

Bureau of Reclamation
Yuma Area Office
**WATER CONSERVATION FIELD
SERVICES PROGRAM**



PLAN OF WORK
MAY 1999

YUMA AREA WATER CONSERVATION FIELD SERVICES PROGRAM PLAN OF WORK FOR 1999

What is Reclamation's Water Conservation Field Services Program ?

In 1997 Reclamation created the Water Conservation Field Services Program. This program is a firm commitment by Reclamation to:

- Encourage water conservation through voluntary and cooperative means;
- Assist water agencies to develop and implement effective water management and conservation plans;
- Coordinate with other state and local conservation program efforts;
- Foster improved water management; and
- Assist water districts as they seek improvements in their water management, as an alternative to other regulatory measures.

What is the "Yuma Area"?

The "Yuma Area" is an administrative area of Reclamation which includes all users of Colorado River water downstream of Davis Dam, except those served by the Central Arizona Project and the Colorado River Aqueduct. A map of the Yuma Area can be found in Appendix C . It is predominately an agricultural area, and the major consumer of Colorado River water. Nearly one million acres of land are irrigated in the Yuma Area. Gross farm receipts are between \$3 billion and \$4 billion per year.

The Yuma Area is composed of a vast and intricate network of water supply and

drainage systems. The water supply and drainage infrastructure is substantially complete.

How can water conservation be accomplished in the Yuma Area?

"Water conservation" and "water management" have typically been identified by the public and even the agricultural community, as structural measures such as reservoirs, canal lining, pipelines, drip irrigation systems, soil exchanges, and laser land leveling.

These structural measures have been beneficial, but the benefits derived from them are limited. Most improvements in water conservation must be made through improved water management.

What is meant by "Water Management"?

Webster's Dictionary defines "management" as the skilled handling of something; or the act of planning, directing, and controlling something in a skilled manner. The words "water management" are used in this plan to distinguish water management from measures that are primarily construction projects, such as canal lining , additional drainage facilities, or regulating reservoirs.

However, water management does need to include some structural components; for example, water measurement structures and devices, or electronic automation equipment.

What is the strategy for the Water Conservation Field Services Program ?

Our strategy for water conservation will focus on:

- ❑ **Water management** - *It is more economical and effective than structural measures.*
- ❑ **Education and Information** - *Changing attitudes and perceptions is more important in the long run.*
- ❑ **Accurate Water Use Data** - *This is vital to show how we can be the most effective.*
- ❑ **Conservation Planning** - *Emphasize that conservation plans should be genuine and credible.*

If this strategy is followed, substantial conservation of water can be achieved through voluntary and cooperative means, and regulatory measures can be avoided.

How much potential is there for water conservation in the Yuma Area?

The Yuma Area water districts divert about 6.5 million acre-feet of water per year. About 4 million acre-feet of water per year of this total is diverted and consumed off the river with no return flows to the river. Conservation of this portion will directly result in more water being available for other uses, or as insurance to avoid a water shortage on the Colorado River.

The remainder, about 2.5 million acre-feet per year, is diverted for use with the unconsumed portion returning to the river. Excessive return flows contribute to the salinity the Colorado River. As salinity increases, more water is required to make crops grow successfully. Therefore, increased salinity in the river causes an increased demand for water downstream.

For every 1% reduction in demand for

water diverted to the off-stream districts, 40,000 acre-feet of water become available for other uses, or for insurance to help avoid water shortages.

Why should a district or water user try to improve their water management?

For the user, it pays. In the increasingly competitive agricultural marketplace, more efficient water use will provide an edge that agricultural producers will need to prosper. Inefficiently managed water costs the user not only in water fees, but labor cost, yields, crop uniformity and fertilizer.

For the water district, more efficiently managed water reduces drainage costs and overall operating expense, while providing better service to its customers.

The cost of water to water users in the Yuma Area is very low. The cost of water management is likewise very low. The public is going to expect holders of the water use entitlements to use those reasonable management measures which either pay or cost very little.

Let's not forget that our water supply is not unlimited. Allocations of Colorado River water exceed the river's long term ability to supply all the projected needs for that water. All water districts and agencies are going to have to demonstrate to the rest of the Lower Colorado water users, that their water is managed prudently and in regard for its value. The best way to do this is with a genuine, credible water conservation plan.

What is Reclamation's Long range Goals With the Field Services Program in the Yuma Area?

Long Range Goal No. 1 - Water Conservation Plans

All districts and municipalities over specific minimum sizes, except Indian Reservations, are required by law to prepare water conservation plans. The Yuma Area Office is committed to assisting and encouraging all water users in the area to prepare bona fide water conservation plans.

