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## **INTRODUCTION**

The end of Fiscal Year (FY) 2001 marked the completion of the first 5 years of the Bureau of Reclamation's Water Conservation Field Services Program (WCFSP). Over this time, the WCFSP has served as the cornerstone of Reclamation's water conservation efforts. The program has also complimented other water conservation programs such as the water conservation planning activities required under the Central Valley Project Improvement Act of 1992, the Reclamation Reform Act of 1982, and the Federal and State efforts being accomplished by the CALFED Bay-Delta Water Use Efficiency Program.

The WCFSP is an incentive-based program that provides technical and financial assistance for water conservation activities through partnerships with water suppliers and other Federal, State, and local entities. There are four focus areas that the WCFSP is designed to benefit. These areas are water conservation planning, education, demonstration, and implementation.

During the last year, the Mid-Pacific Region's (Region) water conservation planning efforts have led to the successful completion of numerous Water Management Plans (Plans). In addition, those districts with outstanding Plans have made a good-faith effort to complete those Plans. Water education efforts have included developing and maintaining water conservation centers associated with Federal facilities and continuing to provide education information to the general public, teachers, students, and growers. Demonstrations on water measurement, system automation, and landscape measurement have been a key element of the program over the last year. Implementation activities continue to increase as more Plans are finalized and Best Management Practices (BMPs) are identified. Technical and financial assistance have been provided to the water suppliers for the implementation of urban BMPs such as rebates on water efficient devices, and agricultural BMPs such as mobile irrigation system evaluation laboratories and canal linings.

As in past years, while implementing the WCFSP, there have been many obstacles to overcome. In FY 2001, a critical drought affected southern Oregon and northern California that hindered the implementation of the program. Inadequate water supplies in the Klamath Basin limited the number of cost-sharing opportunities available in the area.

The Region continued to strengthen its cooperative efforts with universities, resource conservation districts, and other State and local entities. The "Bridging the Headgate" Program Memorandum of Understanding with various Federal and State agencies continued to facilitate coordination of technical and financial assistance to maximize the water conservation resources of the various entities. The Region will continue to look for opportunities to partner through these agreements and others to help insure Federal water resources provide the greatest possible benefit.

## **PROJECT FUNDING**

Approximately \$1.6 million was spent Region-wide on the WCFSP for grants and cooperative agreements. Participating agencies invested \$1.2 million in these projects, with the total funding for all of the activities under this program being approximately \$2.8 million.

# **CENTRAL CALIFORNIA AREA OFFICE**

## **INTRODUCTION**

The water service area of the Central California Area Office (CCAO) consists of the Solano Project and four distinct and separate parts of the Central Valley Project (CVP): The Folsom Unit, the Sly Park Unit, the Auburn-Folsom South Unit of the American River Division, and the New Melones Unit of the East Side Division. The CCAO CVP service area contains about 9,000 acres, which is currently receiving irrigation water, while the Solano Project has 62,000 acres in irrigation. Current annual deliveries and those deliveries from the CVP average approximately 14,600 acre-feet (AF) of irrigation water and 45,700 AF of municipal and industrial (M&I) water, and 168,000 AF of irrigation water and 9,000 AF of M&I water for the Solano Project. In addition, over 2 million people reside in areas where the Bureau of Reclamation (Reclamation) delivers water. The CCAO administers approximately 25 water service contracts, of which approximately 20 require Water Management Plans (Plans).

Stretching from the foothills of the Sierra Nevada mountains west to the Pacific Ocean, the CCAO has an enormous diversity in types of soils, climates, crops, wildlife, recreation, and size of towns and cities. Some of the fastest growing areas in the nation are located within the boundaries of the CCAO. This population growth and natural diversity increases the pressure on the supply of both surface and ground water. The passage in 1992 of Public Law 102-575, Title 34, of the Central Valley Project Improvement Act of 1992 (CVPIA), required that 800,000 AF of CVP yield be diverted from traditional uses and dedicated to environmental restoration purposes. This further increases competition for already limited water supplies in the American River and the East Side Divisions.

Because of the competing water interests described above, and the uncertainty of any future construction of water supply projects, there is a need to manage and stretch the available existing water supplies to meet M&I, agricultural, recreational, and environmental needs. Education, flexibility, and demonstration of new technologies will be the keys to meeting all the water needs. The goal is to lead the way through the Water Conservation Field Services Program (WCFSP) in meeting these needs and to work as partners with all the different water interests.

## **GOALS/OBJECTIVES**

The primary goal of the WCFSP continues to be improving urban and agricultural water management, thereby maximizing the benefits of the limited water resources in the area. With a rapidly growing urban population and environmental concerns about further water development in the area, it is critical that current resources are well managed. The CCAO has a greater percentage of urban agencies in its service area than any other area office in the Mid-Pacific Region (Region). The range of water conservation experience ranges from those who are leaders in the field to those who have not yet undertaken the most basic water conservation measures (i.e., measurement and volumetric pricing). The CCAO has a unique opportunity to cooperate with the pioneers in the urban water conservation field in further developing and refining water conservation programs, while helping less experienced districts develop water management programs.

The WCFSP comprises the following objectives designed to achieve the goal of improved water management.

- Planning assistance which provides technical and financial assistance to districts and groups preparing Plans
- Providing public outreach which gives education and training to district personnel and customers
- Demonstrating Best Management Practices (BMPs) which are tailored for implementation in the area
- Implementing conservation measures through financial assistance and partnerships to accelerate the adoption of BMPs

## **WCFSP ACTIVITIES AND ACCOMPLISHMENTS**

### ***Conservation Planning***

Every district has completed a Plan, some entities were required to update their respective Plan under the 5-year update requirement. The WCFSP provided technical and financial assistance through Reclamation staff and/or consultants to these districts updating their Plans under the 5-year update requirement.

A new feature for CCAO is conducting local or regional pilot programs to determine if it is economically feasible to extend the pilot program from a few participants to an entire district or to a number of locally grouped districts. One of the pilot programs is the Rain Sensor Program. The rain sensor is designed to automatically disengage the irrigation controller and prevent watering on rainy days. If this proves economically beneficial, an effort will be made to get outside funding to expand this program to as many individuals as possible. Further pilot programs are planned for future years.

The CCAO has 18 districts that are required to develop Plans. Of these 18 districts, 17 have completed Plans and one has submitted a Plan for review. One district is in the contract negotiation process and if the water service contract is executed, the district will be required to develop a Plan. The districts combined cover approximately 820,000 acres and serve a population of 2.1 million. The CCAO has full Plan compliance by all required water districts. The districts have or are nearing their 5-year update timeline so the CCAO will be working on updating Plans as required by the CVPIA.

## **DEMONSTRATION OF INNOVATIVE CONSERVATION TECHNOLOGIES**

### ***Conservation Education***

The large population base in the area provided a significant opportunity to educate the public on water conservation. Education and training efforts targeted schools, districts, and communities. Included in this activity was funding for the CCAO public outreach specialist to expand the WCFSP outreach to community organizations and schools. Funding included public education and outreach materials. The American River Water Education Center (ARWEC) at Folsom Dam opened in 1999 and has rapidly become a focal point for the area. Visitorship at the ARWEC this year reached 16,000, although the goal was 20,000, but due to security concerns resulting from September 11, 2001 events, the tour program was closed and public visitors were restricted. Through this past year, the ARWEC has set up many different displays with the most current

display being “Take the Water Challenge.” This display exposes the user to the difficult day-to-day water making decisions and requires the public to decide where the water will be used (urban, agriculture, or environment). It was created in partnership with the U.S. Army Corps of Engineers.

The visitor center at the New Melones Dam now includes a water conservation display developed in conjunction with the existing archeological, wildlife, and natural history displays. Future work will focus on xeriscapes, low water use irrigation methods, and development of an outreach program. Still in the planning phase, a partnership was created among Reclamation, water districts, public organizations, and two universities to create a water education center near Reclamation’s Lake Berryessa Project.

The CCAO worked with local water districts and school districts to complete a water-auditing program. A curriculum was developed for second and third grade students, thereby allowing them to audit all aspects of water in their lives. This audit included the amount of water used, the quality of the water, where it came from, and if the water was used wisely. Materials were developed to prepare the students to perform a water audit of their school facilities. The program also included a module in which students audit the use of water at home. The curriculum incorporated science and math skills which are part of the students’ overall curriculum. This demonstration program provided the students and their parents with a greater appreciation of how they used water and the actions they could take at home to use water more efficiently. To date, approximately 350 children from seven schools have participated in this program. Similar programs have been implemented in other areas outside the Region. Materials from these programs could be tailored to a program to meet the needs of the local school districts. The program would then provide an example that could be shared with other school districts in the Region. The development of the ARWEC at Folsom Dam allowed for further development of this program.

