects (i.e., the Program and Short-Term Workplan projects) with the Capacity to produce 185,000 acre-feet of water that would otherwise not be available in the Sacramento River. Unless otherwise agreed to in the Short-Term Implementation Agreements, for groundwater projects, this Capacity will be made available during the period June 1 to October 31, and for storage release projects, this Capacity will be made available during the period July 1 to September 30. The Short-Term Project Implementation Agreements may provide for a different delivery period based upon individual project circumstances. Up to 92,500 acre feet of this Capacity will be available as Settlement Water, for the purposes of Article 16.2 hereto. Up to 92,500 acre feet of this Capacity will be available for the purposes of Articles 16.1 and 16.3 hereto. The Parties will work together, including through the development of the Remedial Workplan provided for in Article 19.2.4 hereto, to optimize the benefits associated with the developed Capacity in order to provide 185,000 acre feet of water that otherwise would not be available in the Sacramento River to meet the purposes set forth in Article 16 in a manner consistent with the Article 2.0 objectives. Reclamation and DWR will coordinate operation of the CVP and SWP (and any other project under their respective control) to maximize the water supply benefits associated with developed Capacity under this Agreement and the Short-Term Project Implementation Agreements.

**15.2 Schedule for Development of Project Capacity.** The Upstream Water Users will develop Capacity necessary to meet the requirements of Article 15.1 on the following schedule:

- 50,000 acre-feet of Capacity by June 1, 2003

- 100,000 acre-feet of Capacity by June 1, 2004
- 185,000 acre-feet of Capacity by June 1, 2005

The Capacity dedicated from Program projects on June 1, 2012 will decrease to that needed to provide 135,000 acre feet and will reduce further on June 1, 2013 to that needed to provide 85,000 acre feet.

**15.3 Transition to Long Term Agreement.** After the execution of the Short-Term Implementation Agreements, as provided for in Articles 6.2 and 13.0(a), any new Upstream Water Users' projects will be considered projects to be included within the Long-Term Workplan and subject to the Long-Term Workplan. To the extent that water developed from these projects is available prior to the execution of the Long-Term Settlement Agreement, then that water will be devoted first to the actions that may be necessary to address problems identified within the Article 19.2.4 Remedial Workplan process, and then the balance, if any, will be allocated to benefit equally interests associated with the allocations of water provided for within Articles 16.1 and 16.2 as determined by the Management Committee. As part of the Long-Term Agreement, the Parties will negotiate a mutually agreeable limit on the Upstream Water Users' requirement to assist in making water available for the purposes of D-1641.

**16.0 Utilization of Program and Short-Term Workplan Project Capacity.** The project Capacity developed pursuant to Article 15 will be dedicated and operated consistent with the AOP developed under Article 19.3 to meet the uses specified in Articles 16.1 and 16.2 in below normal, dry, and critical and in accordance with Article 16.4, in above-normal years. Water year types will be determined by the May 1 forecast using the 40-30-30 Sacramento River Index in D-1641.

**16.1 Block 1 for Local Use.** Fifty percent of the water developed from the Capacity set forth in Article 15 will be dedicated to local use within the entities producing the water. To the extent that water produced through this Capacity is not needed by entities producing the water, as determined by the entity producing the water, it will, consistent with the provisions of Article 16.3 below, be made available for purchase by the Downstream Water Users, DWR or Reclamation under the terms and conditions of this Short-Term Settlement Agreement.

**16.2 Block 2 for Water Quality Control Plan Water.** Fifty percent of the water developed from the Capacity set forth in Article 15.2 will be made available to the SWP and CVP, which, after consultation with the Downstream Water Users, may, on or before May 1, elect to take and use the water to meet the requirements of D-1641.

**16.3 Obligation to Take Block 1 Water.** In the event DWR or Reclamation elect to call for all or a portion of Block 2 water, the Downstream Water Users, DWR or Reclamation will be required to purchase an equal amount of Block 1 water if that water is made available for purchase pursuant to Article 16.1.

**16.4 Water in Above-Normal Years.** During above-normal year types, DWR or Reclamation may, after consultation with the Downstream Water Users, request that the Upstream Water Users make available Block 2 water. No Upstream Water User will be obligated to make such water available if it determines in its sole discretion that such action would have a negative impact on its ability to meet its commitments under this Agreement in below normal, dry or critical years; Provided that, in this event the Upstream Water User will not operate the Short Term Project in connection with any transfer during the relevant above-normal year.

**16.5 Finances.** To pay for projects and the other actions required by the Program and identified within the Short-Term Workplan, the Parties agree to the following:

**16.5.1 Capital Costs.** Consistent with the responsibilities of the agencies administering the funds, all steps will be taken to secure funds from Proposition 204, Proposition 13, and other appropriate public sources to pay the full capital expenses associated with Short-Term Workplan projects, including costs of acquiring capital facilities to implement the project, reasonable initial rehabilitation and other related costs associated with existing groundwater wells, and other general costs reasonably incurred to implement the project. The voters have recognized it is in the public interest to fund actions that improve water quality in the Delta and the reliability of supplies. Proposition 204, approved by the voters in 1996, provided \$25 million for the purpose of assisting in meeting the 1995 Water Quality Control Plan objectives such as through the implementation of a water rights settlement in the Sacramento Valley. Proposition 13 contains funds for implementation of water management, water

use efficiency and planning projects consistent with the projects envisioned here. Nothing herein is intended to preclude projects from proceeding without the type of public funding dealt with in this sub-article.

**16.5.2 Funds Not Available.** In the event funds identified in Article 16.5.1 are not available in an amount sufficient to pay for the capital costs of Capacity required to make water available under Article 16, the Parties agree that they will together seek alternative funding to pay for these projects under the oversight of the Management Committee consistent with Article 19.

**16.5.2.1 Block 2 Water.** If sufficient alternative funding is not available to pay for the portion of the capital costs required to make Block 2 water available from a project, the Upstream Water User(s) sponsoring the project will not be obligated to proceed with the development of the project.

**16.5.2.2 Block 1 Water.** If sufficient alternative funding is not available to pay for the portion of the capital costs of a project required to make Block 1 water available from a project, the Parties will make their best efforts to obtain reasonably equivalent sources of alternative public or private financing for that project for the term of the Short-Term Project Implementation Agreement. If approved by the Upstream Water User sponsoring that project, Reclamation, DWR and/or Downstream Water Users may provide their own funds to make up for any deficiency in funds; provided that those funds will be fully repaid, including interest, as a credit against the payments required in Article 16.5.5 or pursuant to other repayment provisions specified in the Short-Term Project Implementation Agreement. If reasonably equivalent alternative financing for the term of the Short-Term Implementation Agreement is not available for any specific project, or Reclamation, DWR or the Downstream Water Users do not provide funds in accordance with this article 16.5.2.2 for any specific project, the Upstream Water User(s) sponsoring that project, in its discretion, will not be obligated to proceed with that project.

