

Section 1: Description of the District

District Name: Tulare Irrigation District

A. History (Add History Description Page Here)

The Tulare Irrigation District was organized September 21, 1889. The original proposal for the formation of an irrigation district covering 219,000 acres, extending from the Sierra Nevada foothills to Tulare Lake, was eventually reduced to 32,500 acres. The District continued in this status until January of 1948 when the so-called “Kaweah Lands” (approximately 11,000 acres) were annexed.

In October of 1948, approximately 31,000 acres, comprising the area served by the Packwood Canal Company were annexed to the District.

A U.S. Bureau of Reclamation contract was signed in 1950 providing an annual supply of 30,000 acre-feet of Class 1 water, and up to 141,000 acre-feet of Class 2 water from the Friant-Kern Canal.

After the annexations of the “Kaweah” and “Packwood” lands and the commencement of the diversion of the Central Valley Project water, the District proceeded with extensive improvements to the existing canal system, and the extension of the canal system to serve annexed areas. This work consisted of enlarging and/or relocating canals, constructing diversion structures, road crossings, checkgates, siphons, installing pipelines, etc. The majority of this work occurred between 1951 and 1964.

Since the completion of Terminus Dam in 1962, Kaweah River water rights owners have benefited by the regulation of the natural river flows – temporary storage of flood waters, uniform downstream releases, and options on the time and quantity of irrigation diversions.

The Kaweah Delta Water Conservation District (KDWCD) and the Tulare Irrigation District (TID) formed a joint-power authority in 1982 – the Kaweah River Power Authority (KRPA). The KRPA filed for a license to construct a 17MW hydroelectric plant at Terminus Dam and Lake Kaweah. KRPA proceeded with design and construction of the plant, and the plant went on-line in 1992 delivering power to Southern California Edison Company.

The District and KDWCD also have coordinated efforts to enhance the recharge of groundwater within the Kaweah Basin. During high flow times KDWCD may use the recharge basins within the District for recharge purposes. Further, KDWCD has historically provided for a financial incentive program through which the District sustains the level of groundwater recharge occurring within the Main Intake Canal, the primary artery delivering water from supply sources into the District. This historical program was

recently reinstated by both districts in lieu of the District’s plans to concrete-line this canal to conserve the surface water.

The Tulare Irrigation District is a political subdivision of the State of California – an independent agency operating under the California Water Code. It is governed by a 5-member Board of Directors.

1. Provide date district formed: 1889 Date of first Reclamation contract: Oct. 18, 1950
Original size (acres): 72,000 Current date (date of data entered): 2002

2. Provide size, population, and irrigated acres.

Size (square miles)	110.3
Population served	212
Irrigated acres	61,835

3. Provide water supplies received.

Water Source	Date <u> 1-1-02 to 12-31-02 </u>
Federal urban water	0
Federal agricultural water	40,026
State water	0
Local/other	0
Local surface water	61,445
Upslope drain water	0
District ground water	0
Transferred water	0
Reclaimed water	0
Other (define)	0
Total	101,471

4. Provide annual entitlement under each right and/or contract.

Agricultural AF/Y	AF	Source	Contract #	Contract Restrictions
Class I	30,000	San Joaquin River	175r-2485I	Federal
Class II	141,000	San Joaquin River	175r-2485I	Federal
Local	50,000 avg.	Kaweah River		State

5. Describe anticipated land- use changes (i.e., agricultural to municipal, etc.).

The District surrounds but does not contain the City of Tulare. Growth of the City of Tulare has accounted for exclusions of land from the District due to conversion of farmland to developed City land. The District and the city of Tulare have an agreement that requires the city to pay District tax assessments on any land removed from the District by the City. As the City of Tulare continues to grow into the District, these areas will convert from agriculture to development, and will not be served by the District.

6. *Cropping patterns.*

List crops with 5 percent or more of total acreage.

Acres are based on two rounds of crops. Some crops may be double counted on the same land.

Crop	Acres
Corn	20,936
Alfalfa	16,696
Cotton	15,162
Wheat	11,752

7. *List major irrigation methods (by acreage).*

Irrigation Method	Acres
Graded Surface	65,910
Level Basin	4,244
Trickle, surface	2,561
Sprinkler, solid set	161
All other	
Total	72,876

B. Location and Facilities

1. *2002 Agricultural Conveyance System*

Incoming Locations	Type of Measurement Device	Accuracy
Main Canal/North Branch Split	Parshall Flume	>94%
Cameron Creek @ Mooney's	Parshall Flume	>94%
Packwood Creek below Tagus	Weir	>94%
Evans Ditch	Weir	>94%

Miles Unlined - Canal	Miles Lined - Canal	Miles Piped	Miles - Other
300 +/-	1/4	30 +/-	Aquifer - G.W.