A separate but equally important resource is energy. An additional program is being developed to describe how water and energy interrelate. The public and the schools can see how energy is developed from hydropower and how saving energy saves water and vice versa. The ARWEC will have actual displays of power generating equipment and will include alternative sources of power such as solar.

### ***Implementation of Conservation Measures***

Public involvement is vital to the success of the WCFSP. The stakeholders were contacted directly to determine local area needs. The stakeholder workgroups will continue to be established to provide recommendations on the design of each activity, as well as determining appropriate partnerships.

Since the inception of the WCFSP, the stakeholder groups have included the following:

- Local urban and agricultural water districts
- Federal and State agencies such as,
  - Reclamation
  - Army Corps of Engineers

- Western Area Power Administration
- California Department of Water Resources (DWR)
- California Department of Parks and Recreation
- California Integrated Waste Management Board
- Natural Resources Conservation District (NRCS)
- U.S. Fish and Wildlife Service (FWS), which includes environmental groups such as the Audubon Society and the Sierra Club
- Other local groups such as the Sacramento Water Forum, the California Urban Water Association, and local resource conservation districts.

Since public water conservation education is an essential component of the WCFSP, public feedback mechanisms were incorporated into many of the activities. These included one-on-one discussions with WCFSP participants along with surveys and questionnaires. In addition, districts were required to implement BMPs identified in their Plans.

### ***Partnerships for WCFSP Implementation***

Because of limited staffing and time, most of the activities were administered through cooperative agreements between Reclamation and the districts and/or through partnerships with public or private entities. Partnerships provided the needed expertise to implement the planned activities and provided the stakeholders with an incentive to work toward the WCFSP's success. The most important participants were the local districts who directly benefited from the WCFSP. However, the local resource conservation districts assumed a more prominent role with the initiation of the "Bridging the Headgate" Program. Cooperative agreements were structured to insure that participants were active partners in the activities by requiring direct or indirect cost-sharing provisions.

Partnerships will also continue to be established with both the public and private sector. The WCFSP implementation and "Bridging the Headgate" Program will require partnerships with agencies such as the NRCS, Denver's Technical Service Center, the FWS, the California DWR, and local resource conservation districts. Technical expertise will also be provided by Cal Poly San Luis Obispo Irrigation Training and Research Center (ITRC) and the University of California Extension Service as well as with water management consultants. In addition, partnerships involved in the implementation of WCFSP activities will be encouraged with local environmental groups, resource conservation districts, and the Sacramento Water Forum.

### **WCFSP MONITORING**

The results of the WCFSP were monitored throughout its implementation to determine on an ongoing basis the progress of each activity. This also provided an opportunity to make changes to maximize the benefit of each activity. The stakeholder workgroup was actively involved in monitoring the WCFSP's success and in making recommendations on its improvements.

The annual Plan updates from participating districts were reviewed. In addition, the number of tours, visitors, and demonstrations were also monitored. Where possible, water savings resulting from the WCFSP's implementation were monitored. Final reports were required from participating districts and agencies to document the findings from each project and recommendations were made for future projects. A cost-share grant to the City of Roseville

provided for the development of a spreadsheet to measure water savings and how much money was spent on each BMP or other water savings program. The City of Roseville indicated they should have the spreadsheet and associated software completed by December 2002.

**WCFSP ACCOMPLISHMENTS**

When the WCFSP was initiated, the CCAO assembled a water conservation packet (containing water education literature, water maps, brochures, water devices, etc.) along with a WCFSP brochure describing the WCFSP. This packet was sent to each district informing them of the WCFSP and how Reclamation could assist them and why they needed to prepare a Plan. Each district was also contacted by phone, which was usually followed up with a meeting. Various grants were provided (usually on a cost-share basis) to assist the districts in developing and implementing a Plan.

The CCAO provided technical and financial assistance to assist districts in implementing water conservation measures. Technical assistance consisted of Reclamation staff (Area, Region, Denver) and consultants (ITRC), Water Education Foundation, The Water Link, and private water consultants on contract to Reclamation). Financial assistance included grants and cost-share agreements. The CCAO worked diligently with districts to implement their Plans and used goals derived from BMPs to determine the needs of the districts and how best Reclamation could assist them.

**WCFSP OUTLOOK**

Since the CCAO has full compliance on Plan development, the priority will switch to updating and implementing the Plans every 5 years. The CCAO will strive to have the districts implement their Plans by providing assistance through the WCFSP. In addition, the CCAO will continue to promote public education and will implement this in various ways. These will include the continuing development of the water education/visitor centers at Folsom Dam, New Melones Dam, and Lake Berryessa; xeriscape garden developments; public education outreach; school education outreach through the Water Education Audit Program; and support of each district’s individual education program. Staffing level will remain between 1.0 and 1.2 full-time employees with a WCFSP budget of approximately \$300,000 (this does not include staff time). Specific activities will vary from year to year due to the districts’ priorities. However, the CCAO’s long-term goals will continue to be Plan implementation and the updating of the 5-year revision of existing Plans that began in 1999.

**TABLE 1 - CCAO WCFSP GRANT PROPOSALS**

<i>Sponsor</i>	<i>Project</i>	<i>Funded</i>	<i>Total</i>
Citrus Heights Water District	Funding assisted in conducting water audits, in developing a web page to showcase water conservation information, and in purchasing school and public education and water audit materials. Funding also supported the purchase and the installation of rain sensors to automatically turn off irrigation systems (Regional Pilot Program) and a Low Flow Toilet Rebate Program.	\$15,000	\$34,000



<i>Sponsor</i>	<i>Project</i>	<i>Funded</i>	<i>Total</i>
City of Roseville	Funding provided to develop spreadsheets to track water conservation costs and water savings, to purchase weather station software to allow better water scheduling and to purchase and to install rain sensors (Regional Pilot Program).	\$15,000	\$21,000
El Dorado Irrigation District	Funding assisted in the upgrade of an Irrigation Management System (which provided weekly irrigation scheduling), purchased and installed rain sensors to automatically turn off irrigation systems (Regional Pilot Program), and established a rebate program for high-efficiency washing machines.	\$15,000	\$30,000
Fair Oaks Water District	Funding provided training of water conservation staff, purchased rain sensors to automatically turn off irrigation systems (Regional Pilot Program), purchased educational material, and partial funding of a water conservation educator to inform the public of what water conservation resources are available and to perform basic water conservation audits.	\$15,000	\$31,907
Orangevale Water Company	Funding assisted in the development of a metered water rate study billing system and included the purchase of software and installation support and the purchase and the installation of rain sensors to automatically turn off irrigation systems (Regional Pilot Program).	\$15,000	\$15,000
Placer County Nature Center	Funding assisted in developing three watershed explorations curriculum and included partnering with the Placer County Resource Conservation District.	\$9,775	\$13,815
Sacramento County Water Maintenance District	Funding assisted in the purchase of a central irrigation control system to operate various schools' irrigation systems within the Elk Grove Unified School District and the purchase and the installation of rain sensors to automatically turn off irrigation systems (Regional Pilot Program).	\$15,000	\$32,045
San Juan Water District	Funding assisted in the purchase and the installation of rain sensors to automatically turn off irrigation systems (Regional Pilot Program), to analyze data of existing water users at a flat rate as compared to metered rates, and to develop water rates for when the district goes fully metered in 2005.	\$15,000	\$70,000

<i>Sponsor</i>	<i>Project</i>	<i>Funded</i>	<i>Total</i>
San Juan Water District	Funding assisted in the development of a Regional Pilot Program of 25 large landscapes at parks and schools and to audit these landscapes to determine if a benefit/cost ratio will allow for auditing of all similar large landscapes.	\$20,000	\$42,638
Solano County Water Agency	Funding to assist in the purchase of a central control irrigation station for the City of Suisun and hand-held data loggers/recorders.	\$24,950	\$61,000
Solano Irrigation District (SID)	Funding provided to purchase equipment to develop county-wide water-well pump testing. SID will absorb all yearly operation and maintenance (O&M) costs of approximately \$10,000 for the next 5 years.	\$24,044	\$74,044
State of California Parks and Recreation	Water Education Center at Folsom Dam.	\$50,000	\$115,000
<b>TOTAL</b>		<b>\$233,769</b>	<b>\$540,449</b>

## **KLAMATH BASIN AREA OFFICE**

### **INTRODUCTION**

The Klamath Project provides water to over 240,000 acres of farmland, two national wildlife refuges, endangered species, and fulfills the obligation required under the Native American Trust Assets both in California and Oregon. In an average water year, the project supply is not able to meet all its water needs. In Fiscal Year (FY) 2001, the Klamath Basin Area Office (KBAO) efforts were devoted to acquiring supplemental water supplies due to severe drought and the need to construct Klamath Project operations due to Endangered Species Act requirements in the region. The water conservation staff efforts were shifted to purchasing ground water to meet critical needs.

