Central California Irrigation District
Water Management Plan
2011

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Section I: Description of the District

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A. History

Organization of the Central California Irrigation District occurred under the provisions of the California Irrigation District Act and was approved by a vote of the people held on October 9, 1951.

The early history of our canal system and its various parent companies dates back to March 7, 1866. Mr. John Bensley became involved in a corporation formed to build an irrigation and barge canal system that would connect Tulare Lake Basin with the San Joaquin River at Mendota Pool. From here he would build a new canal system connecting the Mendota Pool with the Sacramento, San Joaquin Delta, San Francisco Bay, and the Pacific Ocean – all of which was no small undertaking. Construction began on the first leg in Tulare Lake Basin in 1852.

In order for the newly formed corporation to succeed it needed assurances that irrigation water could be sold from the canal system as it traversed the valley floor. By the early 1870's, the Miller & Lux holdings has already established control of much of the land immediately to the north of the Mendota Dam site. Thus, the financial dependency of the fledgling company required it to strike a deal with the Miller & Lux interests.

Under the agreement entered into on May 18, 1871, Miller & Lux subsidized the newly formed canal company. In exchange, the newly formed company agreed to provide Miller & Lux with a discounted price on irrigation and livestock water. This same year also witnessed the construction of the first permanent dam facility at the Mendota Pool. The new structure impounded the entire flow of the San Joaquin River and the Fresno Slough, re-diverting these to the headworks of the newly constructed Main Canal.

Unfortunately for its investors, the canal company never proved to be a financial success. As they became more and more disenchanted, Miller & Lux was ever ready to purchase outstanding stock at a greatly reduced price. These stock acquisitions continued until Miller & Lux finally wrestled control away from investors. As the major stockholder, they immediately embarked on a rapid-fire campaign of canal construction. From the early 1870's through the 1920's, virtually all construction of what is now the Central California Irrigation District occurred.

In 1933, the United States Department of Interior negotiated with the heirs of Miller & Lux for the acquisition of the riparian rights from the area which is now identified as the Grassland Water District. At the same time, they negotiated for an exchange of water between the Central Valley Project and Miller & Lux's riparian water rights on the San Joaquin River. As part of the Central Valley Project (CVP) the

United States proposed to construct and operated a new dam on the Sacramento River above Shasta. Transport of water stored behind this facility would be down the Sacramento River to the Delta. It would then be pumped from the Delta into a newly constructed Delta-Mendota Canal terminating at the Mendota Pool. In addition, as part of the project Miller & Lux exchanged water rights to the San Joaquin for water from the CVP. Water from these rights would be impounded behind what is now Friant Dam, where it would be redistributed along the east side of the valley through the Friant Kern canal.

Obviously, a major ingredient of this entire project was the negotiation of an exchange of water between the heirs of Henry Miller and the Federal government. Without such an agreement there would have been no Central Valley Project. The parties finally reached an agreement in 1937. This accord, "The Exchange Contract," remains the backbone of the Central California Irrigation District's water supply to this day.

As mentioned earlier, Central California Irrigation District came into being in 1954 as a result of an election by landowners who were then receiving water from the San Joaquin Canal Company, a former Miller & Lux holding. Shortly after this, landowners held a second election for the purpose of levying a general obligation bond against the properties within the newly formed District. Through the sale of these bonds, they raised enough capital to purchase the assets, including water rights and distribution system, from the San Joaquin Canal Company. In 1954, the newly formed district took over the operation of the Canal Company.

1. Date district formed: 1954 *Date of first Reclamation contract:* July, 1939

Original size (acres): 143,699 *Current year (last complete calendar year):* 2011

2. Current size, population, and irrigated acres

	2011
Size (acres)	143,336
Population served (urban connections)	5,000+/-
Irrigated acres	141,821

3. Water supplies received in current year

Water Source	*AF*
Federal urban water (Tbl 1)	0
Federal agricultural water (Tbl 1)	509,899
State water (Tbl 1)	0
Other Wholesaler (define) (Tbl 1)	0
Local surface water (Tbl 1)	0
Upslope drain water (Tbl 1)	0
District groundwater (Tbl 2)	23,872
Banked water (Tbl 1)	0
Transferred water (Tbl 1)	0
Recycled water (Tbl 3)	0
Other (define) (Tbl 1) (DRAIN)	45,285
Total	579,056

4. Annual entitlement under each right and/or contract

The Exchange Contract provides for the annual delivery of 532,000 acre-feet under non-critical year hydrologic conditions. Under critical year hydrologic conditions, the delivery is reduced to 423,900 acre-feet. The Exchange Contract also provides for maximum monthly water entitlements.

	AF	*Source*	*Contract #*	*Availability period(s)*
Reclamation Urban AF/Y	N/A			
Reclamation Agriculture AF/Y	532,000	Exchange Contract	I1r-1144	January – December (12 Months)
Other AF/Y	N/A			

5. Anticipated land-use changes. For Ag contractors, also include changes in irrigated acres.

Central California Irrigation District does not anticipate any significant land-use changes over the next 5 years.

6. Cropping patterns (Agricultural only)

List of current crops (crops with 5% or less of total acreage) can be combined in the 'Other' category.

Original Plan (1993)		*Previous Plan (2004)*		*Current Plan 2011*	
Crop Name	*Acres*	*Crop Name*	*Acres*	*Crop Name*	*Acres*
Cotton	unk	Cotton	35,650	Alfalfa	38,614
Tomato	unk	Tomato	8,703	Beans	3,629
Corn	unk	Corn	14,496	Corn (Dbl Crop)	22,241
Alfalfa	unk	Alfalfa	37,558	Cotton	31,432
				Oats (Dbl Crop)	13,506
				Tomatoes	12,177
				Wheat (Dbl Crop)	10,325
				Orchard	11,447
				Perm Pasture	3,655
				Rice Sudan	2,594 2,177
Other (<5%)		*Other (<5%)*	44315	*Other (<5%)*	6,924
Total		*Total*	140,722	*Total*	158,721

7. Major irrigation methods (by acreage) (Agricultural only)

Original Plan (1993)		*Previous Plan (2004)*		*Current Plan 2011*	
Irrigation Method	*Acres*	*Irrigation Method*	*Acres*	*Irrigation Method*	*Acres*
Level Basin	unk	Level Basin	83,987	Level Basin	56,834
Furrow/Flood	unk	Furrow/Flood	59,410	Furrow/Flood	62,268
Sprinkler	unk	Sprinkler	3,698	Sprinkler	1,149
Low-volume	unk	Low-volume	1,924	Low-volume	21,569
Multiple	unk	Multiple			
Other		*Other*		*Other*	
Total	unk	*Total*	149,019	*Total*	141,821

B. Location and Facilities

See Attachment A-1 and A-2 for maps containing the following: incoming flow locations, turnouts (internal flow), conveyance system, storage facilities, operational loss recovery system, district wells and lift pumps.