2.

3. *List storage facilities.*

The attached map shows the location and size of storage facilities.

4. *Describe agricultural spill recovery system.*

The District has no spill recovery system.

5. *Describe delivery system operation.*

District deliveries are on Modified Demand and only available when the District makes water available. The customer does request a start time, but the District requires 24 hrs. notice to make deliveries and canal capacities. The District typically makes water available for a spring pre-irrigation during the month of February, and summer irrigation during the months of June through August. These deliveries are dependent on the Districts water supply.

6. *Describe restrictions on the contractor's water source(s).*

Restriction	Cause of Restriction	Effect on District Operations
USBR Water Supply	EPA, PL-102-575	Loss of water Supply

7. *Describe proposed changes or additions to contractor's facilities and operations for the next 5 years.*

Increase ground water sinking basin acres is in the program.

C. Topography and Soils

1. *Describe topography of the district.*

District is relatively flat. No major topographic problems. USBR map on file.

2. Describe district soil associations.

NRCS soil classification maps are attached.

3. Describe limitations resulting from soil problems.

Soil Problem	Estimated Acres	Effect on Water Operations and Management
Akers- Akers saline-sodic		No limit Akers. Leaching to maintain low saline-sodic levels for Akers saline-sodic.
Biggriz- Biggriz saline-sodic		No limitations on Biggriz, crop limitations on Biggriz saline sodic, leaching required.
Crosscreek- Kai		Duripan effects drainage rate, Kai soils require saline-sodic leaching.
Flamen loam		Duripan effects drainage rate.
Gambogy loam		Sodicity requires leaching to maintain low sodic levels.
Gambogy loam- Biggriz saline sodic		Salinity and sodic levels require leaching to keep levels down.

D. Climate

1. Describe the general climate of the district.

Summers hot. Winters cold, frost & fog. Avg. winter precipitation of 10 – 12 inches of rain. Est. avg. daytime temp. in summer exceeding 95 degrees F. & winter avg. about 40 degrees F. Frost-free days average 250/year in the District. Mean wind speed is less than 10 mph prevailing from the NW. They're no known microclimates in the District.

Provide National Weather Service (or other source).

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Avg precip	2.0	1.98	2.09	0.80	0.37	0.14	.01	.02	.25	.58	1.22	1.6	11.03
Avg temp	46	52	56	61	68	75	80	79	74	65	54	46	63
Max temp	79	78	87	91	99	105	105	105	103	96	85	71	
Min temp	25	27	31	35	41	48	53	55	50	40	30	21	

Above data taken from: District Records Year 1988 to Year 2003

Predominant wind direction: NW

Average annual frost-free days: 250

2. *Impact of any microclimates on water management within the district.*

There are no known microclimates located within the District, primarily due to the flat topography of the area.

E. Natural and Cultural Resources

1. *Provide the name of the natural resources area within the district.*

Name	Estimated Acres	Description
Open space	65,000	Overseen by TID

2. *Describe management of these resources in the past or present by the district.*

Open space is privately owned.

3. *Provide the name of the recreational and/or cultural resources area.*

There are no Recreational or Cultural resources within the District. District land is predominantly privately held land used only for agriculture.

Name	Estimated Acres	Description
None		

F. Operating Rules and Regulations

1. *Attach a copy of the contractor's operating rules and regulations.*

2. *Describe contractor's agricultural water allocation policy.*

See Rules and Regulations appendix, Rule #4. Also on the Irrigation Operation Procedures appendix under Prorating of Water.

3. *Describe official and actual lead times necessary for water orders and shut-off.*

Officially, orders must be placed 24 hours in advance for both on and off orders. Actually, orders are accepted any time if it so fits District capabilities. (Rules and Regulations - Rule 4)

4. Describe contractor's policies regarding surface and subsurface drainage from farms.

The District's Board of Directors made a decision not to accept any drainage from farm operations. No new systems will be put in place for such drainage to occur.

5. Describe contractor's policies on water transfers by the contractor and its customers.

Landowners are allowed to move water in the District system.

G. Water Measurement, Pricing, and Billing

Agricultural Customers

1. Provide total number of customers: 212
2. Provide total number of 100 percent measured customers: 960
3. Provide total number of customer turnouts: 968
4. Provide total # of measured turnouts: 968
5. Provide percentage of water delivered that was measured at customer turnouts: 55%

6. Complete measurement device table.

Measurement Type	Number	Accuracy (+/-percentage)	Reading Frequency (Days)	Calibration Frequency (Months)	Maintenance Frequency (Months)
Orifices					
Propeller	18	99%	Once a day	When requested by farmer	Once every one or two years
Weirs					
Flumes					
Venturi					
Metered gates	950	97%	1-3 times a day when operating	When requested by farmer	When needed / varies
Total	968				

Agriculture and Urban Customers

13. *Describe contractor's current year agriculture water charges.*

Billed by quantity, currently 25 dollars an acre-foot - uniform monthly. Assessments 2 x/yr.