The Klamath Basin is in the process of a general stream adjudication. During the interim, Reclamation is developing a long-term operational plan which will provide for more certainty in for future water supplies.

Because of the need to maximize the use of limited supplies in the area, the Water Conservation Field Services Program (WCFSP) is gaining momentum in the promotion of water conservation with Reclamation districts and others interested in the program.

### **GOALS/OBJECTIVES**

- Encourage irrigation districts in the development and implementation of Water Management Plans (Plans)
- Encourage more efficient use of water
- Improve water supply reliability
- Conserve water for other uses

### **WCFSP ACTIVITIES AND ACCOMPLISHMENTS**

The KBAO worked with irrigation districts, through grants from the WCFSP or through direct technical assistance, to encourage the development of plans and implementation of Best Management Practices.

#### ***Conservation Planning***

Ten irrigation districts totaling 148,358 acres were required to have Plans. All districts were contacted either individually or through a public meeting to discuss the development of the Plans. Two districts received on-site assistance to develop plans, seven districts received grants under the WCFSP to hire a consultant to develop Plans, and one district submitted a draft Plan for review.

A grant was provided to the Klamath Water Users Association to conduct a water marketing study for the Klamath Basin.

The Bureau of Reclamation (Reclamation) entered into a cost-share agreement with the Oregon Department of Water Resources (DWR) to develop a basin-wide drought plan. Also, through a cooperative agreement with the Oregon DWR and the U.S. Geological Survey, a ground water

study was conducted in the basin. The study will help determine the availability of alternate sources of water during water-short years.

### ***Conservation Education***

A grant was provided to the University of California Cooperative Extension and the Intermountain Research and Extension Center to provide an irrigation education program for agriculturists in the Klamath Basin. Due to the drought, the work was postponed.

### ***Demonstration of Innovative Conservation Technologies***

A third AgriMet station was installed for local growers, which provided the local farmers with evapotranspiration data. These data may be used to improve irrigation scheduling to meet crop irrigation needs and real-time temperatures, including irrigation needs for frost protection.

The Tulelake Irrigation District (TID) completed lining 2-1/3 miles of canal with a new type material, Ethylene Propylene Diene Terpolymer, which looks like rubber tubing.

On October 31, 1998, Reclamation completed the purchase of the Agency Lake Ranch (Ranch). The Ranch enhances the storage capacity of the Upper Klamath Lake by allowing for the annual delivery of approximately 7,000 acre-feet (AF) of water. The feasibility of increasing storage at the Ranch is being studied, as well as the feasibility of increasing storage at other facilities on the project.

### ***Implementation of Conservation Measures***

In cooperation with the Enterprise Irrigation District, materials were provided by Reclamation to replace an open ditch with a buried pipeline.

Reclamation and the Cal Poly San Luis Obispo Irrigation Training and Research Center (ITRC) provided on-site assistance to irrigation districts for improvement of distribution systems and technical assistance and on-site training for design of management practices.

Reclamation worked with the TID to provide canal lining material for 2 1/3 miles of canal. This was the largest project of this type within Reclamation. An estimated savings of 1,000 AF per year is projected.

Due to drought, the KBAO implemented a well-water augmentation program in 2001. The program generates an estimated 65,000 AF of ground water.

The Enterprise Irrigation District began replacing a canal section with pipe which will result in an 1,100 feet estimated annual savings of 2,000 AF.

## **PROGRAM RESOURCES**

The KBAO has one full-time employee (FTE) working as a water conservationist, one FTE hydrologic technician, one part-time consultant for water conservation planning, the services of the ITRC for technical and educational support, and the services of the Center for Irrigation Technology (CIT) for technical and educational support. The Efficiency Incentive Program

(EIP) budget for FY 2001 was \$120,000 and the WCFSP budget was \$200,000 with a total financial assistance program of \$320,000.

### PROGRAM EVALUATION

Although this past year's efforts were delayed due to drought, overall the KBAO is meeting the program goals. The districts are beginning to work on Plans and are beginning to implement conservation measures. The WCFSP is being promoted by local irrigation districts. These districts are receptive to the program and have asked for cost-share funding for Plan development and implementation. The staffing is adequate with one FTE, one part-time consultant, and the support of the ITRC and the CIT. In addition, other area office staff are working on various other programs that support water management.

### PROGRAM OUTLOOK

With continued funding of the WCFSP, the program will expand as the KBAO gains the trust of its Reclamation districts and others interested in water conservation. The KBAO will continue to work with districts in the development and implementation of Plans, and it is anticipated that the districts will share the information gained from participation in the WCFSP. All Plans are scheduled to be completed by 2002 and resources are dedicated to achieving this goal. However, the inability to issue grants could severely restrict implementation of the WCFSP.

**TABLE 1 – KBAO WCFSP PLAN STATUS (10/30/01)**

<i>District</i>	<i>Plan Required</i>	<i>Acreage</i>	<i>Plan Acreage</i>	<i>Plan Status</i>
Ady District Improvement District Company	No	435	0	N/A
Enterprise Irrigation District	Yes	2,981	2,981	in progress, grant 1999
Horsefly Irrigation District	Yes	9,843	9,843	in progress
Klamath Basin Improvement District	Yes	10,403	10,403	in progress, grant 2000
Klamath Drainage District	Yes	19,229	19,229	draft submitted, 2001
Klamath Irrigation District	Yes	37,748	37,748	in progress, grant 1999
Langell Valley Irrigation District	Yes	16,300	16,300	draft completed, 1999
Malin Irrigation District	Yes	3,507	3,507	in progress, grant 2000
Midland District Improvement Company	No	581	0	N/A
Pine Grove Irrigation District	No	927	0	N/A
Pioneer District Improvement Company	No	424	0	N/A
Plevna District Improvement Company	No	523	0	N/A

<i>District</i>	<i>Plan Required</i>	<i>Acreage</i>	<i>Plan Acreage</i>	<i>Plan Status</i>
Poe Valley Improvement District	Yes	2,636	2,636	in progress
Shasta View Irrigation District	Yes	4,141	4,141	in progress, grant 2000
Sunnyside Irrigation District	No	595	0	N/A
Tulelake Irrigation District (California)	Yes	41,570	41,570	in progress, grant 1999
Van Brimmer Ditch Company	Not subject to Reclamation Reform Act of 1982	3,315	0	N/A
TOTAL		155,158	148,358	

## **LAHONTAN BASIN AREA OFFICE**

### **INTRODUCTION**

The Lahontan Basin Area Office (LBAO) covers most of Northern Nevada and portions of California and encompasses an area of 80,000 square miles. The LBAO's focus on water management includes the Lake Tahoe Basin, the Truckee River Basin, the Carson River Basin, the Humboldt River Basin, and the Walker River Basin. Reclamation projects exist in the first four listed basins.

Nevada has been described as the driest state in the nation in terms of rainfall. The basins described above reside entirely in the Great Basin and terminate in desert lakes or wetlands. There are no drains to the ocean. In their natural state, the rivers are ephemeral with short periods of high runoff and long periods of little or no flow and are subject to frequent and prolonged drought. The water supply is dependant on mountain snow pack and storage facilities. The combination of rapid population growth, agricultural uses, threatened and endangered species, and Native American uses of water, has produced a contentious and litigious atmosphere concerning the use of water. These issues make a water conservation program important in Northern Nevada and presents unique and challenging opportunities in the implementation of the Water Conservation Program.

In 1988, the United States developed the Operating Criteria and Procedures (OCAP) for the Truckee-Carson Irrigation District (TCID), operators of the Newlands Project. That same year, because of the development and implementation of the OCAP, the Bureau of Reclamation (Reclamation) established a field office in Fallon, Nevada on the Newlands Project. The Fallon Field Office was established, "for the sole purpose of providing technical and professional guidance to the TCID in all matters pertaining to water management in the Newlands Project." When the Water Conservation Field Services Program (WCFSP) was established in 1996, it was only natural that the responsibility for the program in the LBAO would be in the Fallon Field Office.

### **GOALS/OBJECTIVES**

- Continue partnerships with the Natural Resources Conservation Service (NRCS), resource conservation districts, and educational partners, such as the State of Nevada and the Water Education Foundation (WEF)
- Work with partners to continue education activities
- Conclude assessment studies by the Cal Poly San Luis Obispo Irrigation Training and Research Center (ITRC) at the Washoe County Water Conservation District (WCWCD)
- Facilitate technology transfer
- Teach data gathering techniques for measurement stations
- Teach the use of computer design programs for broad crested weir design
- Provide information on educational opportunities
- Work with district personnel to identify measurement points and to develop Plans for the installation of measurement devices
- Explore water control strategies
- Provide educational programs at the Pershing County Water Conservation District (PCWCD)

- Work with district personnel to implement Water Management Plans (Plans)
- Work with district personnel to implement water measurement based on studies completed by the ITRC
- Work with district personnel to implement pilot and proven water conservation measures

## **WCFSP ACTIVITIES AND ACCOMPLISHMENTS**

The LBAO has responsibilities for four Reclamation projects; Truckee Storage, Washoe, Newlands, and Humboldt Projects. The Washoe Project is a single-purpose project operated for the benefit of the endangered Cui-ui fish by regulating the Truckee River flows. As such, there is little opportunity for water conservation activities on this project and it is therefore not included in the LBAO WCFSP. Opportunities for improved water management within the LBAO area of responsibility were emphasized in the following projects.