1. Incoming flow locations and measurement methods

Location Name	*Physical Location*	*Type of Measurement Device*	*Accuracy*
Mendota Dam	Mendota Pool	Rated Canal Section & Doppler Meter	+/- 3%
Main Canal	Mendota Pool	Rated Canal Section & Metered upstream of control weir	+/- 3%
Outside Canal	Mendota Pool	Rated Canal Section & Metered upstream of control weir	+/- 3%
Helm Ditch	Mendota Pool	Propeller Meter	+/-3%
DMC	Mile Post 58.27	Propeller Meter	+/-3%
DMC	Mile Post 60.65	Propeller Meter	+/-3%
DMC	Mile Post 76.05	Rated Canal Section & Doppler Meter	+/-3%
DMC	Mile Post 83.08	Propeller Meter	+/-3%
DMC	Mile Post 85.05	Propeller Meter	+/-3%
DMC	Mile Post 86.17	Propeller Meter	+/-3%

2. Current year Agricultural Conveyance System

Miles Unlined – Canal	*Miles Lined – Canal*	*Miles Piped*	*Miles – Other*
251	5.34	0	322 Private

3. Current year Urban Distribution System N/A

Miles AC Pipe	*Miles Steel Pipe*	*Miles Cast Iron Pipe*	*Miles – Other*

4. Storage facilities (tanks, reservoirs, regulating reservoirs)

Name	*Type*	*Capacity (AF)*	*Distribution or Spill*
Colony Reservoir	Regulating	35	Distribution & Spill
Laguna Reservoir	Regulating	20	Distribution & Spill
Gustine Reservoir	Regulating	35	Distribution & Spill
Ingomar Reservoir	Regulating	200	Distribution & Spill

5. Description of the agricultural spill recovery system and outflow points.
In addition to the above regulating reservoirs, the District automated the Main and Outside Canals to automatically reduce or recover spills from the system.

6. Agricultural delivery system operation (check all that apply)
CCID employs a watermaster who monitors the daily needs of the delivery system through coordination with the various canal workers throughout the District. Our farmers contact the canal workers with their water needs and the canal workers relay these requests to the watermaster during morning calls. The watermaster then adjusts the canal levels to meet the demand, taking into account current conditions. Modernization allows the District to monitor the canal elevations and flow rate using SCADA technology. This has resulted in significant water conservation as well as improved water service to all users. All system operations are governed under Rule 12, of Rules and Regulations (Attachment C).

Scheduled	*Rotation*	*Other (describe)*
X		

7. Restrictions on water source(s)

Source	*Restriction*	*Cause of Restriction*	*Effect on Operations*
	Water Transfer guidelines (Federal & State)	Public Law I02-575	Transfer out of the area

8. Proposed changes or additions to facilities and operations for the next 5 years
The District has employed Cal Poly ITRC in developing a 10 year conservation plan. We are in the process of accomplishing projects prioritized in the plan. The District has budgeted $8 million in the next 5 years for District owned facilities improvements as well as $6 million for grants and $5 million for loans through our Water Conservation Program for on-farm projects.

C. Topography and Soils

1. Topography of the district and its impact on water operations and management
The District has slopes that range from 30 feet per mile in the foothills to 1 foot per mile in the lower bottom lands of the District. Several creeks cross the District, with sloughs and wetlands scattered throughout the area. Production land is generally flat, with deep, loam soils prevalent throughout the agricultural area.

2. District soil association map (Agricultural only)
The general soils maps showing soil associations, map showing soil mapping units, and the descriptions of NRCS soil series soils occurring in Central California Irrigation District are included in **Attachment B1 - 3.**

Soil Association	*Estimated Acres*	*Effect on Water Operations and Management*
*Bolfar Clay Loam	4,100	Partial drainage
–*Dos Palos Clay	5,085	Partial drainage

*See complete soil on Attachment B1-3.

3. Agricultural limitations resulting from soil problems (Agricultural only)

Soil Problem	*Estimated Acres*	*Effect on Water Operations and Management*
Salinity	6,000	Salt in soil profiles
High Water Table	0	Crop root zone damage
High or low infiltration rates	0	Irrigation uniformity
Other (define)	0	N/A

D. Climate

1. General climate of the district service area

The general climate of the District service area is mild winters with dense fog at times; no snow; hot summers.

	Jan,	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Annua
Avg. Precip. (1)	1.6	1.5	2.3	0.9	0.34	0.7	0.0	0.0	0.0	0.64	0.88	0.12	8.98
Avg. Temp (2)	52	61	65	72	76	85	93	95	93	79	63	58	74
Max Temp (2)	64	73	76	86	97	104	103	100	100	89	78	64	86
Min.Temp (2)	28	32	37	36	45	52	54	56	55	46	37	26	42
ETo (3)	0.93	1.73	3.53	5.62	7.30	8.16	8.42	7.32	5.49	3.86	1.90	1.0	55.26

(1) Weather Station ID 04-5118-05
(2) January 2011 thru December 2011
(3) Using Calif DWR data

2. Impact of microclimates on water management within the service area

None.