14. *Describe contractor's water-use data accounting procedures.*

Computer information accessible to landowners, 15 + years. District specific computer network system.

H. Water Shortage Allocation Policies

1. *Attach contractor's current year water shortage policies.*

See attached Rules and Regulations and Operating Procedures. During sever drought periods, no water is available and efforts are made to carryover any water to next year in storage.

2. *Attach contractor's current year policies that address wasteful use of water.*

See attached Rules and Regulations and Operating Procedures.

Section 2: Inventory of Water Resources

A. Surface Water Supply

1. *Acre-foot amounts of surface water delivered to the contractor by each of the contractor's sources.*

(Enter in Table 1)

Amount of water received under each right and/or contract for the last 10 years.

(Enter in Table 8)

B. Ground Water Supply

1. *Acre-foot amounts of ground water pumped and delivered by the contractor.*

(Enter in Table 2)

2. *Ground-water basin(s) that underlies the district.*

Name	Size (Square Mile)	Usable Capacity (AF)	Safe Yield (AF/Y)
Kaweah	Unknown	Est. 3.4 Million AF	740,000 AFY

3. *Contractor-operated wells and managed ground-water recharge areas.*

Attached map provides the size and location of recharge areas. Recharge capacity varies with time from 200 cfs/day for all basins and unlined canals within the district. Individual basin sinking capacities are not known. The District is in the process of implementing a program by which ditchtenders will keep daily records of inflow and outflow to each basin to provide an estimate of sinking capacity. Agreement with LSID to store ground water when available. Kaweah R. & supply varies and quality is excellent.

Name	(T, R, & Sec.)	Acreage	Recharge Capacity
Abercrombie	20 24 23	20	Unknown
Anderson	20 23 6	167	Unknown
Creamline	19 25 20	153	Unknown
Doris	21 23 6	21	Unknown
Enterprise	19 24 29	20	Unknown
Guinn	19 23 30	162	Unknown
Tagus	19 24 15	120	Unknown
Watte	20 23 34	19	Unknown
K.D.W.C.D. # 3	19 23 22	155	Unknown
K.D.W.C.D. #6	19 23 35	155	Unknown
K.D.W.C.D. #8	20 23 10	118	Unknown

4. *If there is conjunctive use of surface and ground water, describe it.*

The District has maintained an active conjunctive use program. It has been demonstrated that the most viable method of maintaining the District's groundwater basin is the continuation of our "in-lieu" recharge program. The in-lieu method of recharge relies on maximum use of available surface water so that minimum extraction of groundwater occurs. This has been an effective and efficient means of recharging the area's groundwater supply, and is one of the primary reasons why the District contracted for Class I and Class II water supply on the Friant Unit of the CVP. Between CVP and local surface water supplies, the District has been able to maintain a relatively steady depth to groundwater in the area with the exception of the drop produced by drought conditions observed recently. Obviously, this success depends on maximizing surface water imports.

5. *For managed ground-water basins, attach a copy of the management plan.*

There are no managed ground-water basins within the District.

6. *For participation in ground-water banking, attach a description of the banking plan.*

The District does not engage in ground-water banking.

C. Other Water Supplies

1. *Acre-foot amounts of "Other" water used as part of the contractor's water supply.*

See Tables 1 & 2 of the water accounting tables.

D. Source Water Quality Monitoring Practices

1. *Water quality problems.*

There are no water quality problems that limit the use of water.

3. *Agricultural contractors concerns:* Yes _____ No X

4. *Current water quality monitoring programs for surface water.*

The District collects GW samples each year if the ag. wells are operating on a select number of wells in the District. An effort is made to sample different wells on a year-to-year basis. About every 5 years we try to go back and resample some of the earlier wells to run a comparison analysis.