**16.5.2.3 Termination.** If the failure to implement projects because of the lack of funds results in a reduction in the amount of water otherwise to be provided pursuant to Articles 15 and 16, the early termination provisions of Article 11.0 may be invoked.

**16.5.3 Operation and Maintenance (“O&M”) Costs for Block 2 Water.**

O&M expenses for Block 2 water will be paid 50 percent by Upstream Water Users and 50 percent by Downstream Water Users, Reclamation or DWR. In “Critical Years” (as defined in Sacramento River Settlement Contracts), or “drought” years (as defined in Feather River Contracts and as will be applied on the Yuba River) the 50 percent O&M payment obligation will be tied to Out-of-Pocket Costs. The Technical Measurement and Monitoring Committee will confirm the need to rely upon sources other than short-term Workplan sources in “Critical Years” or “drought” years and also confirm the appropriateness of Out-of-Pocket Costs.

**16.5.4 Costs Associated with Project Implementation, the Preparation of the Annual Operating Plan, Technical work, and Remedial Workplan.** The Parties will seek funds from appropriate public sources to pay for the expenses associated with preparation of the AOP, technical work, remedial workplan preparation and implementation, and monitoring associated with implementation of the Short-Term Projects. To the extent such funds are not obtained for these purposes, the Management Committee will develop a plan for funding the remaining costs consistent with Article 19.0.

**16.5.5 Payments for Block 1 Water Made Available to Downstream Water Users, DWR and Reclamation.** Downstream Water Users, DWR or Reclamation will pay for Block 1 water made available under the provisions of Articles 16.1 and 16.3, according to year types as determined by the May 1 forecast using the 40-30-30 Sacramento River Index in D-1641, pursuant to the following payment schedule:

- \$50/acre-foot during years classified as above-normal;
- \$75/acre-foot during years classified as below-normal;
- \$100/acre-foot during years classified as dry; and

\$125/acre-foot during years classified as critical.

The payments made for Block 1 water will be reduced to reflect the amount of public funds made available pursuant to the funding provisions of Article 16.5.1 hereto, if any, based on a formula assuming a 20-year amortization period at six percent. The payments made for Block 1 water will be modified up or down from the rate noted above based upon changes in actual operation and maintenance costs, assuming a 2002 base year.

**16.5.6 Acre-Foot Payments.** The costs and payments required by Articles 16.5.3 and 16.5.5 will be paid by the Downstream Water Users, DWR or Reclamation for each acre-foot of water they receive pursuant to Articles 16.1 through 16.3. Payments will be made, to an entity or entities identified by the Upstream Water Users, in any year when water is made available under this Agreement, as provided in the Short-Term Project Implementation Agreement(s).

**17.0 System Improvement Projects.** System Improvement Projects will be implemented consistent with the Short-Term Workplan. Water use efficiency measures will be implemented to provide maximum environmental benefit and to provide operations and maintenance benefits to participating Upstream Water Users. To the extent that the Management Committee, acting upon the recommendation of the Technical Measurement and Monitoring Committee, determines that these projects meet the objective of Article 2.2, such water will be credited equally toward the requirements in Articles 16.1 and 16.2.

**18.0 Sacramento Valley Planning Projects.** The planning projects identified in the Short-Term Workplan will be completed. These projects are intended, at least in part, to provide strategic information to Sacramento Valley decision-makers and others to assure that implementation of the Program will protect and enhance the reliability and integrity of Sacramento Valley water supplies.

**19.0 Administration.** To assure effective administration of this Agreement, the Program will include the following:

**19.1 Management Committee.** A Management Committee of 14 voting members will be established to provide oversight for the implementation of the Program. The committee will include an equal number of voting representatives of (i) the Upstream Water Users and (ii) the Downstream Water Users, DWR, and Reclamation collectively. Any decision by the Management Committee will require a majority vote of the members of both groups identified in (i) and (ii) above, provided that group (ii)'s majority includes the votes of DWR and Reclamation. The DF&G and the USFWS will each have an ex-officio, nonvoting representative on the Management Committee. The Management Committee may add voting members and ex-officio members, as it deems appropriate. The Management Committee will act in a manner consistent with the Short-Term Project Implementation Agreements and confirm that the form of the Short-Term Project Implementation Agreements is consistent with the provisions of the Short-Term Settlement Agreement. The Management Committee may create additional committees or working groups, as necessary, to assist it in fulfilling its duties.

**19.2 Technical Measurement and Monitoring Committee.**

**19.2.1 General.** A Technical Measurement and Monitoring Committee of members with expertise in groundwater and surface water project development and management representing the Parties will be created by the Management Committee. All actions and decisions of the Technical Measurement and Monitoring Committee, including decisions with respect to adoption of procedures associated with the operation of the Committee, will be subject to the approval of the Management Committee. The Technical Measurement and Monitoring Committee will establish procedures to determine whether projects are meeting the Article 2.0 objectives. The Technical Measurement and Monitoring Committee will evaluate the actual performance of the projects identified each year in the AOP prepared pursuant to Article 19.4. The Technical Measurement and Monitoring Committee will develop monitoring programs, analyze data from the monitoring programs, and attempt to resolve technical disputes. The Technical Measurement and Monitoring Committee will also provide recommendations with respect to means by which projects can best achieve the purposes of this Agreement.

**19.2.2 Annual Evaluation of Projects.** Each year the Technical Measurement and Monitoring Committee will: (a) assess how the Program and Short-Term Workplan projects developed water from the Capacity set forth in Article 15 to meet the Article 16.1, 16.2 and 16.3 obligations; (b) determine whether the water produced the previous year was made available at the time and in the quantities specified in that year's AOP; and (c) analyze and report on the results of the monitoring programs with respect to the timing and source of groundwater recharge resulting from operation of the projects associated with Program and Short-Term Workplan projects.

**19.2.3 Annual Progress Report.** The Technical Measurement and Monitoring Committee's findings and recommendations will be summarized in an Annual Progress Report submitted to the Management Committee. The Annual Progress Report will also evaluate the performance of projects in the Short-Term Workplan to assess their suitability for inclusion at existing or expanded scale in the Long-Term Workplan.