E. Natural and Cultural Resources

1. Natural resource areas within the service area

Name	*Estimated Acres*	*Description*
None		

2. Description of district management of these resources in the past or present **N/A**

3. Recreational and/or cultural resources areas within the service area

Name	*Estimated Acres*	*Description*
Volta NWA	13,235	Wildlife Refuge
China Island	11,001	Wildlife Refuge
Kesterson NWA	7,600	Wildlife Refuge
San Luis NWA	8,200	Wildlife Refuge
West Gallo	5,000	Wildlife Refuge

F. Operating Rules and Regulations

1. Operating rules and regulations
See Attachment C, "Rules and Regulations of Central California Irrigation District Governing the Distribution and Use of Water" were adopted by the CCID Board of Directors June 27, 1956 and last revised January 10, 1990.

2. Water allocation policy (Agricultural only)
See Attachment C, Rule 13

3. Official and actual lead times necessary for water orders and shut-off (Agricultural only)
See Attachment C, Rule 12

4. Policies regarding return flows (surface and subsurface drainage from farms) and outflow (Agricultural only)
See Attachment C, Rule 4

5. Policies on water transfers by the district and its customers
See Attachment D, Central California Irrigation District Water Transfers Rules and Regulations

See Attachment E, San Joaquin River Exchange Contractors Water Authority Water Transfer Policy

G. Water Measurement, Pricing, and Billing

1. Agricultural Customers

a. *Number of delivery points* 1,232
b. *Number of delivery points serving more than one farm* 285
c. *Number of measured delivery points* 1,232
d. *Percentage of delivered water that was measured at delivery point* 100%

2. Urban Customers **N/A**

a. *Total number of connections* 1
b. *Total number of metered connections* 1
c. *Total number of connections not billed by quantity* 0
d. *Percentage of water that was measured at delivery point* 100%
e. *Percentage of delivered water that was billed by quantity* 100%
f. *Measurement device table*

Meter Size and Type	*Number*	*Accuracy* (+/-percentage)*	*Reading Frequency (Days)*	*Calibration Frequency (Months)*	*Maintenance Frequency (Months)*
5/8-3/4"					
1"					
1 ½"					
2"					
3"					
4"					
6"					
8"					
10"	1	+/-2%	Daily	Annually	Annually
Compound					
Turbo					
Other (define)					
Total					

3. *Agricultural and Urban Rates*

a. *Current year agricultural and /or urban water charges - including rate structures and billing frequency*

CCID sets the water rates annually. Water delivered in January, February, and March is currently charged at $7/af (acre-foot) without per acre quantity limit during this period. During April through October, tiered pricing is in effect as follows:

Tier 1	0 – 3.0 af/ac	@	$ 7.00/af
Tier 2	3.0 – 3.5 af/ac	@	$16.00/af
Tier 3	3.5 – 4.0 af/ac	@	$31.00/af
Tier 4	4.0 af/ac and up	@	$61.00/af

We generally have a limited water supply for November and December. This water is on an "if and when available" basis and is on a first-come, first-served basis at $7/af.

See Attachment F, Letter from Board of Directors establishing water rates for 2011

b. Annual charges collected from agricultural customers

Fixed Charges			
Charges ($ unit)	*Charge units $/acre, etc.*	*Units billed during year acres, etc.*	*$ collected ($ times units)*

Volumetric charges			
Charges ($ unit)	*Charge units $/AF, etc.*	*Units billed during year AF, etc.*	*$ collected ($ times units)*
Tier 1	$7.00/af	373,216	$2,612,512
Tier 2	$16.00/af	22,626	$ 362,022
Tier 3	$31.00/af	7,700	$ 238,700
Tier 4	$61.00/af	6,760	$ 412,366

See Attachment G, Central California Irrigation District Sample Bill

Urban:

Annual charges collected from urban customers

Fixed Charges			
Charges ($ unit)	*Charge units ($/meter size) etc.*	*Units billed during year (by meter size) etc.*	*$ collected ($ times units)*
N/A			

Volumetric charges			
Charges ($ unit)	*Charge units ($/HCF), etc.*	*Units billed during year HCF, Kgal, etc.*	*$ collected ($ times units)*
$55	Per acre foot	1,238	$68,090

Water deliveries for the City of Dos Palos during the past 5 years:

2007 1,719 AF
2008 1.515 AF
2009 1,120 AF
2010 1,258 AF
2011 1,238 AF

c. *Describe the contractor's record management system*

District records agricultural water use on a daily basis. Growers may request that information from the District Office. Monthly billing shows water use by turnout, by farm, for the past 30 days. All delivery records are kept at the District Office and are available to Growers upon request.

H. Water Shortage Allocation Policies

1. *Current year water shortage policies or shortage response plan - specifying how reduced water supplies are allocated*

See Attachment C, Rule 13

Urban: The City of Dos Palos has a right by contract to receive up to 2,500 af/yr of CCID's Exchange Contract water (untreated Ag water) due to their not having available groundwater.

2. *Current year policies that address wasteful use of water and enforcement methods*
No written policy. Active operations policy is for CCID to contact abnormally high use water customers to determine cause. If use is determined to be excessive, solutions are discussed and waste is reduce.

I. Evaluate Policies of Regulatory Agencies Affecting the Contractor and Identify Policies that Inhibit Good Water Management.

CCID is one of four Exchange Contractors. The conveyance and storage polices of the Central Valley Project affects us differently than the Bureau's federal contractors because of the Exchange terms. With our very successful Water Conservation Program and continued work with the Bureau on future policies and programs, the Exchange Contractors will work toward future conservation and flexibility for all CVP water users.

Section II: Inventory of Water Resources

A. Surface Water Supply

1. Surface water supplies in acre feet, imported and originating within the service area, by month (Table 1).
The agricultural tables are included in Section V, Water Inventory Tables.

2. Amount of water delivered to the district by each of the district sources for the last 10 years
See Section V, Water Inventory Tables, Table 8.

B. Groundwater Supply

1. Groundwater extracted by the district and delivered, by month (Table 2)
See Section V, Water Inventory Tables, Table 2.

2. Groundwater basin(s) that underlies the service area

Name	*Size (Square Miles)*	*Usable Capacity (AF)*	*Safe Yield (AF/Y)*
Delta-Mendota Basin	Unk	4,440,000	503,000

3. Map of district-operated wells and managed groundwater recharge areas
See Attachment A-2, for District Deep Wells and Lift Pumps Map

4. Description of conjunctive use of surface and groundwater
District supplements summer irrigation requirements with groundwater to meet grower demand. Due to water allocation restrictions, full demands cannot be met with Contract water, therefore wells are used to supplement irrigation needs during the summer months.