Analysis conducted by Growers Testing Services Visalia, CA

Analyses Performed	Frequency Range	Concentration Range	Average
Calcium	Annually	5.60 - 156.90 ppm	44.11
Magnesium	Annually	0.09 - 13.00 ppm	3.78
Sodium	Annually	3.00 - 120.00 ppm	44.63
Potassium	Annually	0.80 - 3.00 ppm	1.67
Carbonate + Bicarbonate	Annually	15.00 - 295.00 ppm	122.00
Chloride	Annually	7.10 - 95.70 ppm	26.33
Nitrate - Nitrogen	Annually	1.00 - 50.00 ppm	9.11
Sulfate - Sulfur	Annually	1.00 - 35.00 ppm	11.71
Boron	Annually	0.05 - 0.22 ppm	0.11
Phosphate - Phosphorus	Annually	<0.10 - 0.20 ppm	0.13
Zinc	Annually	<0.01 - 0.02 ppm	0.01
Manganese	Annually	<0.01 - 0.09 ppm	0.04
Iron	Annually	<0.01 - 0.02 ppm	0.01
pH	Annually	7.50 - 8.60 pH units	8.20
Ecw	Annually	0.02 - 1.31 mmhos/cm	0.44
SAR	Annually	0.43 - 4.65	2.08
pHc	Annually	6.89 - 9.47	7.95
Adjusted SAR	Annually	-0.02 - 7.41	2.84
TDS	Annually	50.00 - 979.00 ppm	344.86
Hardness	Annually	18.00 - 445.00 ppm	445.00

5. *Agricultural districts - Current year total dissolve solid range for surface water and ground water.*

Surface water: _____ ppm Ground water: _____ ppm

E. Water Uses Within the District

1. Agricultural

Complete Table 5 Agriculture

5. Ground-water recharge/management/banking.

Contractor operated ground-water recharge areas (as identified in Section 2,B).

Recharge Area	Method of Recharge	Year _____ (AF)	Year _____ (AF)	Year _____ (AF)
None				
	Total			

6. Transfers and exchanges.

Transfers into or out of the district.

From Whom	To Whom	Year	(AF)	Use
Garfield WD	TID	2002	650	Ag. To Ag.
Saucelito ID	TID	2002	850	Ag. To Ag.
Shafter Wasco ID	TID	2002	272	Ag. To Ag.
Stone Corral WD	TID	2002	500	Ag. To Ag.
TID	Cawelo ID via Arvin ID	2002	1,843	Ag. To Ag.
TID	SSJMUD	2002	300	Ag. To Ag.
TID	DEID	2002	3,706	Ag. To Ag.

7. Trades, wheeling, or other transactions.

From Whom	To Whom	Year	(AF)	Use
None				

8. *Any other uses of water.*

Other Uses	Year	AF
None		

F. Irrigation Drainage from the District.

1. *Surface and subsurface drain/return flows.*

Drain Location	Type of Use	Year (AF)
None		
	Total	

2. *Drainage Water Quality Testing Program*

Analyses Performed	Concentration Range	Frequency Range	Average
None			

3. *Contractor's role in the current year Drainage Testing Program.*

4. *Any usage limitation resulting from the drainage water quality.*

Constituent	Usage Limitation
None	

G. Water Accounting (Inventory)

Note: Completing Tables 1 through 8 satisfies all the water accounting data. If you have completed Tables 1 through 8, skip to the next section.

1. *Contractor Water Supplies Quantified*

- a. Surface water supplies, imported, and originating within the district, by month (Table 1).
- b. Ground water extracted by the district, by month (Table 2).
- c. Effective precipitation by crop (Ag Table 5).
- d. Estimated annual ground water extracted by non-district parties (Ag Table 2).

- e. Recycled urban waste water, by month (Table 3).
- f. Other supplies, by month (Table 3).

2. *Water Used Quantified*

- a. Conveyance losses, including seepage, evaporation, and operational spills (Table 4).
- b. Consumptive use by riparian vegetation (Table 6).
- c. Applied irrigation water, crop ET, water used for leaching, and cultural practices (e.g., frost protection, soil reclamation, etc.) (Table 5).
- d. Water use (Table 6).
- e. Ground-water recharge (Table 6).
- f. Water exchanges and transfers (Table 6).
- g. Estimated deep percolation within the district (Ag Table 7).
- h. Flows to perched water table or saline sink (Ag Table 7).
- i. Total urban waste water treated and discharged (Urban Table 8).
- j. Irrigation spill or drain water leaving the district (Table 6).
- k. Other (Table 6).

3. *Overall Water Inventory*

Section 3: Best Management Practices (BMPs) for Agricultural Contractors

A. Critical BMPs for Agricultural Contractors

1. Measure the volume of water delivered by the contractor to each customer with devices that are operated and maintained to a reasonable degree of accuracy, under most conditions, to +/- 6 percent.

Total number of customer turnouts that are unmeasured or do not meet the standards listed above: 0

Number of measurement devices installed last year: 0

Number of measurement devices installed this year: 0

Number of measurement devices to be installed next year: 0

Types of Measurement Devices to be Installed	Accuracy	Total to be Installed During Next Year
None		

2. Designate a water conservation coordinator to develop and implement the Plan and develop progress reports.

Name: J. Paul Hendrix Title: General Manager

Address: P.O. Box 1920 Tulare, CA 93274

Telephone: (559) 686-3425 Fax: (559) 686-3673 E-mail: jph@tulareid.org

3. Provide or support the availability of water management services to water users.

a. On-Farm Evaluations

1) On farm irrigation and drainage system evaluations using a mobile lab type assessment.