### ***Truckee Storage Project***

The Truckee Storage Project consists of the Boca Dam and Reservoir, which are operated by the WCWCD. Water is distributed through a number of ditch companies to water right holders. These ditch companies are not under the administration of the TCID, making it particularly difficult to develop a meaningful water conservation plan. The TCID's sole responsibility is the operation and maintenance (O&M) of Boca Dam and Reservoir. The TCID has shown a willingness to examine water conservation opportunities on a limited basis for the ditch companies but is wary of taking on the responsibility for the ditch companies. Reclamation hopes to be able to address issues in the WCFSP such as quantifying delivery volumes, associating infrastructure issues with an old water delivery system, addressing WCWCD's water management process, converting of agricultural water use to municipal and industrial (M&I) water use, and examining water conservation opportunities with several ditch companies.

### ***Humboldt Project***

The Humboldt Project consists of the Rye Patch Dam and Reservoir, the Battle Mountain Pasture, and the Pitt-Taylor Reservoirs and Distribution System, which are operated by the PCWCD. Water conservation issues addressed in 2001 were water measurement, water control, water conservation education for the PCWCD and the public, and any inefficiencies with respect to water management.

### ***Newlands Project***

The Newlands Project delivers water from the Carson and Truckee Rivers for irrigation and wetlands use in the Lahontan Valley. Because of inter-basin diversions of water, there are several competing interests for the limited water resources including Native Americans, project farmers, and urban interests. The Truckee River terminates in the Pyramid Lake, which is wholly within the Pyramid Lake Indian Reservation. The Pyramid Lake is the home of the threatened Lahontan cutthroat trout and the endangered Cui-ui fish. These species figure closely into the culture of the Pyramid Lake Paiute Tribe. The Carson River terminates in the Stillwater Wetlands that are downstream of the Newlands Project. These wetlands are a part of the Pacific Flyway and are of international importance. As a result of the competing demands, the various stakeholders and interested parties have not been able to reach agreement on how to best manage their water resources.



Because of the government-imposed regulations and the implications of the Endangered Species Act, the WCFSP is used extensively to assist the Newlands Project in water conservation and management issues. Some of the issues to address included implementing a program for measurement of water delivered at headgates, offering educational programs for both the public and the districts, improving the control of water, and providing incentives for water conservation.

### ***Public Education***

One of the biggest institutional barriers to achieving water conservation goals in the LBAO is the lack of adequate dissemination of information on water conservation and water management and its benefits to water users and the general public. As a result, education was emphasized with the distribution of water educational maps, brochures, and pamphlets for the state of Nevada to the general public.

### ***Conservation Planning***

Reclamation personnel informed all districts of their water conservation planning status and requirements through letters, telephone conversations, and visits. Assistance was offered through a variety of means including explanations of requirements (Reclamation Reform Act of 1982 (RRA) and others), guidance, review, and comments on plans. Every district was visited and the requirements of the RRA were explained. Opportunities available through the WCFSP were also presented.

Progress was slow in encouraging districts to develop Plans. There was general resistance to the requirements and guidance offered. Some progress was made through contractual requirements with the TCID and through small steps and communication with the PCWCD. The TCID developed a Plan pursuant to the requirements of the O&M contract between Reclamation and the district.

Other water conservation programs that were not district-specific included: WEF produced maps, pamphlets, and brochures on Nevada water issues; WEF produced maps for the Truckee and Carson Rivers showing the location and related issues; the Lahontan Conservation District irrigation system evaluation; and Fallon Paiute Shoshone Tribe water seepage control. The latter project was the only cost-share project.

### **WCFSP RESOURCES**

The WCFSP for the LBAO is administered and implemented by the Fallon Field Office. The staff consists of a Supervisory Civil Engineer, a Civil Engineer, and a Civil Engineering Technician.

Cost-sharing financial assistance is also available from the Regional Office for cost shares. Support is received from the Denver Technical Services Center and the Regional Office's funding for the ITRC assistance.

Actual staff hours in Fiscal Year (FY) 2001 corresponded closely with planned staff hours. However, the particular projects for which staff time were used varied significantly from those planned due mainly to the changing needs and priorities of the districts. Letters were sent to the LBAO customers describing the WCFSP and asking for proposals for activities. Several

responses were received, evaluated by the LBAO staff, and recommended to the Area Manager, who then selected which activities would be funded under the WCFSP.

**WCFSP OUTLOOK**

The goals, staffing, and funding levels for the WCFSP remain the same as detailed earlier in this document. These goals are appropriate and provide a sound basis for the establishment of activities that Reclamation will engage in this area. Expected staffing will remain the same. The planned activities are still in the conceptual stage. The planned activities will be dependent on requests from the districts and the content of their Plans. The LBAO has sent out a letter to customers asking for specific proposed activities to be pursued under the WCFSP. This letter describes the WCFSP and outlines appropriate information to be included in requests for assistance. The list of activities will be updated and refined as requests for assistance are received.

**LONG-TERM GOALS**

The longer-term outlook for the LBAO’s WCFSP is focused on providing technical assistance to the district staff. It is expected that all districts will have Plans in place by 2002. The primary focus for the long term will be improving and implementing Plans. This will involve extensive one-on-one work with all the districts to convince the districts of the value of water conservation and the viability of an active and productive Water Conservation Program. The current structure of the WCFSP of the area is designed so that Reclamation engineers and technicians provide technical service directly to the districts. The goal over the next several years is to assist districts in becoming more self-sufficient in the skills and knowledge needed to improve water management in their projects.

**TABLE 1 - LBAO WCFSP GRANT PROPOSALS**

<i>Sponsor</i>	<i>Project</i>	<i>Funded</i>	<i>Total</i>
Conservation District	AgriMet Station for the Eureka Area.	\$10,000	\$10,000
Fallon Paiute Shoshone Tribe	Seepage control of the R-line running through the cemetery.	\$100,000	\$200,000
Lahontan Conservation District	Water measurement.	\$49,500	\$49,500
Lahontan Conservation District	AgriMet Station for the Fallon Area.	\$10,000	\$10,000
Reclamation	Water measurement demonstration.	\$29,700	\$29,700
WEF	Editing of “Healing the Water.”	\$15,000	\$15,000 <sup>1</sup>
WEF <sup>21</sup>	Water educational maps, brochures, and pamphlets for the state of Nevada.	\$88,000	\$88,000
WEF <sup>2</sup>	Water resource maps.	\$80,000	\$80,000
<b>TOTAL</b>		<b>\$382,200</b>	<b>\$482,200</b>

<sup>1</sup> The total is for this year. The video was shown and received an Emmy nomination.

<sup>2</sup>This is a contract, since there were problems with authority to give grants.

## **NORTHERN CALIFORNIA AREA OFFICE**

### **INTRODUCTION**

The Northern California Area Office's (NCAO) Water Conservation Field Services Program (WCFSP) is focused around the Sacramento River system and tributaries from Shasta Dam in the northern part of the Sacramento Valley, to the West Sacramento area in the southern part of the Sacramento Valley. The NCAO has historically had an abundant water supply. Both the Central Valley Project (CVP) and the State Water Project have constructed flood control storage facilities in Northern California that allow for diversion of water to water-deficient areas of the State. Prior to the early 1980's, there appeared to be surplus water supplies available. However, with the increased mandates of the Central Valley Project Improvement Act of 1992 and the provisions of the San Francisco Bay-Delta outflow requirements, coupled with decreased diversions from the Trinity River and the consequences of listings pursuant to the Endangered Species Act, the Sacramento River is at times unable to meet all of the competing demands for water.

Northern California is a large geographic bowl having an outlet at the San Francisco Bay-Delta and having good quality sub-surface water in most basin locations. Consumptive use is predominantly evapotranspiration. Opportunities exist to improve water use efficiency through monitoring, conjunctive use, district canal and river management, and on-farm efficiencies.

Northern California districts are divided into two categories. The first is comprised of districts with CVP water service contracts and the second are the Sacramento River Settlement Contractors (Settlement Contractors). The water service districts have contracts providing project water, and the Settlement Contractors have contracts which include B(2) project water and base supply. The base supply is an agreed upon quantity that may be diverted from the river during the months of April through October without payment to the United States.