5. Groundwater Management Plan
See Attachment H, AB3030

6. Groundwater Banking Plan
The District is currently implementing a 10 year Water Resources Plan, a portion of which is analyzing water banking opportunities in and around the CCID service area.

C. Other Water Supplies

1. "Other" water used as part of the water supply
See Section V, Water Inventory Tables

D. Source Water Quality Monitoring Practices

1. Potable Water Quality (Urban only) **N/A –** CCID does not make potable water deliveries

2. Agricultural water quality concerns: *Yes* XXX *No* _____
(If yes, describe)
Salinity (measured daily)
Boron (impacts orchards in the north end of the District)
Selenium (not allowed in the system)

3. Description of the agricultural water quality testing program and the role of each participant, including the district, in the program
The District participates through the Exchange Contractors watermaster in measuring water quality (EC and Boron) on all in-flows monthly to confirm compliance of the Exchange Contract water delivery standards. In addition, the District annually measures Ag suitability constituents for all deep wells that pump into the system. The District utilizes an in-house laboratory to test EC and Boron in key locations within the conveyance system on a weekly basis.

4. *Current water quality monitoring programs for surface water by source (Agricultural only)*

Analyses Performed	*Frequency*	*Concentration Range*	*Average*
Total Dissolved Solids	continuous	200-500	350
Ag suitability	Monthly -ECw	200 – 1,200	350

Current water quality monitoring programs for groundwater by source (Agricultural only)

Analyses Performed	*Frequency*	*Concentration Range*	*Average*
Ag Suitability	Monthly - ECw	300 – 1,400	500

E. Water Uses within the District

1. Agricultural
See Section V, Water Inventory Tables, Table 5 - Crop Water Needs

2. Types of irrigation systems used for each crop in current year

Crop name	*Total Acres*	*Level Basin - acres*	*Furrow - acres*	*Sprinkler – acres*	*Low Volume - acres*	*Multiple methods - acres*
Alfalfa	38,614	38,614				
Beans	3,629	3,629				
Corn	22,241		22,241			
Cotton	31,432		31,432			
Oats	13,506	4,160		64		9,282

Tomatoes	12,177		2,192		9,985	
Wheat	10,325		1,484		1,222	7620
Orchard	11,447			1,085	10,362	
Perm Pasture	3,655	3,655				
Rice	2,594	2,594				
Sudan	2,177		2,177			
Other	6,924	4,182	2,742			
TOTAL	**158,721**	**56,834**	**62,268**	**1,149**	**21,569**	**16,902**

3. *Urban use by customer type in current year* ***N/A***

Customer Type	*Number of Connections*	*AF*
Single-family		
Multi-family		
Commercial		
Industrial		
Institutional		
Landscape irrigation		
Wholesale	1	1,238
Recycled		
Other (specify)		
Other (specify)		
Other (specify)		
Unaccounted for		
Total		1,238

4. *Urban Wastewater Collection/Treatment Systems serving the service area* ***N/A***

Treatment Plant	*Treatment Level (1, 2, 3)*	*AF*	*Disposal to / uses*
None in District			
	Total		
Total discharged to ocean and/or saline sink			

5. *Groundwater recharge in current year (Table 6)*

Recharge Area	*Method of Recharge*	*AF 2011*	*Method of Retrieval*
None			
	Total		

6a. *Transfers and exchanges* ***into*** *the service area in current year – (Table 1)*

From Whom	*To Whom*	*AF*	*Use*
None			
	Total	0	Agricultural

*6b. Transfers and exchanges **out** of the service area in current year – (Table 6)*

From Whom	*To Whom*	*AF*	*Use*
None			
	Total	0	

7. Wheeling, or other transactions in and out of the district boundaries – (Table 6)

From Whom	*To Whom*	*AF*	*Use*
None			
	Total	0	

8. Other uses of water

Other Uses	*AF*
None	

F. Outflow from the District (Agricultural only)

Irrigation drainage from the District is not measured. CCID has an internal drainage district (Camp 13 Drainage District) that discharges to the San Luis Drain on a limited basis. Any other discharges are either re-circulated for irrigation or released to the San Joaquin River thru the Salt/Mud Sloughs or other facilities.

1. Surface and subsurface drain/outflow: **CCID does not have subsurface drain/outflow.**

Outflow point	*Location description*	*AF*	*Type of measurement*	*Accuracy (%)*	*% of total outflow*	*Acres drained*
SJR	Salt/Mud Slough	1000	Estimated			5000

Outflow point	*Where the outflow goes (drain, river or other location)*	*Type Reuse (if known)*
SJR	Unmeasured outflow to SJR, seeps into channel	unknown

2. Description of the Outflow (surface and subsurface) water quality testing program and the role of each participant in the program.

CCID participates in the Westside San Joaquin River Watershed Coalition which encompasses 460,000 acres. The Coalition conducts sampling on a monthly basis and storm events throughout the area and also uses the data of the monitoring station at Sand Dam. The major concerns for the Regional Water Control Board are exceedances of chlorpyrifos and diazinon.

*3. Outflow (**surface drainage & spill**) Quality Testing Program*

Analyses Performed	*Frequency*	*Concentration Range*	*Average*	*Reuse limitation?*
EC, Boron, etc.	Monthly			Salt load

*Outflow (**subsurface drainage**) Quality Testing Program* **CCID does not have subsurface drainage**

Analyses Performed	*Frequency*	*Concentration Range*	*Average*	*Reuse limitation?*
NA				

4. Provide a brief discussion of the District's involvement in Central Valley Regional Water Quality Control Board programs or requirements for remediating or monitoring any contaminants that would significantly degrade water quality in the receiving surface waters.

Central California Irrigation District is a member of the Westside Regional Water Coalition. All acreage within CCID is enrolled to comply with the agricultural waiver requirements.

Districts included in the drainage problem area, as identified in "A Management Plan for Agricultural Subsurface Drainage and Related Problems on the Westside San Joaquin Valley (September 1990)," should also complete Water Inventory Table 7 and Addendum C (include in plan as Attachment J)

G. Water Accounting (Inventory)

Tables 1 through 8 are included in Section V.