The District supports the availability of on farm irrigation and drainage system evaluations. We do this by maintaining a list of irrigation educators and professionals that provide these services at the District office. The Friant Water Users Authority

(FWUA) also maintains a list of educators and irrigation evaluation service providers, as well as providing reminders of this fact to District waterusers in the monthly newsletter The Friant Waterline. At this time the District is still investigating the possibility of providing these services through the Cal Poly San Luis Obispo ITRC and its contract with the Bureau of Reclamation. The District also plans to survey the waterusers to determine interest in such a program, and better coordinate the program should investigation prove it to be of benefit. Survey results will also be utilized in coordinating grant requests from the Bureau of Reclamation should interest levels prove high enough.

Total number of irrigated acres: 66,000 +/-

Number of irrigated acres to be surveyed per year by on-farm irrigation evaluations:
Varies

Total number of farms: 240 +/-

Number of farms to be surveyed per year by on-farm irrigation and drainage evaluations:
Varies

2) Timely field and crop-specific water-use information to the water user. ◆

Water use data is included in the monthly billing statement on a per turnout basis. As the District already provides the volume of water used through any given turnout and the individual water user can readily determine which field or crop it is applied to, providing this information would be a redundant duplication of efforts. Accounts of detailed daily water use are also already available to water users upon request.

b. Normal year and real-time irrigation scheduling and crop ET information (i.e., CIMIS). ◆

The FWUA provides this assistance via soil water use data, CIMIS Et_o data, and crop coefficient data on a daily basis. The newsletter provides information about access to this data.

c. Surface, ground, and drainage water quantity and quality data. ◆

See the description of the District's groundwater quality monitoring program provided earlier in this document (Sec. 2-D). This data is maintained at the District office and is available upon request to landowners.

- d. Agricultural water management educational programs and materials for farmers, staff, and public.

The District supports the availability of educational programs, materials, etc. through a joint program with the FWUA. The Friant Waterline and its inserts contain educational and informational articles regarding water conservation issues. The newsletter is also a periodic reminder that the FWUA maintains soil water use data, CIMIS Et₀ data, and crop coefficient data on a daily basis, as well as lists of water conservation educators(CSU Fresno CIT, Cal Poly San Luis ITRC, etc.), and class schedules. The District also maintains an onsite water conservation library available to all landowners.

4. *Pricing structure - Adopt a water pricing structure for contractor water users based at least in part on quantity delivered.*

The District pricing structure is broken into water cost on a per acre-ft basis and a flat per acre of owned land environmental charge. The environmental charge is applied to all landowners in the District. The conjunctive use program of the District requires that the price for water on a per acre-ft basis be competitive with the cost to pump groundwater. If the per acre-ft cost of water rises above the energy costs of pumping groundwater, the waterusers will simply pump groundwater instead of purchasing surface water. At this time estimates of the cost of energy to pump one acre-ft range between \$20 and \$30 dollars depending upon the efficiency or energy source of the pump. Due to the supplementary nature of the District water supply, if water users do not purchase surface water when it is available, the groundwater overdraft in the district will continue. This pricing structure was adopted in Oct. 1992 and is ongoing.

5. *Evaluate the need for changes in policies of the institutions to which the contractor is subject.*

The ability to make water orders from the Friant-Kern Canal with less than 24 hours notice might enable the District to increase the flexibility of its system.

6. *Evaluate and improve efficiencies of contractor's pumps.*

The District has no deep wells or attendant pumps in operation. The District coordinates pump testing between individual landowners and SCE or PG&E upon request of the individual landowner. The District advertises this service through the FWUA and the monthly newsletter. Every few years the District will request from the utility companies any results of efficiency tests performed on pumps within the District for the years since the last request.

B. Exemptible BMPs for Agricultural Contractors

1. Facilitate alternative land use.

No irrigated lands with unmanageable drainage problems exist in the District. Nor do any whose irrigation would lead to unmanageable problems.

Drainage Characteristic	Acreage	Potential Alternate Use
High water table (<5 feet)	0	
Poor drainage	0	
Ground water Selenium concentration > 50 ppb	0	
Poor productivity	0	

2. Facilitate use of available recycled urban waste water that otherwise would not be used beneficially, meets all health and safety criteria, and does not cause harm to crops or soils.