**19.2.4 Remedial Workplan.** If, after review of the Annual Progress Report, the Management Committee determines that the water developed from the Capacity set forth in Article 15 is not sufficient to meet the objectives of Article 2.0 and the Article 16.1, 16.2 and 16.3 purposes, it will direct the Technical Measurement and Monitoring Committee to develop a Remedial Workplan to address the identified problems. Remedial actions the Technical Measurement and Monitoring Committee consider may include, but are not limited to, relocation, improvement of Capacity or deepening of wells, and operation timing changes for groundwater and surface projects. To the extent that such actions result in additional expense, the Parties will evaluate such expenses and develop a mutually agreeable equitable distribution of such expenses. Failure to agree on implementation of improvements identified as necessary to provide water pursuant to Article 15.1 will be deemed cause for termination of the Agreement.

**19.3 Annual Operating Plan.** An AOP will be developed each year to describe how the available Capacity from the projects will be operated to produce water needed for the

purpose of Articles 15 and 16. The AOP will be developed each year by the dates shown in the following schedule:

March 1— The Upstream Water Users will develop a draft AOP in coordination with the Technical Measurement and Monitoring Committee, identifying how the Upstream Water Users plan to provide the amount of settlement water identified in Article 16.2. The plan will also disclose the quantity of Block 1 Water that the Upstream Water Users will require to be purchased pursuant to Article 16.3, and will describe the manner of operation and describe the measurement and monitoring program that will be carried out pursuant to Article 19.2;

March 15—DWR and Reclamation will submit comments, if any, on the AOP to the Upstream Water Users;

March 31—The Upstream Water Users will reply to any DWR and Reclamation comments;

May 1—DWR and Reclamation will request the amount of Block 2 water they elect to call for in that year;

May 15—The Upstream Water Users will submit a final AOP that reflects the amount of Block 2 water requested by DWR and Reclamation and the amount of Block 1 water that DWR and Reclamation will be obligated to purchase pursuant to Article 16.3 hereto.

## **20.0 Unmet Sacramento Valley Demands.**

**20.1 Recognition of Unmet Sacramento Valley Demands.** The Stay Agreement recognizes that Upstream Water User demands may vary and that various enumerated categories of demand will need to be provided for. These categories of demand include:

- (i) Urban needs and uses within the watershed of the Sacramento River and its tributaries;
- (ii) Needs and uses within the Tehama-Colusa and Corning Canal service areas;
- (iii) Needs and uses within the Sacramento River Water Rights Settlement Contractors' collective service area;

- (iv) Needs and uses within areas that obtain supply from drains and bypasses within the Sacramento Valley; and
- (v) Needs and uses within the areas tributary to the Sacramento, American and Feather Rivers.

The Parties agree that, as an initial step in providing for this identified demand, initial needs within the Tehama-Colusa and Corning Canal service areas ((ii) above) and within the Sutter Bypass ((iv) above) will be addressed. The general terms by which these needs are to be addressed are set forth in sub-articles 20.2 and 20.3 below. As part of the Long-Term Settlement Agreement, means by which additional unmet demands within the upstream areas can be met will be identified and developed. Meeting this upstream demand will be undertaken in a manner that also recognizes the need to increase benefits to Downstream Water Users.

**20.2 Sutter Bypass.** Notwithstanding the provisions of Article 2.2, during the term of this Short-Term Settlement Agreement or for whatever period is otherwise negotiated, the continued diversion and use of return and tailwater flows by water users in the Sutter Bypass/Butte Slough region will not be challenged by DWR, Reclamation, DF&G, USFWS or the Downstream Water Users. Sutter Bypass/Butte Slough region lands affected by this provision are shown on the map attached hereto and marked as Exhibit "A". The Sutter Bypass/Butte Slough Water Users Association will provide \$36,000 annually, on behalf of the water users identified in Exhibit "A", for the benefit of DWR and Reclamation. To receive the benefit of this subarticle, these Sutter Bypass/Butte Slough water users must have this total amount applied as a credit towards the non-Upstream Water Users' share of operation and maintenance cost of Block 2 water pursuant to Article 16.5.3. This provision is self-executing and will create no legal precedent. It is solely for the purpose of addressing unique facts associated with the Sutter Bypass/Butte Slough water users as a part of this overall agreement. During the term of the Short-Term Settlement Agreement, the Sutter Bypass/Butte Slough water users, DWR, Reclamation and other interested parties will develop a long-term plan to accomplish the objectives in Article 20.1 for this region.

**20.3 Tehama-Colusa Canal Authority ("TCCA").** Notwithstanding the provisions of Article 2.2, during the term of this Short-Term Settlement Agreement, or for whatever

period is negotiated between TCCA, Reclamation and other affected parties, CVP water service contractors served by the TCCA will receive an increased CVP contract supply, not to exceed a combined total of 25,000 acre-feet annually, at water rates based on Reclamation's "ability to pay" criteria. This supply will be made available through the assignment, or in such other manner as TCCA, Reclamation and other affected parties agree, of existing Sacramento River Settlement Contract CVP water supply to TCCA member agencies. This provision will create no legal precedent regarding transfers of base or project water supplies and is solely for the purpose of addressing unique facts associated with TCCA CVP water supply contracting. The general form of the agreement that will be used to implement this subarticle is attached as Exhibit B.

**20.4** The provisions of sub-articles 20.2 and 20.3 are not intended to impose any obligation on any Upstream Water User or any Downstream Water User to make water supplies or money available for the benefit of the Sutter-Bypass/Butte Slough region or to the TCCA, except as otherwise agreed to by the affected parties. The provisions of subarticles 20.2 and 20.3 are not intended to impose any obligation on DWR or Reclamation, except as specifically provided in this Article 20.

**21.0 Area-of-Origin Claims.** Nothing within this Short-Term Settlement Agreement is intended, in any way, to adversely affect or to affirm the area-of-origin claims of Upstream Water Users or any other individual or entity who may be a beneficiary of the area-of-origin provisions of the California Water Code.

**22.0 Water Transfers.** Nothing herein is intended to prejudice the Parties' respective positions on the transferability of unused base water supply or unused water entitlements nor is it intended to affect the transfer of water that is not otherwise subject to this Agreement.

**23.0 Protection of SWP and CVP Supplies.** In recognition of the need to protect SWP and CVP supplies from inappropriate use by others, it is agreed as follows:

**23.1 Illegal Diversions.** The Parties agree that entities that do not hold adequate water rights should be prevented from illegally diverting water from the system. To reduce such diversions, the Parties will cooperate in seeking significantly increased penalties for

such illegal diversions and significant increases in resources for enforcement actions by the SWRCB.