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

A. Critical Agricultural BMPs

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

The District primarily uses metered gates (whistle pipes), open flow meters, measuring weirs and a few others such as acoustic Doppler meters to measure water deliveries to each water user. The District has been in a program of increasing the accuracy of these measurements using pool stabilization through modernization and automation of the Main and Outside Canals (127 miles), which are the main distribution canals in the District. The automation of the Main and Outside Canals are complete, automation and/or pool stabilization of the south division canals is presently underway and is expected to be complete with the next 10 year timeline. The south division pool stabilization will be accomplished through a combination of installation of long crested weirs, weir automation and installation of regulating reservoirs. The District currently has 5 regulating reservoirs and will be installing up to another 5 over the next 10 years.

In addition, in order to comply with the requirements of the SB7x7, the District has been systematically field checking the physical and hydraulic condition of turnouts, and performing field flow measurements to verify accuracy. The District has been standardizing turnout design and size by installing gates which have been calibrated in accordance with the Cal Poly Irrigation Training and Research Center (ITRC) for laboratory testing and verification under different submergence conditions in 2013 (Attachment J). Accurate discharge tables were developed for all the different types of metered gates used in the

District's canals that take into consideration the exact location of the whistle pipes and the conditions of submergence.

a. *Number of delivery points (turnouts and connections)* 1,232

b. *Number of delivery points serving more than one farm* 285

i. When a delivery services more than one farm, the District Canal Workers track water to each farm separately. All water is measured at the outlet from the district owned canal or ditch. In a large percentage of cases where more than one farm is serviced, water is being delivered into a privately owned ditch which the landowners have connected to the district's facilities. Water deliveries to landowners are started separately to each landowner so that each land owner gets all of their water and the ditch is allowed to reach equilibrium which in most cases occurs within a matter of hours. Then the next delivery is made into the ditch and the ditch is operated to insure all the additional water goes to the new delivery. Water is measured at all deliveries on a daily basis. In a normal water year, there are very few disputes over the over the quantities of water delivered, given the fact that water is charged on a tiered water rate basis this is a further indication that water is measured fairy and accurately especially in community ditches. If a dispute does occur, a landowner notifies their Canal Worker whom attempts to resolve, if the Canal Worker cannot resolve then he notifies the Division Supervisor whom is trained in the use of open flow measurement which is employed as needed.

c. *Number of measured delivery points (meters and measurement devices)* 1,232

d. *Percentage of delivered water that was measured at a delivery point* 100%

e. *Total number of delivery points not billed by quantity* 0

f. *Delivery point measurement device table*

Measurement Type	*Number*	*Accuracy* (+/- %)*	*Reading Frequency (Days)*	*Calibration Frequency (Months)*	*Maintenance Frequency (Months)*
Meter gates	902	+/- 5%	Daily	*	*
Open flow meters	199	+/- 5%	Daily	*	*
Measuring weirs	14	+/- 5%	Daily	*	*
Doppler meters	10	+/- 5%	Daily	*	*
Pitot tubes	11	+/- 5%	Daily	*	*
Saddle meters	96	+/- 5%	Daily	*	*
Total (various)	1,232	+/- 5%		*	*

*The District completely removes, cleans, and calibrates each open flow meter every winter, then reinstalls at each site. Each meter gate is currently being checked for accuracy and needed site adjustments are made each winter. The meter gates and measurement weirs will be rechecked and calibrated on a 3 year frequency.

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

Name: Tracey Rosin *Title:* Conservation Coordinator

Address: *P.O. Box 1231, Los Banos, CA 93635*

Telephone: 209-826-1421 *E-mail:* trosin@ccidwater.org

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

a. On-Farm Evaluations.

The Mobile Lab is available to perform irrigation evaluations, pump tests, soil tests and water quality tests at a minimum charge for District consumers. The District mails this information, included in the newsletter, to all agricultural customers each year and will continue to do so in the future. Cal Poly ITRC also schedules summer irrigation evaluations throughout the District. This service is by request to Cal Poly and must be scheduled in advance. Grower demand for system evaluations outweighs ITRC's time allowed to accomplish this service. Notification for this free service is through ITRC mailing list and through District email notice. Large amounts of acreage are being converted annually to drip and micro irrigation. These landowners are responsible for follow up irrigation analysis.

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

	Total in district	*# surveyed last year*	*# surveyed in current year*	*# projected for next year*	*# projected 2nd yr in future*
Irrigated acres	141,821				
Number of farms	700	10 farms*	10 farms*	10 farms*	10 farms*

* estimated

2) Timely field and crop-specific water delivery information to the water user

Water use by day or by irrigation can be supplied to any water user by request at the District Office or by logging onto their individual account on-line. Irrigation meters are read daily and reported to the District Office. Monthly bills show water use for the past 30 days and growers can track how much water was applied for any specific irrigation event. Canal men are also available to assist the Grower as needed.

b. Real-time and normal irrigation scheduling and crop ET information.

The District provides weather station data and promotes the use of CIMIS data.
Growers are informed about the availability of the data through annual meetings, quarterly newsletters and through the District's webpage www.ccidwater.org

The District also promotes the use and assists interested growers by walking them through irrigation scheduling techniques with the ITRC California Crop and Soil Evapotranspiration website at www.itrc.org/reports/californiacrop.htm and CIT's Waterright web site at www.waterright.org

CCID provides technical assistance to all growers on accessing and using the evapotranspiration information from the CIMIS website at www.cimis.water.ca.gov/cimis

Information is also included on the San Joaquin River Exchange Contractor's website at www.sjrecwa.net. In addition to these practices, some growers subscribe to professional irrigation scheduling services.

c. Surface, ground, and drainage water quantity and quality data provided to water users.

CCID is very active in the monitoring of all waters within the District. These data are available at the District Office as well as being reported in the District newsletter on an ongoing basis.

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

Program	*Co-Funders (If Any)*	*Yearly Targets*
CCID Observer Newsletter	NA	700 farms/public
Water Conservation Program	NA	700 farms
CCID Scholarship Program	CCID Landowners	All local students
Annual Public Meetings District Tours – 3-5 per year Site Specific Meetings (drainage)	NA NA NA	Consumers/Public All landowners Public 50/tour Govt/State Reps

See Attachment I for samples of provided materials and notices

e. Other.