The Bureau of Reclamation (Reclamation) and the Settlement Contractors are preparing to enter into negotiations for renewal of the settlement contracts. As a result of these preparations, the Settlement Contractors are not yet required to provide Water Management Plans (Plans). The tables below reflect only those Settlement Contractors that have indicated a willingness to move ahead with the planning of demonstration or implementation projects and activities intended to increase their operational and water delivery efficiencies. Reclamation has partnered with these Settlement Contractors in an effort to move them closer to the objectives of the program.

### **GOALS/OBJECTIVES**

- Encourage Reclamation districts in the development and implementation of Plans
- Promote water conservation education by encouraging and expanding the water conservation education efforts
- Implement water efficient management practices
- Introduce Reclamation districts to new techniques of efficient water management through demonstrations, education, and financial assistance
- Initiate demonstration project activities with willing water districts
- Continue activities that establish 'leadership by example' in the water conservation and management programs

- Encourage and participate in partnerships with public and private entities that have similar conservation objectives and goals

## **WCFSP ACTIVITIES AND ACCOMPLISHMENTS**

### ***Planning Assistance***

Reclamation's NCAO offers Plan preparation and technical assistance to water districts and holds meetings to discuss the programs and their progress.

Of the CVP districts under the NCAO's jurisdiction, 14 water districts were required to provide Plans, and 14 had Plans in place and were implementing them. Reclamation staff met with district managers, provided presentations to district boards, and made available technical assistance for the annual planning process. The Plans were reviewed through annual updates submitted by the districts. The NCAO contracted with a water conservation planning specialist to provide assistance, upon request, to districts revising their plans.

Planning assistance was provided to the Bella Vista Water District, the Clear Creek Community Services District, the Corning Water District, the Dunnigan Water District, the Kanawha/Glide Water District, the Orland-Artois Water District, the Proberta Water District, the Cities of Redding and Shasta Lake, the Colusa Water District, the Thomes Creek Water District, and the Westside Water District.

The Settlement Contractors make up a large portion of the NCAO districts. As a result of negotiations and the signing of a Memorandum of Understanding, the requirement to develop and to implement Plans were postponed until the year 2002. Nine of the Settlement Contractors worked together in cooperation with Reclamation on a draft regional Plan. Assistance was provided to several of the Settlement Contractors to assist in the improvement of their delivery efficiencies, canal management, and information management.

### ***Public Outreach/Partnerships***

The NCAO staff worked with districts and educational groups to provide teacher training through Project Water Education for Teachers (Project WET) and to offer water conservation teaching programs. The NCAO also provided educational materials and reminders on the need for water conservation.

The WCFSP supported water efficiency education through many partnerships such as the Sacramento River Discovery Center (SRDC), the Turtle Bay (Redding) Water Conservation Education Program, resource conservation districts, the Natural Resource Conservation Service, the California Department of Water Resources, the California State University at Chico, Cal Poly San Luis Obispo Irrigation Training and Research Center (ITRC), the University of California Extension Service, and local school organizations. The staff was also working internally to encourage and educate other Reclamation staff on the importance of water conservation and water use efficiency.

Reclamation worked with the SRDC staff in Red Bluff, where approximately 6,000 students and 11,000 people were presented with water education lessons, materials, and presentations. Thirty

teachers were given a 2-day curriculum of watershed training, including Project WET, which they could include in their school programs.

The NCAO staff worked with several districts to provide educational materials and training to their water users. The City of Redding received funding this year to provide water conservation materials, presentations, and training to their water users. Also, Reclamation, the City of Redding, and the Turtle Bay Museum and Educational Center had partnered to develop a water conservation demonstration and educational display for the students and public in Redding and the surrounding area. This demonstration and educational activity provided water conservation and conservation awareness training for over 40,000 people over the past year.

The NCAO's Shasta Office utilized Shasta Dam guides during the slower parts of the season to provide outreach presentations to the local schools and classes. Over the past year, Shasta Dam guides made water conservation and Reclamation history presentations to over 4100 students and 164 classes from third grade through college age.

Reclamation contracted with ITRC to provide (on-location) professional training and assistance on canal and water management. The Information Transfer Program is being expanded to develop water industry and Supervisory Control and Data Acquisition (SCADA) training facilities at California State University, Chico. These facilities will provide state-of-the-art training to Northern California students and industry (agriculture) on measurement, conservation, efficient water management techniques, and automation (SCADA).

The ITRC staff, under contract with Reclamation, provided water management training and assistance services to the Anderson-Cottonwood Irrigation District, the Glenn-Colusa Irrigation District, and the Sutter Mutual Water Company. Training sessions provided district staff with information on water management techniques, water measurement devices, canal management, SCADA technology and applications, information collection equipment (hand-held recording devices for measuring equipment), and software development options for effective data management.

### ***Conservation Demonstrations***

The NCAO offered cost-share grants to districts to introduce, demonstrate, or implement measurement and monitoring equipment or new technologies or improved water management techniques to the water district.

The NCAO saw increased interest in canal automation and operation efficiency due to the SCADA demonstrations and the ITRC canal management courses (funded by the Regional Office WCFSP). The SCADA demonstrations accomplished several necessary tasks while initiating real-time canal monitoring for the districts. Some of the necessary tasks were the real-time measurement of river diversions and river stage levels by Reclamation, real-time monitoring of diversions, flows, river and canal stage by district, and real-time monitoring of pump activities by the district. The demonstration SCADA sites introduced SCADA technology to a district and offered encouragement to the district to expand into automated canal monitoring, control operations, and improved data management.

Ten districts worked with demonstration projects on hand-held equipment to assist the water measurement meter readers in recording and to transfer more accurately the flow data to the districts' base computer systems. These projects included software for the office computer that work with the hand-held recorders to present the information in a manner that made the information transfer less difficult for those in the field.

The Glenn County Resource Conservation District sponsored (partnering with Reclamation) an effort to identify the ability of the watershed to hold increased amounts of moisture for year-round release. The study was based on a theory that improvement of native perennials' populations would increase the water infiltration into the hillside watershed soils. Anticipated multiple benefits were increased forage tonnage, soil stability, and returning annual streambeds to perennial production. This could have the potential of becoming a possible natural water storage source.

### ***Conservation Measure Implementation***

The NCAO tracked districts' Plan implementation through the Plan annual update process. This process allowed both Reclamation and the districts to monitor their progress in achieving these goals.

This year Sutter Mutual Water Company expanded its SCADA program to include improved canal level management through the use of a SCADA controlled Variable Frequency Drive pump. The Anderson-Cottonwood Irrigation District implemented its canal management expansion by utilizing some experimental Doppler equipment for canal management and data collection.

The Bella Vista Water District, the Clear Creek Community Services District, the Colusa County Water District, the Corning Water District, the Glide Water District, the Kanawha Water District, the Orland-Artois Water District, the Natomas Central Mutual Water District, the Sutter Mutual Water Company, and the Westside Water District are implementing hand-held data management technologies. They are using new software and equipment that allows the meter readers and ditch riders to enter fields and meter information electronically for direct download upon return to the office. This improves the efficiency of the information transfer by both time and quality. Also, additional information is captured (e.g., crop type, stage, applications, system troubles, etc.) for immediate recorded transfer upon return to the office.

### ***Leadership by Example***

A portion of the program was called "lead the field." This program was a combination of approaches. First, the NCAO upgraded its own facilities to low-flow appliances (faucets, toilets, and sprinklers). Second, the Shasta Visitors Center was upgraded to reflect the important issues such as water conservation. Third, the Shasta Dam tour guides were utilized during the fall/winter season to make off-site presentations to school classes regarding conservation (outreach program). Fourth, the NCAO looked at management tools on the river system and looking for areas that can have multiple benefits by upgrading information technology through the use of SCADA. This program acted as a leadership and demonstration activity that is receiving positive response from water districts.