There are 13 districts in the Yuma Area that are required to complete plans. (Needles, Bullhead City, and Lake Havasu City work with the Boulder Canyon Area Office). In addition, there are five Indian Tribes, several smaller municipalities and agricultural users, three wildlife refuges, and two military reservations in the Yuma area that are not required to prepare plans.

A genuine planning effort involves gathering basic resource inventory information; identifying problems, goals, and opportunities; and evaluating and selecting alternative courses of action, all through open and public discussion.

Our long range goals are:

A. 100 % of water conservation plans from districts who are required to develop plans by the year 2005

B. Water Conservation plans from three Indian Tribes, municipalities, and others who are not required to develop plans, by the year 2005.

Long Range Goal No. 2 - Effective Conservation Measures

We have been actively working in partnership with local entities on a well balanced water management and conservation program, with emphasis on:

- Water Measurement & Accounting
- Irrigation Water Management
- Canal Automation

- Soil Salinity Management
- Conservation Education; and
- Water Conservation Planning.

At the present time, the Bureau of Reclamation shares up to 50% of the cost of demonstration measures, and provides technical assistance where it is needed for demonstration projects. Appendix A includes some photographs of current projects. Appendix B is a list of current project agreements.

Our long range plan is to move gradually from demonstration projects to implementation projects.

Our long range goals are:

A. Be a partner in at least one effective conservation measure operating in all thirteen districts and three Indian Reservations by the year 2005.

B. Participate in local measures that reduce diversions by at least 100,000 acre-feet by the year 2005.

C. Move from demonstration to implementation. 70% of cost-shared demonstration projects will become direct implementation projects by the year 2005.

Long Range Goal No. 3 - Public Awareness and Direction of Water Conservation Program

Public input and direction is essential to insure that this program is effective, and responsive to their needs. We will strive to obtain input from local water users, conservation organizations, and the public at large through:

- Newsletters;
- News articles;
- Public presentations at fairs, field days, and expositions; and
- Attendance at public board meetings.

Our long range goals are:

A. Double the number of people reached or contacted by the year 2005.

B. Form a public advisory process for the Field Services Program by 2003.

Long Range Goal No. 4 - Water Use Information & Data

Data is important. Effective conservation is driven by data. Farm data (local irrigation surveys) show where, how and why water is used by water users. District water operation assessments, based on the collection of field data, show how well water is delivered to the users. By analyzing these data, responsible water districts and water users can target their efforts much more effectively, and demonstrate to the public that they are being responsible in exercising their water use privilege.

Our long range goals are:

A. Participate in four irrigation or water use surveys by the year 2003.

B. Participate in four district water operations assessments by the year 2003.

Long Range Goal No. 5 - Area-Wide Conservation Inventory & Assessment

Benefits gained from the application of a conservation plan in a district go beyond the boundaries of the district. The benefits derived from application of conservation plans are indirect and cumulative. A method is needed to quantify the benefits of applied conservation in the area as a whole. Such a method would be numerical and would:

- Show the cumulative benefit of applying conservation in the area.;
- Show how effective we have been or could be; and
- Take into account the relationship between water quantity and water quality.

Our long range goal is:

Develop an area-wide numerical method of assessing the effect of water conservation efforts by the year 2002.

**Status of Water Conservation Plans
Yuma Area - May 1999**

Date Due	District	Attended Workshop	Reclamation-Yuma Area Providing Assistance	No Assistance Requested Beyond Workshop	Draft Plan Received	Comments Returned	Final 5-year Plan Received
1997	NGVID	X		X			
	WMIDD	X		X	X	X	X
	YCWUA	X		X	X	X	
	MVIDD		X				
	City of Yuma	X	X				
	YMIDD	X	X		X		
	YID	X	X				
1998	BWD	X	X				
1999	IID	X		X			
	CVWD	X		X			
	PVID	X		X			
2000	UBIDD	X	X				
	CVIDD			X			
Not Required	USFWS				X		

NGVID=North Gila Valley Irrigation District WMIDD= Wellton-Mohawk Irrigation and Drainage District YCWUA= Yuma County Water Users Association MVIDD= Mohave Valley Irrigation and Drainage District YMIDD= Yuma Mesa Irrigation and Drainage District YID= Yuma Irrigation District BWD= Bard Water District IID= Imperial Irrigation District CVWD= Coachella Valley Water District PVID= Palo Verde Irrigation District UBIDD= Unit B Irrigation and Drainage District CVIDD=Cibola Valley Irrigation and Drainage District USFWS= U.S. Fish & Wildlife Service