None

4. Pricing structure - based at least in part on quantity delivered
Adopt a water pricing structure based on the measured quantity delivered

All water is billed by quantity

5. Evaluate and improve efficiencies of district pumps
Describe the program to evaluate and improve the efficiencies of the contractor's pumps.

CCID maintains all pumps used for re-lift or delivery with an annual maintenance program. Normal maintenance, repair and upgrades are scheduled as needed, generally each year after irrigation season or on an *on-demand* basis during the delivery periods. See Attachment A-2.

B. Exemptible BMPs for Agricultural Contractors

(See Planner, Chapter 2, Addendum B for examples of exemptible conditions)

1. Facilitate alternative land use: None identified at this time. Severe drainage impacted areas are not formable and have no intended use currently.

Drainage Characteristic	*Acreage*	*Potential Alternate Uses*
High water table (<5 feet)	N/A	
Poor drainage	N/A	
Groundwater Selenium concentration > 50 ppb	N/A	
Poor productivity	N/A	

Describe how the contractor encourages customers to participate in these programs.

2. Facilitate use of available recycled urban wastewater
No urban wastewater is available.

Sources of Recycled Urban Waste Water	*AF/Y Available*	*AF/Y Currently Used in District*
NA		

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

Program	*Description*
Water Conservation Loan and Grant Program	Annual Water User Loan and Grant Funding

See Attachment I

CCID's Water Conservation Program began in 1990 offering low-interest loans for on-farm conservation practices. In 1999, a grant component was made available to cost-share 50% of concrete ditches and pipelines, up to $400/per acre benefited and 25% of other practices that result in water conserved such as micro and drip irrigation or tailwater return systems. To date, the program has loaned over $12 million and granted nearly $8 million as our consumers accomplish their on-farm practices.

4. Incentive pricing
Describe incentive rate structure and purpose.
Our Board of Directors sets the water rates annually using a tiered pricing structure to ensure beneficial use of District water supply. See Attachment F.

Tier 1 0 - 3.0 af/ac @ $7/AF
Tier 2 3.0 – 3.5 af/ac @ $16/AF
Tier 3 3.5 – 4.0 af/ac @ $31/AF
Tier 4 4.0 af/ac & up @ $61/AF

5. a) Line or pipe ditches and canals
CCID does not currently line its delivery canals or ditches. Consumers, through the District's Water Conservation Program, apply for funds to line on-farm ditches and this yearly program is very active and used frequently. An estimated 10 to 20 miles of on-farm canals have been concrete lined in the past 15 years.

b) Construct/line regulatory reservoirs

Reservoir Name	*Location*	*Describe improved operational flexibility and AF savings*
Poso	Dos Palos	Regulating reservoir to increase delivery efficiency
East Ditch	Dos Palos	Regulating reservoir to increase delivery efficiency

6. Increase flexibility in water ordering by, and delivery to, water users
The District allows flexibility in water ordering by its water users if the canal system can handle a requested off-hour change without affecting other deliveries or water levels in the canal system. Canal workers, with the concurrence of the watermaster, can adjust schedules if requested and the change does not result in delivery or canal impacts.

7. Construct and operate district spill and tailwater recovery systems
Complete – the District's spill recovery system recovers 95% of all spills for re-use.

Distribution System Lateral	*Annual Spill (AF/Y)*	*Quantity Recovered and reused (AF/Y)*
Main and Outside Canals	10,000*	95%
Total		

Drainage System Lateral	*Annual Drainage Outflow (AF/Y)*	*Quantity Recovered and reused (AF/Y)*
Community Ditch Laterals	5,000*	95%
Total	0	

- Estimated amounts as spills are intermittent

Describe facilities that resulted in reduced spill and tailwater.
Consumers have constructed on-farm capture basins and water conservation efforts in drip and sprinkler irrigation have reduced surface tailwater.

8. *Plan to measure outflow.*
The District maintains 6 to 8 portable data recorders that are rotated to different outflow locations on community ditches throughout the District. This practice will continue and enhanced as necessary as indicated by the analysis of the data collected.

9. Optimize conjunctive use of surface and groundwater.
Surface and groundwater use complement each other in providing irrigation water to all crops as required by consumptive use of the crops. The Exchange Contract dictates amounts of contract water available each month to the water users and if those amounts are not sufficient, groundwater is used to fulfill daily requirements. Goal is to use Contract water when available and supplement in low supply periods or years with local groundwater to maximize crop production.

10. Automate distribution and/or drainage system structures
Identify locations where automation would increase delivery flexibility and reduce spill and losses. Describe program to achieve these benefits and estimate the annual water savings.
The District's Main and Outside Canals are fully automated. The District's canals in our southern portion are in the process of being automated.

11. Facilitate or promote water customer pump testing and evaluation
The District continues to encourage its users to maintain their pumps in good working order. Prudent business sense mandates that all pumps be kept in good working order to maximize pumping requirements and reduce power consumption. The District gets this message out to its users through the

newsletter and private pump companies remind them of services available through private mailings and advertisements.

12. Mapping

GIS maps	*Estimated cost (in $1,000s)*				
	Year 1	*Year 2*	*Year 3*	*Year 5*	*Year 6*
Data base development	100k				
Data base management		10k	10k		

C. Provide a 3-Year Budget for Implementing BMPs

1. Amount actually spent during current year.

Year 2012 or Year 1			Actual Expenditure	
BMP #		BMP Name	(not including staff time)	Staff Hours
A	1	Measurement (Daily ditch tender measurements)	$150,000	0
	2	Conservation staff (Water Conservation)	$166,000	0
	3	On-farm evaluation /water delivery info	$10,000	0
		Irrigation Scheduling	$5,000	0
		Water quality	$75,000	0
		Agricultural Education Program	$30,000	0
	4	Quantity pricing (Tiered rate program)	$15,000	0
	5	Contractor's pumps (Annual maintenance)	$4,635,000	0
B	1	Alternative land use	$0	0
	2	Urban recycled water use	$0	0
	3	Financing of on-farm improvements	$7,500,000	0
	4	Incentive pricing	$20,000	0
	5	Line or pipe canals/install reservoirs	$2,000,000	0
	6	Increase delivery flexibility	$25,000	0
	7	District spill/tailwater recovery systems	$50,000	0
	8	Measure outflow	$5,000	0
	9	Optimize conjunctive use	$50,000	0
	10	Automate canal structures	$1,000,000	0
	11	Customer pump testing	$15,000	0
	12	Mapping	$100,000	0
		Total	$15,851,000.00	0