**TABLE 1 - NCAO WCFSP GRANT PROPOSALS**

<i>Sponsor</i>	<i>Project</i>	<i>Funded</i>	<i>Total</i>
Anderson Cottonwood Irrigation District	SCADA Canal Management Program.	\$22,000	\$44,000
California State University – Chico	The development of a Water Management Technology Transfer Center for students and industry.	\$50,000	\$106,000
City of Redding/Turtle Bay	District Plan Implementation and Public Education Program.	\$35,000	\$113,000
Dunnigan Water District	Cost Share Program to implement Meter Upgrade Program from high flow meters to low flow meters.	8,900	\$23,900
Glenn County Resource Conservation District	Cost share on Stony Creek riparian improvement planning for watershed improvement.	\$50,000	\$78,000
ITRC	GIS development with districts.	\$5,000	\$10,000
ITRC	On-site district SCADA planning assistance.	\$15,000	\$30,000
Natomas Central Mutual Water Company, Sutter Mutual Water Company, and Cities of Redding and Shasta Lake	Water Management Training - Denver.	\$1,600	\$4,600
Natomas Central Mutual Water District	Hand-Held Field Recorder Program.	\$23,579	\$36,079
Orland-Artois Water District	SCADA Implementation Program.	\$20,000	\$65,000
Reclamation - Lead the field	Shasta Dam xeriscape project.	\$15,000	\$15,000
Reclamation - Lead the Field.	Equipment and programming for SCADA data collection at Willows from Sacramento River districts.	\$10,400	\$10,400
Reclamation District #108	SCADA program implementation for return flow monitoring.	\$24,800	\$49,800
Reclamation Water Awareness Education	The development and the purchase of handouts and educational material for public education opportunities and the purchase of measurement demonstration.	\$15,650	\$15,650
SRDC	SRDC Water Awareness and Teacher Water Conservation Education Program.	\$45,000	\$90,000
Sutter Mutual Water Company	SCADA, remote control Variable Frequency Drive, and monitoring for improved management of canal system.	\$17,000	\$62,000
<b>TOTAL</b>		<b>\$358,929</b>	<b>\$751,929</b>

## **SOUTH-CENTRAL CALIFORNIA AREA REPORT**

### **INTRODUCTION**

The South-Central California Area Office (SCCAO) encompasses more than 2.5 million acres of irrigated farmland. Served by Bureau of Reclamation's (Reclamation) Central Valley, Monterey, Ventura River, and Cachuma Projects, this area office covers 80 water service districts, including 61 water districts, with allocations of nearly 6 million acre-feet of water.

With its proximity to and inclusion of large urban areas, such as the Silicon Valley and the Cities of Tracy, Bakersfield, Santa Barbara, and Fresno, the importance of urban water conservation is becoming more apparent. The Central Valley has the fastest growing population in California; therefore, demand for municipal and industrial (M&I) water will continue to increase dramatically. Urban coastal projects including Cachuma, Ventura River, and Monterey, are facing salt-water intrusion, water quality concerns, low supplies, and urbanization. Because of these trends, the Water Conservation Field Services Program (WCFSP) will address these areas in the near future. The vast agriculture area of the west side of the Central Valley must cope with reduced water supplies, environmental obligations, high water tables, salinity problems, and drainage disposal. Because of these constraints, assistance efforts will continue in this area.

The SCCAO WCFSP addresses the above concerns by insuring the completion of water conservation plans, initiating Best Management Practices (BMPs) wherever possible, sharing successful projects and new technologies with all water users, and assisting water districts in achieving their water management objectives.

### **GOALS/OBJECTIVES**

The goal of the SCCAO WCFSP will be to continue to provide assistance to Reclamation water districts in the development and implementation of water conservation. In order to accomplish this goal, the area office will facilitate the completion of Water Management Plans (Plans) and assist with the completion of 5-year Plan updates as they become due. In addition, the SCCAO will identify where BMP implementation can be accelerated through financial and/or technical assistance.

### **WCFSP ACTIVITIES AND ACCOMPLISHMENTS**

#### ***Planning Assistance***

The Reclamation Reform Act of 1982 and the Central Valley Project Improvement Act of 1992 require districts to prepare and implement a Plan. The districts continue to ask for assistance in completing annual updates and 5-year Plan revisions that identify BMP's that have been implemented or need to be implemented in order to comply with the Criteria for Evaluating Management Plans.

Specifically in 2001, the SCCAO staff continued to:

- Provide technical assistance to area customers in their development of Plans, including background information, water management options, and an application process for BMP's



- Provide technical assistance in identifying water conservation opportunities and new technologies available to water users
- Assist Reclamation personnel in developing water management criteria and support regional in a water management effort

### ***Conservation Implementation***

Through cooperative agreements, water contracts and grants, the WCFSP provided financial assistance, cost sharing, and other measures to encourage the implementation of the BMP's identified in the water district's Plans. The following conservation water and management measures were financed in 2001 through cost-share agreements:

- Evaluation of water irrigation systems and the development of recommendation for cost-effective system improvements. (Mobile lab field evaluations in partnership with local resource conservation districts)
- Installation of California Irrigation Management Information System (CIMIS) weather stations to provide farmers with district-specific irrigation scheduling information
- Upgrading irrigation delivery systems and irrigation facility purchases for new technology hardware for more efficient water management
- Provision of funding for computer programs which are available for tracking water delivery data, irrigation scheduling, water use by crops, Internet software, and other water management options made available to the user for assistance in the development of on-farm strategies geared toward improved water management
- Installation of remote Supervisory Control and Data Acquisition (SCADA) systems to improve water district canal operations and improving efficiency of irrigation water delivery

### ***Education***

The following were some of the activities included in the WCFSP to provide education, training, and information transfer to area water users:

- Funding for classroom displays, lesson plans, tours, study guides, and teacher's handbooks
- Assistance for development of in-school water awareness programs
- Funding a drought tolerant garden and Visitor Center at Friant Dam to educate the public on water use and irrigation techniques for conserving water
- Providing partnership funding for a watershed museum on the history of the San Joaquin River and its many uses for urban and agriculture

### ***Demonstration of Water Conservation Projects***

The following were some of the activities included in the WCFSP to provide demonstration of water conservation projects:

- Funding for hand-held data recorders for on-site recording of water delivery data and water use totals. Several water districts are testing potential for these systems
- Assisting districts in the installation of Variable Speed Drive units to existing irrigation facilities to upgrade units and provide energy and water savings at these facilities

- Provide funding to urban for retrofit home shower units with low flow parts and replace existing toilet units with improved units. Provide leak detection kits

### **PARTNERSHIPS FOR WCFSP**

The WCFSP was encouraged through discussions with local stakeholders to create partnerships to assist in the development and implementation of water conservation/management programs. To that end, partnerships were created with water districts, resource conservation districts, local universities, the U.S. Department of Agriculture, Water Awareness Committees, the California Department of Water Resources, the University of California Cooperative Extension, and consultants.

### **MONITORING ACCOMPLISHMENTS**

The results of the WCFSP are monitored through annual updates of Plans, grant reports, number of participants, demonstration events, and conservation goals achieved. Each proposal or activity funded is required to complete a final report detailing the project and its advantages and/or recommendation for use by others. Annual Plan updates provide information on district and water user efforts regarding water conservation and BMP implementation.

**TABLE 1 – SCCAO WCFSP GRANT PROPOSALS**

<i><b>Sponsor</b></i>	<i><b>Project</b></i>	<i><b>Funded</b></i>	<i><b>Partner</b></i>	<i><b>Total</b></i>
Broadview Water District	Implementation: Variable Speed Drive upgrades for energy and water savings.	\$10,415	\$7,000	\$17,415
Center for Irrigation Technology (CIT) - Fresno State	Education: Xeriscape garden and Visitor Center at Friant Dam.	\$20,000	\$20,000	\$40,000
Central Sierra Historical Society	Education: Watershed museum for hydrologic history of the San Joaquin River. Water uses and management of river system.	\$40,000		\$40,000
City of Santa Barbara	Education: Continuing Green Gardener training for landscape and urban areas of coastal California. Emphasis on water savings and plant selection for low water-use varieties.	\$15,000	\$15,000	\$30,000
Columbia Canal Company	Research: District-wide GIS mapping of all irrigation facilities and crop fields for water management improvements.	\$15,108	\$10,500	\$25,608
County of Santa Barbara	Education: Partnership with the City of Santa Barbara on the Green Gardener Program to include county parks, rural cities, and county landscapes.	\$15,000	\$15,000	\$30,000

<i>Sponsor</i>	<i>Project</i>	<i>Funded</i>	<i>Partner</i>	<i>Total</i>
Del Puerto Irrigation District	Implementation: Flow meters installed to record diversions at sub-lateral turnouts from the Main Canal.	\$15,000	\$15,000	\$30,000
Delano-Earlimart Irrigation District	Implementation: CIMIS weather station for evapotranspiration (ET) data collection.	\$5,500	\$3,000	\$8,500
Exeter Irrigation District	Implementation: Computer hardware provided for irrigation scheduling and record keeping of water uses.	\$5,000	\$5,000	\$10,000
Goleta Water District	Education: Classroom puzzle and hands-on display developed for local schools on how to conserve water and to show water's many uses.	\$25,000	\$25,000	\$50,000
ITRC	Demonstration: Field evaluation team for irrigation system efficiency.	\$30,000	\$30,000	\$60,000
James Irrigation District	Implementation: Canal automation upgrades at delivery points to monitor water deliveries to farms.	\$15,000	\$15,000	\$30,000
	Demonstration: Install remote system (Supervisory Control and Data Acquisition) for flow control.	\$15,000	\$10,000	\$25,000
	Demonstration: Data logger installed to record more accurate water delivery and canal flow data.	\$15,000	\$15,000	\$30,000
Kern-Tulare Irrigation District	Implementation: Variable Speed Drive upgrades for energy and water savings.	\$15,000	\$15,000	\$30,000
Monterey Resource Conservation District	Implementation: Mobile Lab provided to area growers for irrigation analysis on delivery systems.	\$25,000	\$25,000	\$50,000
Pajaro Valley Water District	Education: Series of water user meetings on water conservation techniques and compiling of handout materials.	\$15,000	\$15,000	\$30,000
Patterson Irrigation District	Implementation: Canal gates automated for delivery control and improved management of canal system.	\$15,000	\$15,000	\$30,000