PLAN OF GOALS AND ACTIVITIES FOR 1999

Long Range Goal Number 1 : Water Conservation Plans				
Measure for 1999	Results Expected	Dates	Employee Years	Financial Match
Assist cooperating districts to complete seven water conservation plans	Four plans completed ; progress on three more	Continuing	0.5	
Develop cooperative agreement to cost-share on a quality water conservation plan	Agreement signed with City of Yuma	August 1999	0.1	\$25,000
Review three California conservation plans due in 1999	Review and comment on three plans	Sept 1999	0.1	
Long Range Goal Number 2 : Effective Conservation Measures				
Measure for 1999	Results Expected	Dates	Employee Years	Financial Match
Provide design assistance on existing water measurement agreements	Twenty new measurement structures	Continuing	0.3	
Provide soil moisture meter assistance to cooperating Universities and Districts.	Continue work on four irrigation demonstrations	Continuing	0.4	
Provide technical assistance on canal automation projects	Complete CRIT; begin work on three more: Bard, YID, and Unit B	Sept 1999	0.6	
Complete test version of AZSCHED, Internet based version of irrigation scheduling computer program.	Complete test or "Beta" version; ready for field testing	Aug 1, 1999	0.4	
Assist with water conservation education programs in Yuma County, Arizona	Grants to support four projects in Yuma County	Sept 1, 1999	0.1	\$70,000

Expand demonstration of new technology for soil salinity assessment	Two new Agreements to support demonstrations at IID and CRIT	July 15, 1999	0.1	\$120,000
Expand water measurement improvement program	Two new water measurement agreements for Fort Mohave Indian Tribe, and BIA / CRIT	July 15, 1999	0.1	\$70,000
Reconfiguration of CIMIS Internet site for California irrigation scheduling , to make more accesible;user-friendly; more graphical features	Agreement with Cal. Dept. of Water Resources, Southern Cal. Area Office, and Mid-Pacific Region	July 1, 1999		\$17,500

Long Range Goal Number 3 : Public Direction and Awareness

Measure for 1999	Results Expected	Dates	Employee Years	Financial Match
Newsletter	4 issues	Continuing	0.1	
News Articles	5 articles	Continuing	0.1	
Fairs and Field Days	2 fairs, 5 field days	Continuing	0.1	
Public Board Meetings	10 public board meetings	Continuing	0.1	

Long Range Goal Number 4 : Water Use Information & Data, and
Long Range Goal Number 5 : Area-Wide Conservation Inventory and Assessment

Work to begin in 2000

Totals for 1999:	Employee-years	3.1	
	Financial Match		\$302,500

PLAN OF ACTIVITIES FOR 2000

The “Field Services Program” plan for the year 2000 is under development and should include the following activities in accordance with our long range goals:

- I. Continued emphasis on conservation planning
 - A. Encourage and assist districts who are required to develop plans
 - B. Outreach to water users who are not required to develop plans
- II. Effective conservation measures
 - A. Quality technical assistance on existing cooperative projects
 - 1. Water measurement
 - 2. Canal automation
 - 3. Field testing of Internet irrigation scheduling software (AZSCHEM in Arizona and CIMIS in California)
 - 4. Assistance with irrigation water management demonstrations
 - 5. Assistance with improved water scheduling & accounting software
 - B. Development of new cooperative agreements
 - 1. Demonstration of new technology for soil salinity assessment in the Palo Verde valley
 - 2. Expansion of water measurement improvement program
 - 3. Expansion of canal automation program
 - 4. Demonstration project for surge irrigation in the Imperial valley
 - 5. Begin program to assist cooperating districts with improved water scheduling & accounting software
- III. Expand public outreach
 - A. Publicize results of completed projects
 - B. Information program - follow up to irrigation water management demonstrations
- IV. Water use information and data - Begin work to solicit support for
 - A. Irrigation surveys
 - B. District water operations assessments
- V. Area-wide conservation inventory & assessment
 - A. Develop plan of work
 - B. Begin development

APPENDIX A PHOTOS OF CONSERVATION PROJECTS



Broad Crested Weir in Earthen Canal



Long Throated Flume in Earthen Canal

Water Measurement Structures



USBR cooperates in the establishment of weather stations for improved irrigation water management.

Irrigation Scheduling



Studies and demonstrations of improved irrigation water management will provide good information for water users to improve their irrigation efficiency.

Irrigation Demonstrations

APPENDIX A (Continued)

PHOTOS OF CONSERVATION PROJECTS



An automatic controller being installed at a main canal. The controller will maintain constant water flows or levels requested by the water master at the district office via radio communication.



A gate position sensor is installed on a main canal radial gate, to electronically monitor the gate's position. This information helps the district to better measure and control its water.

Canal Automation



Part of an irrigation evaluation by a mobile lab, is measurement of the output and uniformity of undertree sprayers.

Irrigation Mobile Labs



USBR Hydrologic Technician Joe Espinoza takes flow measurement data in a lateral, needed to design a measurement device.

USBR Technical Assistance

APPENDIX C - LOCATION MAP