Due to the State Water Resources Control Board (SWRCB) issues, the District and the City of Tulare have placed a low priority on the idea of receiving treated urban wastewater percolated into the aquifer below the City sewer treatment plant. Instead, the District and the City are working on acquiring permits from the SWRCB to allow the District to receive treated urban wastewater directly from the sewer treatment plant. The program would include an extensive water quality monitoring system, which will also be used to ensure that no detrimental water quality impacts occur due to the program.

Sources of Recycled Urban Waste Water	AF/Y Available	AF/Y Currently Used by Contractor
Tulare Sewer Treatment Plant	N/A	None

3. Facilitate the financing of capital improvements for on-farm irrigation systems.

The District supports the availability of on farm irrigation and drainage system evaluations. We do this by maintaining a list of irrigation educators and professionals that provide these services at the District office. The Friant Water User Authority (FWUA) also maintains a list of educators and irrigation evaluation service providers, as well as providing reminders of this fact to District water users in the monthly newsletter The Friant Waterline. At this time the District is still investigating the possibility of providing these services through the Cal Poly San Luis Obispo ITRC and its contract with the Bureau of Reclamation. The District also plans to survey the water users to determine interest in such a program, and better coordinate the program should investigation prove it to be of benefit. Survey results will also be utilized in coordinating grant requests from the Bureau of Reclamation should interest levels prove high enough.

4. Incentive pricing.

The District has maintained an active conjunctive use program. It has been demonstrated that the most viable method of sustaining groundwater levels beneath the District is the continuation of our in-lieu recharge program. The in-lieu method of recharge relies on maximum use of available surface water so that minimum extraction of groundwater occurs. This has been an effective and efficient means of recharging the area's groundwater supply, and is one of the primary reasons why the District contracted for Class I and Class II water supply on the Friant Unit of the CVP. Between CVP and local surface water supplies, the District has been able to maintain a relatively constant depth to groundwater in the area with the exception of the drop produced by drought conditions observed in the last decade. The future success of the program depends on maximizing surface water imports.

Current billing is on a quantity delivered basis with an assessment charge assessed on a per acre basis. It is important for the price of District water to remain competitive with the cost of pumping groundwater for our conjunctive use program to remain effective. If prices for District water rise beyond pumping costs, on a quantity delivered basis, water users will simply pump groundwater. This will result in a return to overdraft conditions in the area. One of the reasons for the assessment charge being applied on a per acre basis to all landowners in the District is that it aids in keeping water sale prices at levels competitive with pumping groundwater.

Even with this strategy, the cost of District water is many times higher than it has been on a historical basis. This high cost of water serves as an incentive to conserve and better manage the water purchased by water users in the District.

5. a) *Line or pipe ditches and canals-accomplished during last 5 years or planned for next 5 years.*

This BMP is not applicable to most of the canal system within the District, which will remain unlined by intention. The District maintains an aggressive conjunctive use program to maintain and decrease the depth to groundwater underneath. This program utilizes all unlined canals estimated to provide 450 acres of recharge basin capacity, as well as over 1,000 acres of recharge basins to provide for recharge of the groundwater table. The conversion of these unlined canals to lined canals would adversely impact the District’s ability to recharge groundwater. In 2000, the District ceased its efforts to line the Main Intake Canal lying outside of the District boundaries due to easement and right-of-way issues that remain unresolved. One quarter mile stretch of ditch within the District was converted to pipeline due to operational issues.

Canal/Ditch (Reach)	Type of Improvement	Number of Miles in Reach	Estimated Seepage (AF/Y)	Accomplished/Planned Date
Raviscioni Ditch	Pipeline	1/4	40 - 60	Sept. 2002

b) *Regulatory reservoirs-accomplished during last 5 years or planned for next 5 years.*

This BMP is not applicable to the District. As stated previously, the District is engaged in an aggressive conjunctive use program. Large parts of this program are the basins within the District boundaries. All District basins are used to recharge the local groundwater table. Some of these recharge basins also serve the purpose of water control/regulation reservoirs. Lining any of these basins would adversely impact the District’s ability to recharge the local groundwater table.

6. *Increase flexibility in water ordering by, and delivery to, water users.*

Note: Provide a copy of a sample bill and water order.

The District provides surface water to landowners on demand with 24 hours notice before delivery and shutoff. This water is supplemental to the water users’ other source of water, groundwater pumping. This primary source of water can be turned on and off with a switch, on demand with almost no notice, to provide any flexibility level required. Therefore District water, delivered in an open-canal system with its inherent

limitations in allowing for rapid operational changes, is not a significant factor in providing on-farm delivery flexibility. Given this, current levels of flexibility are deemed adequate.