<i>Sponsor</i>	<i>Project</i>	<i>Funded</i>	<i>Partner</i>	<i>Total</i>
Plain View Water District	Research: Water recording system with hand-held recorders for ditch-tenders - new system.	\$15,000	\$15,000	\$30,000
Pond-Shafter-Wasco Resource Conservation District	Implementation: Mobile lab for field irrigation evaluations.	\$25,000	\$25,000	\$50,000
San Benito County Water Agency	Demonstration: Urban household kits for retrofit of showerheads, toilets, and leak detection in and outside the home.	\$10,000	\$10,000	\$20,000
San Luis-Delta Mendota Water Authority	Implementation: Flow meters installed at key canal diversion points for more accurate water use data.	\$30,000	\$20,000	\$50,000
Santa Barbara County Water Agency	Education: Classroom materials on water conservation.	\$5,600	\$3,200	\$8,800
Santa Barbara County Water Agency	Research: Drought contingency plan compiled for urban cities within SCCAO service area.	\$10,000		\$10,000
Santa Barbara County Water Agency	Education: Various education guides, brochures, demonstration and portable displays available to all teachers within county.	\$10,600	\$15,000	\$25,600
Saucelito Irrigation District	Implementation: Variable Speed Drive upgrades for energy and water savings.	\$20,254	\$6,751	\$27,005
Utah State University	Education: School calendars that include lesson plans on water education. Distributed within SCCAO service area.	\$5,000		\$5,000
Westlands Water District	Research: Crop ET study for water requirements on new crops.	\$9,400	\$10,000	\$19,400
Totals		\$451,877	\$360,451	\$812,328

## MID-PACIFIC REGIONAL OFFICE

### INTRODUCTION

The Regional Water Conservation Team (Regional Team) was originally established in 1992 to implement the provisions of the Central Valley Project Improvement Act of 1992 (CVPIA). Since that time, the Regional Team has administered the water conservation programs associated with the CVPIA and the Reclamation Reform Act of 1982 (RRA) mandates. The Regional Team also supports the area office water conservation specialists in their efforts to evaluate Water Management Plans (Plans) and promote better water management among districts.

Along with providing technical assistance and budget over-sight to the area offices, the Regional Team oversees the Mid-Pacific Region's (Region) water conservation planning duties. As part of the mission, the Regional Team continues to support the introduction of new and innovative water conservation measures by providing technical and financial assistance to entities such as universities, foundations, and other non-profit organizations. This assistance is intended to accelerate the development, demonstration, and adoption of water conservation measures and to instill in water users and the general public a sense of stewardship of water resources.

Partnerships continue to be the underlying foundation of the Regional Water Conservation Field Service Program (WCFSP). The Regional Team's active participation in the CALFED Bay-Delta (CALFED) Water Use Efficiency (WUE) Program is one example of the importance of working with others to accomplish important objectives. The Regional Team also continues to work closely with the Urban and Agricultural Water Management Councils, the university systems in California and Nevada, the State, and with group related missions such as the Water Education Foundation (WEF) and the California Association of Resources Conservation Districts (CARCD). All of these entities have similar goals and objectives as the Regional Team's mission.

### GOALS

#### *The Regional Team's Mission Statement*

*Optimize the beneficial use of water resources including, ground water, recycled/reused water, and surface water. Educate customers about the opportunities for and the benefits of water conservation in context of watershed management. Cooperate with agencies and other stakeholders to be leaders in conservation.*

### ACTIVITIES

To meet these goals, the Regional Team is engaged in a wide range of activities. They are laid out within the framework of the WCFSP for the purposes of this annual report.

#### *Planning Assistance*

The Regional Team assisted the area office staff in the review of Plans. The area office water conservation specialists provided planning assistance to the districts in person or through consultants. In some cases, the Regional Team was asked to provide assistance. After the initial review of Plans, comments and recommended changes were provided to the districts. When the Plan was near completion, the Regional Team reviewed the Plan and provided official comments. In consultation with the area office specialists, the Regional Team began the final

communications with the district until the Plan was deemed adequate according to the CVPIA Water Management Planning Criteria. Through the Federal Register, the public was given an opportunity to review the Plan and provide comments. Plans submitted from districts that were located outside the Central Valley Project (CVP) service area were reviewed based on the RRA and Bureau of Reclamation-wide (Reclamation) water management planning data and were not submitted in the Federal Register.

The original Criteria for Evaluating Water Conservation Plans was developed in 1993. It was revised and renamed in 1996 to Criteria for Evaluating Water Management Plans (Criteria). The Regional Team revised the Criteria again in 1999 through a series of scoping sessions, public workshops, and consultations with water management experts. The Regional Team coordinated with the Agricultural Water Management Council (AWMC) and the California Urban Water Conservation Council's (CUWCC) in their efforts to promote efficient water management planning. Both of these councils were key players in CALFED's WUE Program. The revised Criteria incorporated language from each council's water conservation planning and reporting process wherever possible. The revised Criteria Best Management Practices (BMPs) closely matched those of each council with the exception of water measurement and pricing. These were important differences which continued to be revisited during implementation of the CALFED Program.

Once a district had an approved Plan, the Regional Team coordinated the annual update process. An extensive database was maintained in which the key Plan elements for each district were tracked at the end of each year. The annual updates were used to evaluate a district's Plan implementation. An annual update template was generated and each district was required to update the BMPs based on their water conservation activities for that year. The area office specialists worked with the districts to complete these reports.

Certain water districts that contract with Reclamation were required to develop Plans and to have had those Plans evaluated by the Criteria. These Criteria were developed in accordance with the CVPIA. The CVPIA states that, ". . .*The Secretary shall establish and administer an office on Central Valley Project water conservation best management practices that shall, in consultation with. . .develop criteria for evaluating the adequacy of all water conservation plans developed by project contractors, including those plans required by section 210 of the Reclamation Reform Act of 1982.*" The Criteria states that, "*Districts shall report on Plan implementation annually. . .*" Reclamation has adopted the CUWCC's Memorandum of Understanding for reviewing and implementing urban BMPs.

### ***Water Management Plans***

Fourteen plans were reviewed and noticed in the Federal Register. Reclamation also began the process of revising the 1999 Criteria for 2002. Water districts, users, and environmental and special interest groups will be invited to participate and comment on the Criteria revision process. Workshops will be scheduled in the Northern, the Central, and the Southern areas of the Region.

Through an agreement with the CUWCC, "Guest Accounts" were created for Reclamation's urban water districts who are not signatories to the CUWCC. This allows Reclamation's urban

districts to submit their Annual Updates on the Internet via the CUWCC's web site at: [www.cuwcc.org](http://www.cuwcc.org). At present, there are approximately 45 urban water districts. Of these 45 districts, approximately 15 are already signatories of the CUWCC. This leaves approximately 35 districts who do not have access to the CUWCC's reporting system. A similar Internet process is being developed for Reclamation's agricultural districts.

### ***Education and Outreach***

Public education and outreach are important tools in improving the management of water resources. The Regional Team promoted water management through presentations and papers and by supporting programs that reach a broad audience. Continuing education courses for district staff and board members were also encouraged. By partnering with several institutions, districts could choose from programs provided by the Denver Technical Service Center, the Fresno State Center for Irrigation (CIT), Cal Poly San Luis Obispo Irrigation Training and Research Center (ITRC), the American Water Works Association (AWWA), and WEF, to name a few.

A broad audience can be reached through Reclamation's web site, entitled "WaterShare" at <http://watershare.mp.usbr.gov/>. In 1999, "WaterShare" was recognized as the Best Government and Law Web site at the Third Annual Sacramento Web Awards. The Regional Team pioneered this site with the help of a district and has since brought the site in-house to be maintained by Reclamation staff. In 2001, efforts focused on updating the web site and adding the "Water Management Planner" along with a listing for new water conservation documents that were developed. The planner is a guidebook for preparing Plans required under CVPIA.