**23.2 Project Storage Releases.** The Parties agree that when releases are required from the SWP and CVP reservoirs to maintain Delta water quality, such releases must be protected from illegal diversions. The Parties affirm the principle that upstream water rights do not extend to use of SWP and CVP storage releases, except in those circumstances where the upstream diverter has a contract with the SWP or CVP that expressly provides for such use.

#### **24.0 Environmental Compliance.**

**24.1 Preparation of Environmental Documents.** In carrying out any actions arising under or which may result from this Agreement, all applicable environmental review, including compliance with the National Environmental Policy Act (“NEPA”) and the California Environmental Quality Act (“CEQA”), will be completed.

**24.2 Program Environmental Document.** DWR will be the lead agency under CEQA and Reclamation will be the lead agency under NEPA for preparing a program/programmatic environmental impact document with respect to actions resulting from this Agreement program documents. DWR and Reclamation will cooperate in preparing a joint program environmental impact document with DWR coordinating such preparation. During preparation and review of the joint program document, other Parties will participate as cooperating agencies pursuant to NEPA and as responsible agencies pursuant to CEQA. As appropriate, DF&G will also participate as a trustee agency pursuant to CEQA.

**24.3 Project-Level Documents.** Upstream Water Users will be lead agencies under CEQA for preparing and approving project level environmental documentation of their respective projects, as identified in the Short-Term Workplan. However, project-level evaluation of appropriate projects may be included within the program environmental document.

**24.4 Compatible Documents.** Environmental documents will be compatible with CALFED environmental documents.

**24.5 Costs for Environmental Compliance.** Costs for such environmental compliance, including preparation of program or project-level environmental documents, will be paid, to the extent feasible, from funds identified in Article 16.5.1, subject to the provisions of Article 16.5.2 and Article 30.0. If such funds are not sufficient to cover necessary costs of preparing the environmental documentation described by this Article, the Parties will cooperate to seek alternative funding to pay such costs.

**25.0 Non-Participating Entities.** The Downstream Water Users, DWR, Reclamation, DF&G or USFWS will not enter into water purchase or transfer agreements with entities, located in the Sacramento River Hydrologic Region as defined in Bulletin 160 and possessing water rights identified in the Phase 8 hearing process, if the entities are not providing water, or are not committed to provide water, under Articles 16.1, 16.2 or 16.4 pursuant to this Agreement and related Short-Term Implementation Agreements. The provisions of this Article 25.0 will not apply to Upstream Water Users that have resolved Phase 8 issues through separate settlement agreements approved by the SWRCB, or to water purchase or transfer agreements for use within the Sacramento River Hydrologic Region as defined in DWR Bulletin 160, including instream or in-basin environmental purposes. The provisions of this Article 25.0 also will not apply to water purchase or transfer agreements executed prior to October 1, 2002. For purposes of this Agreement the Environmental Water Account will be considered a use outside of the Sacramento River Hydrologic Region.

**26.0 Upstream Water Users Who's Rights Are Not Directly at Risk in Phase 8.** Any Upstream Water User whose underlying water rights were not identified in the Phase 8 hearing process and who participates in making water available under the provisions of Articles 16.1 and 16.2 will be credited to the extent it continues to provide Block 2 water pursuant to Article 16.2 in any SWRCB Bay-Delta water quality or water rights proceedings that directly implicate those rights and with respect to any action by the SWRCB to increase the 1995 Water Quality Control Plan objectives.

**27.0 Resolution of Disputes.** Any material dispute arising under this Agreement, including those involving possible termination or those which might cause the initiation of any

administrative or judicial proceeding to enforce the Agreement, will be submitted to a mediator. The mediator, who must have experience in water-related disputes, will be selected by the Parties who participate in the mediation. The Parties who participate in the mediation will use their best efforts to resolve the issues within 30 days. The costs of any such mediation will be borne equally among the Parties who participate in the mediation. Initiation of this mediation process will be through written notice to all Parties to this Agreement by any of the Parties hereto.

**28.0 Effect of This Short-Term Settlement Agreement on Other Matters.** Except as specifically provided in this Agreement, nothing in this Agreement, and nothing incorporated by reference into the terms of this Agreement, is intended or will be construed as a waiver or compromise of any Party's rights or responsibilities under State or Federal law. This Agreement will not be construed as an admission or determination of any Party's responsibility for meeting the requirements of D-1641. This Agreement constitutes a compromise and settlement of legal claims and is inadmissible to establish liability, responsibility or fault in any judicial or administrative proceeding. Execution of this Agreement is not intended and will not be construed as or is it intended to abrogate or limit any regulatory or statutory responsibility that any of the Parties hereto may have. The Agreement is subject to State and Federal Law.

**29.0 Allocation of Risk Responsibilities.** The Parties will cooperate in reducing, to the greatest extent practicable, the risk of claims arising against the parties from implementing this Agreement.

A. The parties to each Short-Term Project Implementation Agreement will specify in those agreements how they will allocate responsibilities with respect to the legal defense and payment of any settlements or judgments arising from:

- (1) Claims involving control, carriage within the boundaries of the Upstream Water User who is implementing the project, handling, use, and disposal, or distribution of water pursuant to this Agreement or any Short-Term Project Implementation Agreement.
- (2) Claims arising from activities under the exclusive control of the Upstream Water User who is implementing the project.

- (3) Claims with respect to damage from the operation of an Upstream Water User who is implementing a groundwater project.
- B. The Upstream Water Users and Downstream Water Users will share equally the responsibility, to the extent permitted by law, for the defense and any settlement of any claims challenging the validity of this Agreement (including reasonable attorneys' fees and litigation costs), or the underlying authority of the parties hereto to implement this Agreement, including claims brought under CEQA, NEPA, the Clean Water Act, state or federal Endangered Species Acts and claims with respect to the programmatic effects of this Agreement.
- C. Reclamation, DWR, USFWS, and DFG will cooperate, to the extent permitted by law, in the defense and any settlement of any claims challenging the validity of this Agreement, and the underlying authority of the Parties hereto to implement this Agreement; including claims brought under CEQA, NEPA, the Clean Water Act, state or federal Endangered Species Acts; and claims with respect to the programmatic effects of this Agreement.