2. Projected budget summary for the next year.

Year 2013 or Year 2			Budgeted Expenditure	
BMP #		BMP Name	(not including staff time)	Staff Hours
A	1	Measurement (Daily ditch tender measurements)	$150,000	0
	2	Conservation staff (Water Conservation)	$170,000	0
	3	On-farm evaluations/water delivery info	$12,000	0
		Irrigation Scheduling	$8,000	0
		Water quality	$100,000	0
		Agricultural Education Program	$30,000	0
	4	Quantity pricing (Tiered rate program)	$15,000	0
	5	Contractor's pumps (Annual maintenance)	$4,500,000	0
B	1	Alternative land use	$0	0
	2	Urban recycled water use	$0	0
	3	Financing of on-farm improvements	$5,000,000	0
	4	Incentive pricing	$20,000	0
	5	Line or pipe canals/install reservoirs	$2,000,000	0

	6	*Increase delivery flexibility*	*$25,000*	*0*
	7	*District spill/tailwater recovery systems*	*$50,000*	*0*
	8	*Measure outflow*	*$5,000*	*0*
	9	*Optimize conjunctive use*	*$50,000*	*0*
	10	*Automate canal structures*	*$500,000*	*0*
	11	*Customer pump testing*	*$15,000*	*0*
	12	*Mapping*	*$10,000*	*0*
		Total	$12,655,000	0

3. *Projected budget summary for 3rd year.*

Year 2014 or Year 3

BMP #		*BMP Name*	*Budgeted Expenditure (not including staff time)*	*Staff Hours*
A	*1*	*Measurement (Daily ditch tenders measurements)*	*$150,000*	*0*
	2	*Conservation staff (Water Conservation)*	*$200,000*	*0*
	3	*On-farm evaluations/water delivery info*	*$14,000*	*0*
		Irrigation Scheduling	*$10,000*	*0*
		Water quality	*$115,000*	*0*
		Agricultural Education Program	*$30,000*	*0*
	4	*Quantity pricing (Tiered rate program)*	*$20,000*	*0*
	5	*Contractor's pumps(Annual maintenance)*	*$3,000,000*	*0*
B	*1*	*Alternative land use*	*$0*	*0*
	2	*Urban recycled water use*	*$0*	*0*
	3	*Financing of on-farm improvements*	*$2,000,000*	*0*
	4	*Incentive pricing*	*$20,000*	*0*
	5	*Line or pipe canals/install reservoirs*	*$2,000,000*	*0*
	6	*Increase delivery flexibility*	*$30,000*	*0*
	7	*District spill/tailwater recovery systems*	*$50,000*	*0*
	8	*Measure outflow*	*$0*	*0*
	9	*Optimize conjunctive use*	*$50,000*	*0*
	10	*Automate canal structures*	*$500,000*	*0*
	11	*Customer pump testing*	*$3,000,000*	*0*
	12	*Mapping*	*$10,000*	*0*
		Total	$11,199,000	0

Section IV: Best Management Practices for Urban Contractors

OMITTED – Not Applicable

Section V: District Water Inventory Tables

This Section includes the 2011 water inventory tables for Central California Irrigation District as follows:

- Table 1 Surface Water Supply
- Table 2 Groundwater Pumping
- Table 3 Total Water Supply
- Table 4 Agricultural Distribution System
- Table 5 Crop Water Needs
- Table 6 2011 District Water Inventory
- Table 7 Influence on Groundwater and Saline Sink
- Table 8 Annual Water Quantities Delivered Under Each Right or Contract

Year of Data 2011 **Enter data year here**

0

Table 1

Surface Water Supply

2011 Month	Federal Ag Water (acre-feet)	Federal non-Ag Water. (acre-feet)	State Water (acre-feet)	Local Water (define) (acre-feet)	Other Water (Drain) (acre-feet)	Transfers into District (acre-feet)	Upslope Drain Water (acre-feet)	Total (acre-feet)
Method								
January	0	0	0	0	0	0	0	0
February	16505	0	0	0	0	0	0	16,505
March	24250	0	0	0	6884	0	0	31,134
April	29241	0	0	0	2024	0	0	31,265
May	54970	0	0	0	4277	0	0	59,247
June	66259	0	0	0	8423	0	0	74,682
July	114361	0	0	0	8861	0	0	123,222
August	108112	0	0	0	7785	0	0	115,897
September	49289	0	0	0	3876	0	0	53,165
October	26186	0	0	0	1891	0	0	28,077
November	14921	0	0	0	809	0	0	15,730
December	5805	0	0	0	455	0	0	6,260
TOTAL	509,899	0	0	0	45,285	0	0	555,184

Table 2

Groundwater Pumping

2011 Month	District Groundwate (acre-feet)	Private Agric *(acre-feet)
Method		
January	0	0
February	0	0
March	0	0
April	949	0
May	8,653	0
June	10,539	0
July	2,508	0
August	950	0
September	249	0
October	24	0
November	0	0
December	0	0
TOTAL	23,872	42,116

*normally estimated

Table 3

Total Water Supply

2011 Month	Surface Water Total (acre-feet)	District Groundwate (acre-feet)	Recycled M&I (acre-feet)	Total District (acre-feet)
Method				
January	0	0	0	0
February	16,505	0	0	16,505
March	31,134	0	0	31,134
April	31,265	949	0	32,214
May	59,247	8,653	0	67,900
June	74,682	10,539	0	85,221
July	123,222	2,508	0	125,730
August	115,897	950	0	116,847
September	53,165	249	0	53,414
October	28,077	24	0	28,101
November	0	0	0	0
December	6,260	0	0	6,260
TOTAL	539,454	23,872	0	563,326

*Recycled M&I Wastewater is treated urban wastewater that is used for agriculture.