7. Construct and operate district spill and tailwater recovery systems with measurement.

There is minimal operational spill of CVP water out of the District system. What spill does occur is generally flood release water from the Kaweah River that the District is obligated to pass through its system. In either case, the District maintains regulating/reuse/recharge reservoirs near the end of all major canals within the District to prevent or minimize operational spills. The names of these basins are Anderson, Doris, Enterprise, Guinn, and Watte. These basins appear on the attached District facilities map.

Acres where tailwater does drain into distribution system: N/A

Annual tailwater collected (AF/Y): N/A

Acres where tailwater is currently lost: N/A

Estimated potential additional tailwater recovery (AF/Y): N/A
(Measure within 3 years.)

8. Optimize conjunctive use of surface and ground water.

As stated previously in this document, the District has an aggressive conjunctive use program. This system consists of unlined canals equivalent to 450 acres of recharge basin as well as over 1,000 acres of recharge basins within District boundaries. When water supply permits, the District fully utilizes existing recharge basin capacity, and therefore, additional recharge sites are under consideration. This program actively seeks to procure lands for more sinking basins when property is offered for sale (east of Highway 99), and is affordable to the District at market value. Imminent domain acquisition is possible but the District seeks to avoid this method as much as possible.

9. Automate canal structures.

The District continues to study the feasibility of automating selected canal control structures at key locations within the system.

10. Facilitate or promote water customer pump testing and evaluation.

The District coordinates pump testing between individual landowners and SCE or PG&E upon request of the individual landowner. The District advertises this service through the FWUA and the monthly newsletter. Every few years the District will request from the utility companies any results of efficiency tests performed on pumps within the District for the years since the last request.

C. Provide a 3-Year Budget for Expenditures and Staff Effort for BMPs
 (Current year and 2 projected years budget for all BMPs.)

3-Year Budget and Staff Time Summary

1. Amount actually spent last year.

Year _____		Total Budget	Staff Time	
BMP #	BMP Name	(Including Staff Time)	(Hours)	(\$)
A1	Measurement	\$10,000	600	\$0
2	Conservation staff	\$1,250	50	\$1,250
3	On-farm	\$250	10	\$250
	CIMIS	\$500	20	\$500
	Water quality	\$1,750	80	\$1,450
	Agricultural Education Program	\$minimal	minimal	\$minimal
4	Quantity pricing	\$250	10	\$250
5	Policy changes	\$minimal	minimal	\$minimal
6	Contractor's pumps	\$3,500	35	\$875
B1	Alternative land use	\$0	0	\$0
2	Urban recycled water use	\$500	20	\$500
3	Facilitate financing of on-farm systems	\$250	10	\$250
4	Incentive pricing	\$0	0	\$0
5	Line or pipe canals/install reservoirs	\$11,500	450	\$11,250
6	Increase delivery flexibility	\$0	0	\$0
7	District spill/tailwater system	\$0	0	\$0
8	Optimize conjunctive use	\$1,283,000	25,000 - 35K	\$700,000
9	Automate canal structures	\$1,900	75	\$1,900
10	Customer pump testing	\$minimal	minimal	\$minimal
	Total	\$1,314,650	0	\$0

2. Projected budget and staff time summary for the next 2 years.

Year _____		Total Budget	Staff Time	
BMP #	BMP Name	(Including Staff Time)	(Hours)	(\$)
A1	Measurement	\$5,000	200	\$0
2	Conservation staff	\$1,250	50	\$1,250
3	On-farm	\$125 - 500	5 - 20	\$125 - 500
	CIMIS	\$500	10	\$500
	Water quality	\$1,750	80	\$1,450
	Agricultural Education Program	\$minimal	minimal	\$minimal
4	Quantity pricing	\$250	10	\$250
5	Policy changes	\$2,000	10 - 100	\$2,000
6	Contractors pumps	\$3,500	35	\$875

B1	Alternative land use	\$0	0	\$0
2	Urban recycled water use	\$125 - 5000	5-200	\$125 - 5000
3.	Facilitate financing of on-farm systems	\$125 - 5000	5-200	\$125 - 5000
4	Incentive pricing	\$0	0	\$0
5	Line or pipe canals/install reservoirs	\$0	0	\$0
6	Increase delivery flexibility	\$0	0	\$0
7	District spill/tailwater system	\$0	0	\$0
8	Optimize conjunctive use	\$1,000,000	30,000	\$750,000
9	Automate canal structures	\$2,000	80	\$2,000
10	Customer pump testing	\$0-1000	0-40	\$0-1000
	Total	\$1,016,625 - 1,027,750	0	\$0