**30.0 Contingent Upon Appropriations.** The expenditure or advance of any money or the performance of any obligation of the United States or the State of California under this Agreement will be contingent upon appropriation and allotment of funds. No liability will accrue to the United States or the State of California in case funds are not appropriated or allotted.

**31.0 Public Participation.** The Parties will hold periodic public meetings, including SWRCB workshops and legislative hearings, to provide an opportunity for nonparticipating individuals and entities to have input into the planning process.

**32.0 Other Agreements.** The Parties recognize that as program development progresses there will be a need either to amend this Agreement or to enter into additional agreements. In this regard, the Parties acknowledge that this Agreement will complement other relevant local partnerships and/or CALFED agreements and will, as a consequence, be flexible enough to accommodate those other partnerships and agreements.

**33.0 Cooperation.** The Parties will cooperate in carrying out the provisions and intent of this Agreement.

**34.0 Notices.** All notices will be sent to the following:

DWR: Thomas M. Hannigan, Director  
Department of Water Resources  
1416 Ninth Street, Room 1115-1  
P.O. Box 942836  
Sacramento, CA 94236-0001

Reclamation: Kirk C. Rodgers, Regional Director  
U.S. Department of the Interior  
Bureau of Reclamation, MP-100  
2800 Cottage Way  
Sacramento, CA 95825

Downstream Water Users: John C. Coburn, General Manager  
State Water Contractors  
455 Capitol Mall, Suite 220  
Sacramento, CA 95814

Daniel G. Nelson, Executive Director  
San Luis & Delta-Mendota Water Authority  
842 – 6th Street, Suite 7  
P.O. Box 2135  
Los Banos, CA 93635

Walter J. Bishop, General Manager  
Contra Costa Water District  
1331 Concord Avenue  
P.O. Box H2O  
Concord, CA 94524

Upstream Water Users: David J. Guy, Executive Director  
Northern California Water Association  
455 Capitol Mall, Suite 335  
Sacramento, CA 95814

DF&G: Robert C. Hight, Director  
Department of Fish and Game  
1416 Ninth Street, Room 1207  
Sacramento, CA 95814

USFWS: Steve P. Thompson,  
Manager, California-Nevada Operations Office  
U.S. Fish and Wildlife Service  
2800 Cottage Way, Suite W-2610  
Sacramento, CA 95825

35.0 Counterparts. This Agreement may be executed simultaneously or in one or more counterparts, each of which will be an original but all of which together will constitute one and the same document.

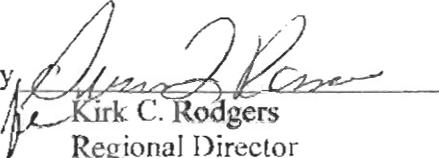
DEPARTMENT OF WATER RESOURCES

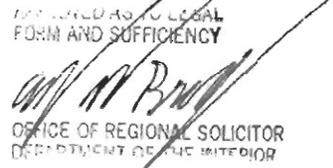
Dated: 12/19/02

By   
Thomas M. Hannigan  
Director

U.S. BUREAU OF RECLAMATION

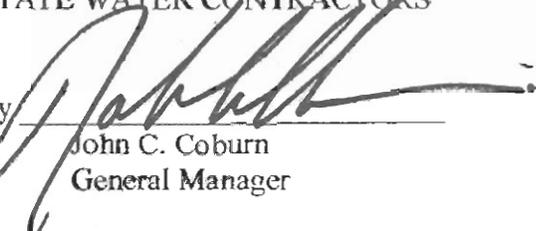
Dated: 1/10/03

By   
Kirk C. Rodgers  
Regional Director

APPROVED AS TO LEGAL  
FORM AND SUFFICIENCY  
  
OFFICE OF REGIONAL SOLICITOR  
DEPARTMENT OF THE INTERIOR

STATE WATER CONTRACTORS

Dated: 12-18-02.

By   
John C. Coburn  
General Manager

SAN LUIS & DELTA-MENDOTA WATER AUTHORITY

Dated: 3/24/03

By   
Daniel G. Nelson  
Executive Director

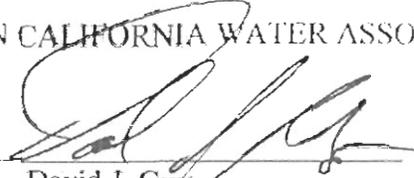
CONTRA COSTA WATER DISTRICT

Dated: 12/24/02

By   
Walter J. Bishop  
General Manager

NORTHERN CALIFORNIA WATER ASSOCIATION

Dated: 12-20-02

By   
David J. Guy  
Executive Director

DEPARTMENT OF FISH AND GAME

Dated: 12-20-02

By   
Robert C. Hight  
Director

U.S. FISH AND WILDLIFE SERVICE

Dated: 12-18-2002

By   
Steve P. Thompson  
Manager  
California-Nevada Operations Office

Additional Upstream Water User  
Signatories Pursuant to Article 9.0:

ANDERSON-COTTON IRRIGATION DISTRICT

Dated: 12-12-02

By   
Dee E. Swearingen  
General Manager

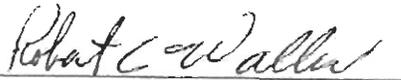
BROWNS VALLEY IRRIGATION DISTRICT

Dated: 12-12-02

By   
Robert Winchester  
President  
Board of Directors

BUTTE WATER DISTRICT

Dated: 12-17-02

By   
Robert Waller  
President of the Board

FEATHER WATER DISTRICT

Dated: Dec 11, 2002

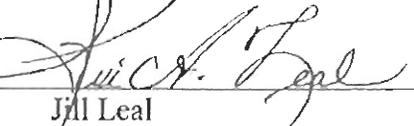
By   
Neill Mitchell  
President

GARDEN HIGHWAY MUTUAL WATER COMPANY

Dated: 12/15/02

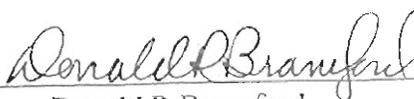
By   
Alfred G. Montna  
President/Manager