The Regional Team continued to provide technical and financial assistance to the American River Water Education Center (ARWEC) in Folsom. The ARWEC helps fulfill Reclamation's obligation under the CVPIA to provide a water conservation center. The ARWEC opened 2 years ago and has exceeded expectations as a vehicle to provide a valuable water education resource to the neighboring community. Similar efforts are underway to create centers at Shasta and Friant Dams. The Region also continued to support Project Water Education for Teachers in California and also maintained the WaterLearn programs including water conservation related school lesson plans on Reclamation's "WaterShare" web site.

The Regional Team reached water districts and others through various publications. The Conservation Connection is a quarterly newsletter which targets water conservation specialists and water districts. The newsletter was first published in 1994 and recognizes people and organizations that demonstrated effective water conservation efforts. Each issue of the newsletter contains a calendar of events, highlighted a person in the water conservation industry, recognizes a water district that demonstrates innovative technology or demonstrations, provides tips for conserving water and covered many issues related to water use efficiency. Over 800 copies of the newsletter have been sent out in an effort to be an informative vehicle in the water industry.

The Regional Team co-sponsored training for water conservation coordinators. The Regional Team worked with the AWMC, the CARCD, and ITRC to provide two, 2-day training sessions. The Mid-Pacific and Lower Colorado Regions are jointly providing support to the AWWA

Water Conservation Training Program which focused on urban water conservation which included landscape irrigation.

### ***Demonstrations of Water Conservation Projects***

Demonstration projects provide an opportunity to explore and validate innovative water conservation practices that would be accelerated by the improved management of water in the Region. In 2001, the Regional Team funded demonstration projects through partnerships with the CUWCC, the California Department of Water Resources (DWR), the Fresno State CIT, water districts, and ITRC. The Regional Team also worked with Denver Technical Service Center and private consultants on projects. On-going managed programs included two challenge grant programs initiated in 1994: One demonstrated total resources management on the farm; and the other demonstrated options for economic incentives to encourage agricultural water conservation.

### ***Conservation Implementation***

In the past, the Regional Team provided funding for BMPs such as the Toilet Replacement Program. With the advent of the WCFSP, the area offices have taken the lead on these activities. To support their efforts, the Region maintained a contract with ITRC that provided technical assistance directly to agricultural water districts. The Regional Team also worked closely with the CUWCC and AWMC to sponsor additional programs which fostered the implementation of appropriate water management efforts.

## **ACCOMPLISHMENTS**

### ***Planning***

The Regional Team worked with the area office water conservation specialists to review 14 plans which were noticed in the Federal Register.

In FY 2001, representatives from Reclamation, the U.S. Fish and Wildlife Service, the California Department of Fish and Game, and the Grasslands Water District created the Interagency Refuge Water Management Team. This team's initial task was to develop criteria for Evaluating Refuge Management Plans similar to the criteria developed for urban and agricultural water management planning. The refuge criteria are due for completion by March 2002. Refuges have to develop plans that meet these criteria within a year after the criteria are finalized. Reclamation staff will continue to take a leadership role in facilitating the development of the criteria

The Regional Team has actively participated in the CALFED WUE Program. The CALFED Record of Decision identified Reclamation as a co-lead of this program and five Reclamation employees served on the committee which selected over 50 water use efficiency projects that received approximately 12 million dollars in grant funding. Reclamation also played a major role in developing the three-way agreement with the AWMC and the California DWR to advance agricultural water use efficiency (see below). In addition, the Regional Team administered and provided technical assistance on six CALFED pilot projects which were intended to provide information on structuring future water conservation projects. These projects included determining the effect of irrigation management on evaporation losses, dissemination of information to growers and residential customers, assessment of seepage losses, and the potential for conjunctive use of water in urban locations.



Regional staff continued to work closely with the CUWCC and the AWMC to standardize planning processes where possible.

### ***Education and Outreach***

The water conservation staff participated in drought workshops sponsored by California DWR. These workshops were held at Red Bluff, Visalia, Concord, and Sacramento. The main purpose of the workshops was to provide information on CALFED's water use efficiency component and to solicit comments. The staff also reviewed and evaluated comments received in response to the water use efficiency section of the CALFED draft Environmental Impact Statement/- Environmental Impact Report.

In cooperation with the WEF, Reclamation provided a grant for \$45,000 to produce a documentary video entitled "Healing the Water," which concerns local water issues in northwestern Nevada. This video was shown on the Public Broadcasting Station and received an Emmy nomination. It was an important case study of the Truckee River and the Pyramid Lake water struggle and clearly exemplified the many complicated issues involved in water resource \ management. The many stakeholders involved had valuable but conflicting perspectives and all sides had much to lose. Culture, livelihood, local economies, and fisheries all figured into this struggle, in which "Healing the Water" powerfully displayed this dynamic situation. This documentary was produced in a 60-minute and 15-minute version and included a viewer's guide incorporating class exercises. Used in combination, the videos and the guide were powerful tools for K-12 education.

In order to make California Irrigation Management Information System more accessible, Reclamation co-funded a project with the California DWR to upgrade the system and made it available over the web. This upgrade also allowed people to access weather data by zip code. An associated project will test the practicality of using "mini" weather stations (solar radiometers) to gather data in small microclimate zones.

The ITRC provided short courses to water managers and water district board members on their campus and/or at the district's offices. These educational courses were very affordable because the Region underwrote them.

The AWMC provided administration services for a series of educational workshops for irrigation districts and individuals. The workshops were sponsored by Reclamation and provided education that fulfilled the BMPs required as a part of the water conservation plans.

### ***Research and Demonstrations***

Reclamation is in the process of renewing the cooperative agreement with the ITRC. The new agreement includes an additional 2 years of support from the ITRC. The ITRC has in the past provided classroom training, on-site investigations and problem solving for water distribution systems, measurement, and new technology demonstrations. The ITRC also provides general technical assistance to entities that contract with Reclamation for water. One important class conducted was the Water Conservation Coordinator Training, which will be offered again periodically as needed.

Reclamation engaged the Fresno State University, CIT to develop a web site. The site will estimate water savings available for transfer. While other methods are reasonable, the site will be available as one method to estimate the amount of water made available by fallowing land. Districts or individuals may use the site. This site, when completed, may be used as a primary or back up method of estimation.

Reclamation entered into a cooperative agreement with California State University of Chico (Chico State) to develop expertise and demonstration facilities for modernization of water distribution systems. Modernization is conversion to a central location for control and data, commonly referred to as Supervisory Control and Data Acquisition. Many area districts were in the process of modernization and will now be able to call on Chico State for support and training.

Reclamation also entered into a cooperative agreement with the U.S. Department of Agriculture to support the installation of two new lysimeters near Five Points, California. The agreement also included research associated with developing evapotranspiration (ET) data from the new location. The new data would provide more accurate estimates of ET in the San Joaquin Valley. More accurate data would lead to more efficient water application in the San Joaquin Valley.

### ***Implementation***

The Regional Team continued to manage the contract with the ITRC to provide direct technical assistance to water districts. They assisted the districts in identifying and implementing appropriate BMPs through a rapid one-to-two day evaluation of an irrigation district. The Regional Team is currently negotiating a second 5-year agreement with the ITRC to provide our customers with this valuable technical assistance.

## **PARTNERSHIPS**

### ***California Urban Water Conservation Council Support***

As the role of the CUWCC has expanded over the past year, Reclamation has contributed financially toward the development of a strong future for this consensus-building organization. Also, Reclamation staff participated actively on the many various committees of the CUWCC. In addition, Reclamation funded numerous projects that will help in the implementation of the CUWCC's BMP's. This year's efforts focused on developing a web-based database for gathering annual reports; developing a process for evaluating exemptions from BMP's based on cost effectiveness; preparing a certification process; and printing a guidebook for implementing the landscape.

### ***Three-Way/3-Year Cooperative Agreement***

Reclamation, California DWR, and CALFED, are currently negotiating a three-way/3-year cooperative agreement with the CUWCC. This agreement is being patterned after a similar agreement with the AWMC.

The purpose of this agreement is to provide technical assistance to urban water suppliers to implement the first 4 years of the CALFED incentive-driven WUE Program. The tasks undertaken by the CUWCC under this cooperative agreement will assist Reclamation, the

California DWR, and other agencies participating in the CALFED program in developing a program of technical and financial incentives for water use efficiency in the urban sector.

***Partnerships***

The Regional Team provided leadership in a number of water conservation related activities at the State, national, and international levels. Members of the Regional Team continued to serve in various capacities in the CALFED program. The Regional Team continued to coordinate with the California DWR and the Natural Resources Conservation Service as we neared the implementation phase of this program. The Regional Team supported the efforts of the CUWCC and the AWMC to create a forum for stakeholders to discuss and adopt policy for CALFED's WUE Program. The Regional Team continued to keep a working relationship with several conservation districts in Nevada, Oregon, and California. Two examples of partnerships that have been established during the last year are with the CUWCC and the AWMC.