Year _____		Total Budget	Staff time	
BMP #	BMP Name	(Including Staff Time)	(Hours)	(\$)
A1	Measurement	\$5,000	200	\$0
2	Conservation staff	\$1,250	50	\$1,250
3	On-farm	\$125 - 500	5 - 20	\$125 - 500
	CIMIS	\$500	10	\$500
	Water quality	\$1,750	80	\$1,450
	Agricultural Education Program	\$minimal	minimal	\$minimal
4	Quantity pricing	\$250	10	\$250
5	Policy changes	\$2,000	10 - 100	\$2,000
6	Contractors pumps	\$3,500	35	\$875
B1	Alternative land use	\$0	0	\$0
2	Urban recycled water use	\$125 - 5000	5-200	\$125 - 5000
3.	Facilitate financing of on-farm systems	\$125 - 5000	5-200	\$125 - 5000
4	Incentive pricing	\$0	0	\$0
5	Line or pipe canals/install reservoirs	\$0	0	\$0
6	Increase delivery flexibility	\$0	0	\$0
7	District spill/tailwater system	\$0	0	\$0
8	Optimize conjunctive use	\$1,000,000	30,000	\$750,000
9	Automate canal structures	\$2,000	80	\$2,000
10	Customer pump testing	\$0-1000	0-40	\$0-1000
	Total	\$1,016,625 - 1,027,750	0	\$0

Section 5: Plan Implementation

Pursuant to water service and settlement contract terms, contractors must report on Plan implementation annually.

Agricultural contractors can complete an annual update by filling in the information for BMPs on the WaterShare web site at www.usbr.gov/mp/watershare/.

Urban contractors can complete an annual update by filling in the information for urban BMPs on the CUWCC website. Contractors who are signatories of the CUWCC are currently submitting annual reports via the CUWCC's *BMP Reporting Database* located on their web site at www.cuwcc.org. Through an agreement with the CUWCC, Reclamation's urban non-signatories may now submit their Annual Reports through the CUWCC's web site using "guest accounts." Urban BMPs are reviewed based on the CUWCC's MOU (amended March 14, 2001).

Section 6: Exemption Process

Some BMPs are not appropriate or possible for a contractor to implement. To document an exemption, refer to the guide for methods of justification and insert justifications here.

Exemptible Best Management Practice 1. *Facilitate alternative land use*

No irrigated lands with unmanageable drainage problems exist in the District. Nor do any whose irrigation would lead to unmanageable problems.

Exemptible Best Management Practice 5a. *Line or pipe ditches and canals*

The District maintains an aggressive conjunctive use program to maintain and decrease the depth to groundwater underneath. This program utilizes all unlined canals estimated to provide 450 acres of recharge basin capacity, as well as over 1000 acres of recharge basins to provide for recharge of the groundwater table. The conversion of these unlined canals to lined canals would adversely impact the District's ability to recharge groundwater.

Exemptible Best Management Practice 5b. *Construct regulatory reservoirs to improve distribution system delivery flexibility.*

What is not said in the title of the BMP is the idea of lining the reservoirs to prevent seepage. The District is always looking for land to expand regulatory reservoir acreage, however lining of the reservoirs would not be environmentally feasible. As stated previously, the District is engaged in an aggressive conjunctive use program. Large parts of this program are the basins within the District boundaries. All District basins are used to recharge the local groundwater table. Some of these recharge basins also serve the purpose of regulatory reservoirs. Lining any of these basins would adversely impact the District's ability to recharge the local

groundwater table.

Section 7: Regional Criteria

There are no Regional Criteria at this time. If in the future regional criteria are considered, they will be developed as a separate document.

Section 8: Five-Year Plan Revision Procedure

No data required. Refer to Guidebook for explanation.

Attachment D

Crop List

barley	cabbage	berries (all kinds)
corn - field	carrots	cherries
oats	cauliflower	grapefruit
rice	celery	lemon / limes
sorghum	corn	oranges / tangerines
wheat	cucumbers	dates
other cereals	garlic	grapes
	greens	olives
alfalfa	lettuce	peaches
clover	melons	pears
irrigated pasture	onions	prunes / plums
other hay	peas	strawberries
silage	peppers	other fruits
other forage	potatoes	
	squash	almonds
cotton	tomatoes	pecans
hops	other vegetables	pistachios
safflower		walnuts
sugar beats	Sudan grass	other nut trees
soybeans	Bermuda grass	
other field crops	other grasses	ornamental nursery
		joboba
asparagus	apples	other
beans	apricots	
broccoli	avocados	

Irrigation Methods List

Level basin, 1/4 mile
Level basin, 1/8 mile
Graded, surface 1/2 miles
Graded, surface 1/4 miles
Graded, surface 1/8 mile
Sprinkler, center pivot
Sprinkler, linear move
Sprinkler, solid set
Sprinkler, hand move
Trickle, spray

Trickle, subsurface
Trickle, surface