Dated: 12/15/02

By   
Jill Leal  
Secretary

Glenn-Colusa Irrigation District

Dated: 3/25/03

By   
Donald R. Bransford  
President

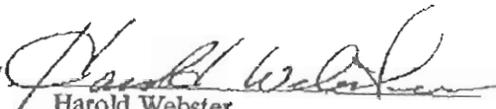
MAXWELL IRRIGATION DISTRICT

Dated: 12/10/02

By   
Douglas McGeoghegan  
Chairman  
Board of Directors

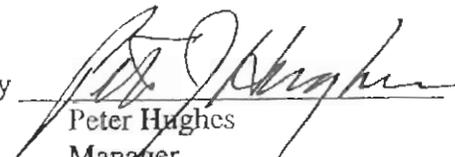
MBRIDIAN FARMS WATER COMPANY

Dated: 12-13-02

By   
Harold Webster  
General Manager

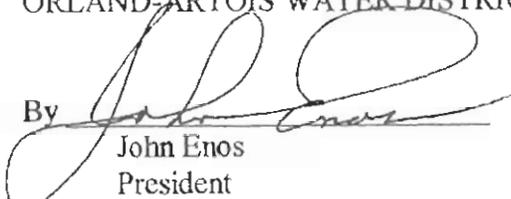
NATOMAS MUTUAL WATER COMPANY

Dated: December 11, 2002

By   
Peter Hughes  
Manager

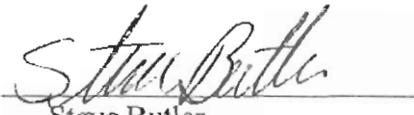
ORLAND-ARTOIS WATER DISTRICT

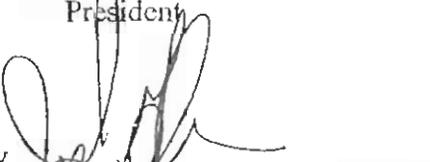
Dated: 12/17/02

By   
John Enos  
President

ORLAND UNIT WATER USERS' ASSOCIATION

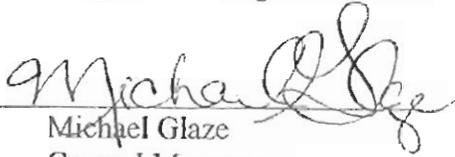
Dated: 12.13.02

By   
Steve Butler  
President

By   
Joe Gilmore  
Secretary

Oroville-Wyandotte Irrigation District

Dated: 11.26.02

By   
Michael Glaze  
General Manager

PELGER MUTUAL WATER COMPANY

Dated: 12/15/02

By [Signature]

Title President

Placer County Water Agency

Dated: \_\_\_\_\_

By \_\_\_\_\_

Dave Breninger  
General Manager

PLEASANT GROVE-VERONA MUTUAL WATER COMPANY

Dated: DEC. 14, 02

By [Signature]  
Brett Scheidel  
President

Plumas Mutual Water Company

Dated: \_\_\_\_\_

By \_\_\_\_\_

Dick Onyett  
Treasurer

Princeton-Codora-Glenn Irrigation District

Dated: 12-11-02

By [Signature]  
David Alves  
Chairman  
Board of Directors

PROVIDENT IRRIGATION DISTRICT

Dated: 12-10-02

By [Signature]  
Elwood Weller  
President  
Board of Directors

RECLAMATION DISTRICT NO. 108

[Signature]  
President

[Signature]  
Secretary

RECLAMATION DISTRICT 1004

Dated: 12-11-02

By: [Signature]  
Jack Baber  
Chairman  
Board of Trustees

RIVER GARDEN FARMS COMPANY, a  
partnership

Dated: 12-13-02

By: [Signature]

Title Canterbury Farms, Inc. by Les Cantor, President

RIVER GARDEN FARMS COMPANY, a  
partnership

Dated: 12/13/2002

By: [Signature]

Title VICE PRESIDENT OF GENERAL  
PANTAN KSA INDUSTRIES INC.

Sutter Bypass-Butte Slough Water Users Association

Dated: 3/15/03

By: [Signature]  
Nicole Montha Van Vleck  
Chairman of the Board

SUTTER EXTENSION WATER DISTRICT

Dated: 12-13-02

By Paul Russell  
Paul Russell  
Secretary

SUTTER MUTUAL WATER CO.

Dated: 12/9/02

By David Richter  
David Richter  
President

Tehama Colusa Canal Authority

Dated: April 15, 2003

By Bob Williams  
Bob Williams  
Chairman of the Board

Tudor Mutual Water Company

Dated: \_\_\_\_\_

By \_\_\_\_\_  
Jaswant Bains  
President

YUBA COUNTY WATER AGENCY

Dated: Dec. 12, 2002

By Bill Simmons  
Bill Simmons  
Chairman  
Board of Directors

**Attachment 5**  
**NCWA Letter of Support**

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Resolution 2004-05

*Resolved* by the **Board of Directors** of the **Anderson-Cottonwood Irrigation District** that application be made by **Anderson-Cottonwood Irrigation District** to the California Department of Water Resources to obtain a Water Use Efficiency Assistance grant, and to enter into an agreement to receive a grant for **Phase II Implementation – Main Canal Modernization Project**.

The **General Manager** of the **Anderson-Cottonwood Irrigation District** is hereby authorized and directed to prepare the necessary data, make investigations, execute, and file such application with the California Department of Water Resources to accept the grant, and administer said grant when awarded.

*Passed and adopted* at a regular meeting of the **Board of Directors** of the **Anderson- Cottonwood Irrigation District** on **December 09, 2004**.

Authorized Original

Signature



Printed Name

**Patrick Andrews**

Title

**Board President**

Clerk / Secretary:

  
Dee E. Swearingen

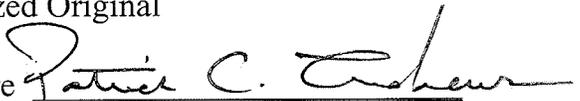
Resolution 2004-04

*Resolved* by the **Board of Directors** of the **Anderson-Cottonwood Irrigation District** that application be made by **Anderson-Cottonwood Irrigation District** to the California Department of Water Resources to obtain a Water Use Efficiency Assistance grant, and to enter into an agreement to receive a grant for **Phase II Feasibility Study – Churn Creek Lateral Improvement Project**.

The **General Manager** of the **Anderson-Cottonwood Irrigation District** is hereby authorized and directed to prepare the necessary data, make investigations, execute, and file such application with the California Department of Water Resources to accept the grant, and administer said grant when awarded.

*Passed and adopted* at a regular meeting of the **Board of Directors** of the **Anderson- Cottonwood Irrigation District** on **December 09, 2004**.