2011 Precipitation Worksheet				
	inches precip	ft precip	acres	AF/Year
Jan	1.61	0.13	0.00	0.00
Feb	1.53	0.13	0.00	0.00
Mar	2.32	0.19	0.00	0.00
Apr	0.09	0.01	0.00	0.00
May	0.34	0.03	0.00	0.00
Jun	0.70	0.06	0.00	0.00
Jul	0.00	0.00	0.00	0.00
Aug	0.00	0.00	0.00	0.00
Sept	0.00	0.00	0.00	0.00
Oct	0.64	0.05	0.00	0.00
Nov	0.88	0.07	0.00	0.00
Dec	0.12	0.01	0.00	0.00
TOTAL	**8.23**	**0.69**		**0.00**

2011 Evaporation Worksheet			
	inches evap	ft evap	acres
Jan	0.93	0.08	0.00
Feb	1.72	0.14	0.00
Mar	3.53	0.29	0.00
Apr	5.02	0.42	0.00
May	7.30	0.61	0.00
Jun	8.16	0.68	0.00
Jul	8.42	0.70	0.00
Aug	7.32	0.61	0.00
Sept	5.49	0.46	0.00
Oct	3.86	0.32	0.00
Nov	1.90	0.16	0.00
Dec	1.00	0.08	0.00
TOTAL	**54.65**	**4.55**	

Table 4

Agricultural Distribution System

2011 Canal, Pipeline, Lateral, Reservoir	Length (feet)	Width (feet)	Surface Area (square feet)	Precipitation (acre-feet)	Evaporation (acre-feet)	Spillage (acre-feet)	Seepage (acre-feet)	Total (acre-feet)
			0	0.0	0.0	0	0	0
			0	0.0	0.0	0	0	0
			0	0.0	0.0	0	0	0
All CCID Canals			0	0.0	53,000.0	0	60,000	(113,000)
			0	0.0	0.0	0	0	0
			0	0.0	0.0	0	0	0
			0	0.0	0.0	0	0	0
			0	0.0	0.0	0	0	0
			0	0.0	0.0	0	0	0
			0	0.0	0.0	0	0	0
			0	0.0	0.0	0	0	0
			0	0.0	0.0	0	0	0
TOTAL			0	0.0	53,000.0	0	60,000	(113,000)

Table 5

Crop Water Needs

2011 Crop Name	Area (crop acres)	Crop ET (AF/Ac)	Leaching Requiremen (AF/Ac)	Cultural Practices (AF/Ac)	Effective Precipitatio (AF/Ac)	Appl. Crop Water Use (acre-feet)
Alfalfa	38,614	4.47	0.1	0.1		178,397
Beans	3,629	2.31	0.1	0.1		77,323
Corn	22,241	2.31	0.1	0.1		54,713
Cotton	31,432	2.96	0.1	0.1		97,754
Oats	13,506	1.86	0.1	0.1		27,147
Tomatoes	12,177	2.60	0.1	0.1		33,487
Wheat	10,325	1.18	0.1	0.1		13,732
Orchard	11,447	3.42	0.1	0.1		40,866
Perm Pasture	3,655	4.60	0.1	0.1		17,361
Rice	2,594	4.40	0.1	0.1		11,803
Sudan	2,177	4.00	0.1	0.1		9,035
other	6,924		0.1	0.1		1,039
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
Crop Acres	158,721					562,655

Total Irrig. Acres 131,906 (If this number is larger than your known total, it may be due to double cropping)

Table 6

2011 District Water Inventory

Water Supply		Table 3		563,326
Riparian ET		(Distribution and Drain)	minus	0
Groundwater recharge		intentional - ponds, injection	minus	0
Seepage		Table 4	minus	60,000
Evaporation - Precipitation		Table 4	minus	53,000
Spillage		Table 4	minus	0
Transfers out of District			minus	
Water Available for sale to customers				450,326
Actual Agricultural Water Sales	2011	From District Sales Records		499,716
Private Groundwater		Table 2	plus	42,116
Crop Water Needs		Table 5	minus	562,655
Drainwater outflow		(tail and tile, not recycled)	minus	0
Percolation from Agricultural Land		(calculated)		(20,823)
Unaccounted for Water		(calculated)		(49,390)

Table 7

Influence on Groundwater and Saline Sink

2011

Agric Land Deep Perc + Seepage + Recharge - Groundwater Pumping = District Influence	36,128
Estimated actual change in ground water storage, including natural recharge)	0
Irrigated Acres (from Table 5)	158,721
Irrigated acres over a perched water table	0
Irrigated acres draining to a saline sink	0
Portion of percolation from agri seeping to a perched water table	0
Portion of percolation from agri seeping to a saline sink	0
Portion of On-Farm Drain water flowing to a perched water table/saline sink	0
Portion of Dist. Sys. seep/leaks/spills to perched water table/saline sink	0
Total (AF) flowing to a perched water table and saline sink	0

Table 8

Annual Water Quantities Delivered Under Each Right or Contract

Year	Federal Ag Water (acre-feet)	Federal non-Ag Water. (acre-feet)	State Water (acre-feet)	Local Water (define) (acre-feet)	Other Water (acre-feet)	Transfers into District (acre-feet)	Upslope Drain Water (acre-feet)	Total (acre-feet)
2002	501,956	0	0	0	0	0	45,584	547,540
2003	503,362	0	0	0	0	0	47,996	551,358
2004	495,658	0	0	0	0	12,380	43,396	551,434
2005	504,155	0	0	0	0	17,662	45,040	566,857
2006	524,347	0	0	0	0	8,529	45,362	578,238
2007	498,571	0	0	0	0	7,929	52,958	559,458
2008	489,962	0	0	0	0	9,960	47,341	547,263
2009	491,052	0	0	0	0	15,422	39,754	546,228
2010	495,480	0	0	0	0	18,593	17,680	531,753
2011	506,284	0	0	0	45,285	19,174	45,286	616,029
Total	5,010,827	0	0	0	45,285	109,649	430,397	5,596,158
Average	501,083	0	0	0	4,529	10,965	43,040	559,616