Authorized Original

Signature 

Printed Name **Patrick Andrews**

Title **Board President**

Clerk / Secretary:

  
Dee E. Swearingen



*To promote the economic, social and environmental viability of Northern California by enhancing and preserving the water rights, supplies and water quality of our members.*

January 6, 2004

Debra Gonzalez  
California Department of Water Resources  
Office of Water Use Efficiency  
P.O. Box 942836  
Sacramento, CA 94236-0001

**RE: Support of 2004 WUE Grant Funding for the Anderson-Cottonwood Irrigation District (ACID) Modernization System Improvement Project**

Dear Ms. Gonzalez:

The Northern California Water Association (NCWA) supports the Anderson-Cottonwood Irrigation District (ACID) Modernization System Improvement Project 2004 Water Use Efficiency grant application.

NCWA represents 70 agricultural water districts and agencies, private water companies, and individual water rights holders with senior rights and entitlements to the surface waters of the Sacramento Valley. NCWA's members also have overlying and appropriative water rights to groundwater resources in Northern California, from the Northern reaches of Shasta County to Sacramento County, from the edge of the Sierra Nevada Mountains in El Dorado County to Glenn County which extends to the Coast range.

ACID proposes to construct new automated flow control and measurement structures using a centralized control facility along the ACID Main Canal and major laterals in an effort to continuously control and monitor system flows to increase water use efficiency.

The NCWA supports this project and the role it will play in the development of an integrated regional water management program for the Sacramento Valley. We encourage you to fund the Anderson-Cottonwood Irrigation District (ACID) Modernization System Improvement Project.

Sincerely,

Todd N. Manley  
Director of Government Relations

**Attachment 6**  
**Annotated Bibliography**

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# Attachment 6—Annotated Bibliography

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## **ACID Groundwater Monitoring Program--ACID Phase 1a Monitoring Well Installation and Water-level Monitoring Field Plan, Shasta County, California (CH2M HILL, 2003b)**

This document discusses the groundwater and surface-water 6-month monitoring plan developed for ACID as part of Phase 1 of the Groundwater Conjunctive Management Program. The plan was implemented in June 2003 and since this time 12 groundwater monitoring wells and two Sacramento River staff gages have been installed and continuously monitored using pressure transducers and automatic dataloggers. In addition, pumping rates and durations of City of Anderson municipal supply wells, select industrial supply wells, and domestic wells were monitored and recorded. This initial monitoring work is the first step for the ACID proposed Conjunctive Management Program. Monitoring is ongoing with field staff assistance from DWR Northern District. The additional data collection, as well as future data collection through December 2005, are necessary for better definition and understanding of water level trends in this portion of the Redding Basin that result from seasonal fluctuations and changes in water use. This will be the only data set in the Redding Basin with a continuous, hourly water level record over a multi-year period. Phase 1b of the Monitoring Program started December 2004 and is expected to be completed by Summer 2005.

## **Shasta County Water Resources Master Plan Phase 1 Report: Current and Future Water Needs (CH2M HILL, 1997)**

This document outlines the initial program for regional planning to meet the current and future needs for water users within and outside the Redding Basin. Water purveyors (including ACID), industries, and private interests, joined together to identify current and long-term water supply needs throughout Shasta County. The study provided the basic information upon which subsequent work was premised, namely a formal Groundwater Management Plan. This information included current and projected land use and water supply needs, supplies, and shortages within the Redding Basin (through 2030). While agricultural needs will remain relatively stable, population growth will cause an increase in the water demand for urban, industrial, and recreational needs by over 90,000 acre-feet per year by the year 2030. The study concluded that existing water supplies must be augmented, integrated, and made more dependable to maintain a vital and healthy economy in Shasta County.

## **MOU and GWMP (Phase 2A)**

Phase 2A of the basinwide planning effort was initiated in October 1998. Initial elements of Phase 2A included forming committees to guide the study efforts, identifying water supply problems and opportunities for each purveyor, setting preliminary goals, listing environmental and institutional concerns, establishing an approach for developing an integrated groundwater/surface water model of the Redding Basin, developing an MOU

among the participants, developing a GWMP, and developing a work plan for future activities. A public information component was also developed and implemented to inform and obtain input from affected agencies and the public.

#### **Redding Basin Water Resources Management Plan Phase 2B Report (CH2M HILL, 2001)**

This report was the second step in a long-term water supply planning effort for the RAWC (of which ACID is a member), which helped initiate a long-term water resources planning effort for the Redding Basin. This report presents the findings and recommendations for the development and adoption of a SCWA Groundwater Management Plan, development of a detailed regional groundwater model of the Redding Basin, evaluation of existing water supply reliability, and a screening evaluation of short- and long-term actions for improving regional water supplies. The report builds on the information from the Shasta County Water Resources Master Plan Phase 1 Report: Current and Future Water Needs (CH2M HILL, 1997).

#### **Redding Basin Water Resources Management Plan Phase 2C Report (CH2M HILL, 2003)**

This report was the third step in a long-term water supply planning effort for the RAWC, which helped initiate a long-term water resources planning effort for the Redding Basin and will serve as the basis for coordinated use and development of water resources through the year 2030. This report presents the final development of recommended combined actions and modeling results and is available on the web at:

<http://www.co.shasta.ca.us/Departments/PublicWorks/Plan2C.shtml>.

The report assessed the effects of the combined actions, provided cost-benefit analyses for each purveyor's recommended actions, developed a public information program, provided impact analyses, and developed a detailed implementation plan, including institutional frameworks and financial planning. This work was funded by two AB 303 grants through SCWA and helped to guide components of ACID's Groundwater Management Program. Phase 3 of the Redding Basin Water Resources planning is underway.

#### **Sacramento Valley Water Management Agreement Short-term Work Plan (CH2M HILL, 2001b)**

As an alternative to participating in the adversarial State Water Resources Control Board Phase 8 Bay-Delta Water Rights hearings, California DWR, the U.S. Bureau of Reclamation (Reclamation), Sacramento Valley water interests, and export water users entered into the voluntary Sacramento Valley Water Management Agreement in April 2001. The agreement provides that increased supplies resulting from water management projects will be used to meet in-basin needs, out-of-basin needs, and environmental needs. This document describes the short-term work plan for investigating projects to meet the goals of the agreement. Project 2C of this short-term work plan includes the evaluation of potential operational and infrastructure modifications within the Churn Creek Lateral service area to more efficiently utilize Redding Basin water resources.

#### **Sacramento River Basin Wide Water Management Plan (2 volumes) (CH2M HILL 2004)**

This document includes six different technical memoranda and provides the Sacramento River Settlement Contractors (SRSC) with a comprehensive basis for managing water

resources to meet their existing and future water needs in a manner that can also serve other water needs in the Sacramento Valley, including but not limited to environmental needs.

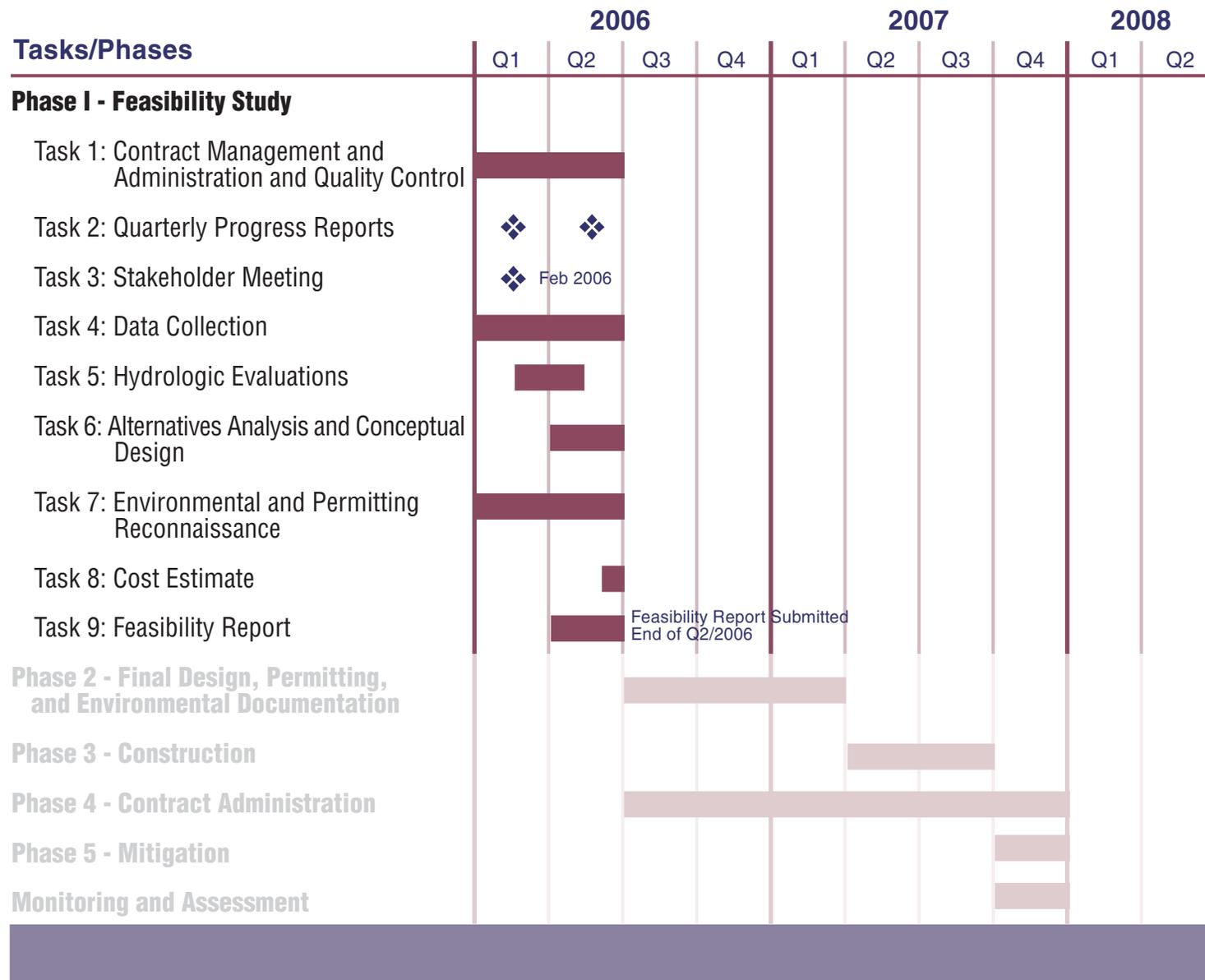
ACID is one of 10 SRSCs involved in this plan. The document details current and future water requirements for each SRSC, characterizes the available water resources for each SRSC, and provides sub-basin water balances for the Sacramento Valley. The document also provides options for developing sustainable water supplies for all Sacramento Valley users and improving water management through coordinated actions (conjunctive water management, water quality management, transfers, etc.).

**Phase 1 Feasibility Study—Churn Creek Lateral Improvements Project (CH2M HILL, March 2003)**

ACID studied the feasibility of replacing an aging, unlined lateral ditch with a pipeline on both sides of the Sacramento River. Seepage losses on the east side of Sacramento River are estimated at 8,700 acre-feet per year, and there are additional losses on the west side of the river. A piped river crossing would replace a diversion and pumping plant. The project would conserve up to 20,000 acre-feet of water per year, restore original conveyance capacity, eliminate the potential for impacts to fisheries represented by the diversion, reduce energy consumption (presently about \$100,000 per year) by the pumps, and restore natural aquatic and riparian habitat at the diversion site.

**Attachment 7**  
**Schedule**

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**Attachment 8**  
**Resume**

---

# Mr. Dee E. Swearingen

PO Box 786 530-365- 7329

Anderson, CA, 96007 Fax 530-365- 7623

Acid@shasta.com

## Objective

Project Manager

## Experience

Served as General Manager, Secretary , Treasurer and for Water and Irrigation Districts in both Oregon and California. Executive Director for Joint Powers Authorities and as Senior Water Resource Consultant for a consulting Engineering firm. Has been involved in the formation of, Water Districts, Joint Power Authorities MOU and MOA working groups. Served on Strategic Water Committees in Oregon and California appointed by the Governors and Directors of Water Resources. Served on the Association of California Agencies Executive committee, Vision 2000, and Board of Directors. Over 31 years experience working with water resources in Oregon and California.

Project Manager for more than 10 successful grants including CALFED, totaling over \$ 12 million dollars. Providing Administrative assistance and Management of grant applications and administration, planning, design, and construction activities.

Administered capital improvement projects with annual expenditures of up to \$5 million per year.

Managed the Operation and Maintenance of water system facilities including canals, pipelines, pump stations, flow control structures, fish screens and fish ladders.

## Specialty

Water resource management, conservation, conjunctive use water banking, incentive pricing, water transfers and marketing, Planning long range fish and waterfowl joint habitat program with irrigation projects for win solutions.

## Employers

Talent Irrigation District, Talent Oregon; Grant Pass Irrigation District, Grants Pass Oregon; Western Canal Water District, Richvale California; San Joaquin River Exchange Contractors Water Authority, Los Banos California; HY A Consulting Engineers, Sacramento California; Anderson Cottonwood Irrigation District, Anderson California.