Delano-Earlimart Irrigation District
Water Management Plan
2008 Criteria

Prepared by:

Dale R. Brogan
General Manager

Submitted to:

United States Department of the Interior
Bureau of Reclamation
South Central California Area Office
1243 N Street
Fresno, California

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Section 1: Description of the District

District Name: Delano-Earlimart Irrigation District

Contact Name: Dale Brogan

Title: General Manager

Telephone: (661) 725-2526

E-mail: dbrogan@deid.org

Web Address: www.deid.org

A. History

1. *Date district formed:* 1938 *Date of first Reclamation contract*: 1951
   Original size (acres): 32,416 *Current year - (2008):* 54,890

2. *Current size, population, and irrigated acres*

	(2008)
Size (acres)	54,890
Population served	NA
Irrigated acres	49149

3. *Water supplies received in current year*

Water Source	*AF*
Federal non-Ag water (Tbl 1)	319
Federal agricultural water (Tbl 1)	110162
State water (Tbl 1)	0
Other Wholesaler (define) (Tbl 1)	0
Local surface water (Tbl 1)	0
Upslope drain water (Tbl 1)	0
District ground water (Tbl 2)	0
Banked water (Tbl 1)	0
Transferred water (Tbl 6)	0
Recycled water (Tbl 3)	0
Other (define) (Tbl 1)	0
Total	110481

4. *Annual entitlement under each right and/or contract*

	AF	*Source*	*Contract #*	*Availability period(s)*
Reclamation Urban AF/Y				
Reclamation Ag AF/Y	183,300	CVP-Friant	175r-3327-LTR1	March-February
Other AF/Y				

5. *Anticipated land-use changes*
   None

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 - 2002*		*Current Plan - 2008*	
Crop Name	*Acres*	*Crop Name*	*Acres*	*Crop Name*	*Acres*
Grapes	26306	Grapes	31390	Grapes	29426
Almonds	5245	Almonds	6625	Almonds	9591
Other Nut Crops	2412	Other Nut Crops	3261	Other Nut Crops	4493
Alfalfa	3340	Alfalfa	1229	Alfalfa	725
Cotton	5622	Cotton	40	Cotton	0
Tree Fruit	1835	Tree Fruit	1436	Tree Fruit	1504
Citrus	1239	Citrus	1379	Citrus	1966
Field/Row Crops	2251	Field/Row Crops	1221	Field/Row Crops	1444
Not farmed/irrigated	7813	Not farmed/irrigated	9893	Not farmed/irrigated	5739
Other (<5%)		*Other (<5%)*		*Other (<5%)*	
Total	56063	*Total*	56474	*Total*	54888

(See Planner, Chapter 2, Appendix A for list of crop names)

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

Original Plan - 1993		*Previous Plan - 2002*		*Current Plan - 2008*	
Irrigation Method	*Acres*	*Irrigation Method*	*Acres*	*Irrigation Method*	*Acres*
Drip/Micro/Fanjet	6682	Drip/Micro/Fanjet	23587	Drip/Micro/Fanjet	31704
Sprinkler	3712	Sprinkler	2072	Sprinkler	1559
				Flood	11799
				Border	60
				Furrow	3071
Other	45669	*Other*	30815	*Other*	
Total	56063	*Total*	56474	*Total*	54888

(See Planner, Chapter 2, Appendix A for list of irrigation system types)

B. Location and Facilities

See Attachment A for points of delivery, turnouts (internal flow), and outflow (spill) points, measurement locations, conveyance system, storage facilities, operational loss recovery system, wells, and water quality monitoring locations

1. Incoming flow locations and measurement methods

Location Name	*Physical Location*	*Type of Measurement Device*	*Accuracy*
Friant-Kern Canal	Mile Post 108.7	Propeller meter	+/– 5%
FKC	M.P. 109.46 west-main (ave.56)	Venturi Meter	+/– 5%
FKC	M.P. 109.46 west-north sub (ave.56)	Propeller meter	+/– 5%
FKC	M.P. 109.46 west-south sub (ave.56)	Propeller meter	+/– 5%
FKC	M.P. 109.46 east-main (ave.56)	Propeller meter	+/– 5%
FKC	M.P. 109.46 east-sub (ave.56)	Propeller meter	+/– 5%
FKC	M.P. 111.56 west-main (ave.40)	Venturi Meter	+/– 5%
FKC	M.P. 111.56 west- sub (ave.40)	Propeller meter	+/– 5%

FKC	M.P. 111.56 east (ave.40)	Venturi Meter	+/– 5%
FKC	M.P. 112.9-White River wasteway	Parshall flume	+/– 5%
FKC	M.P 113.62 west-main (ave.24)	Venturi Meter	+/– 5%
FKC	M.P 113.62 west-sub (ave.24)	Propeller meter	+/– 5%
FKC	M.P 113.62 east-main (ave.24)	Venturi Meter	+/– 5%
FKC	M.P 113.62 east-sub (ave.24)	Propeller meter	+/– 5%
FKC	M.P. 115.95 main (ave.8)	Venturi Meter	+/– 5%
FKC	M.P. 115.95 sub (ave.8)	Propeller meter	+/– 5%
FKC	M.P. 116.92-east (ave.0)	Venturi Meter	+/– 5%
FKC	M.P. 116.92-west (ave.0)	Propeller meter	+/– 5%
FKC	M.P. 118.45 main (9^{th} ave.)	Propeller meter	+/– 5%
FKC	M.P. 118.45 sub (9^{th} ave.)	Propeller meter	+/– 5%

2. Current year Agricultural Conveyance System

Miles Unlined - Canal	*Miles Lined - Canal*	*Miles Piped*	*Miles - Other*
0	0	172	0

3. Current year Urban Distribution System

Miles AC Pipe	*Miles Steel Pipe*	*Miles Cast Iron Pipe*	*Miles - Other*
NA	NA	NA	NA

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

Name	*Type*	*Capacity (AF)*	*Distribution or Spill*
D-11	Regulating reservoir	3.4	distribution
D-17	Regulating reservoir	3.3	distribution
D-12	Regulating reservoir	9.7	distribution
D-14	Regulating reservoir	6.1	distribution
Terminal	Regulating reservoir	2.1	distribution

5. Outflow locations and measurement methods (Agricultural only)
None

6. Description of the agricultural spill recovery system
None-no spill from DEID's closed, pressurized distribution system

7. Agricultural delivery system operation (check all that apply)

On-demand	*Scheduled*	*Rotation*	*Other (describe)*
x	x		

8. Restrictions on water source(s)

Source	*Restriction*	*Cause of Restriction*	*Effect on Operations*
Millerton Lake	Inflow prorate	Reservoir too small	Limited deliveries to growers
Millerton Lake	Uncontr. /flood flows	Reservoir too small	Loss of schedulable supply
Friant-Kern Canal	Canal capacity prorate	Canal too small	Limited deliveries to growers
San Joaquin River	Restoration flows	Lawsuit settlement	Limited deliveries to growers

9. Proposed changes or additions to facilities and operations for the next 5 years

a. Continue to offer pressure-compensation float systems to growers requesting one.
b. Continued development of groundwater recharge and recovery (banking) facilities.

C. Topography and Soils

1. *Topography of the district and its impact on water operations and management*

San Joaquin Valley

The terrain (on the valley floor; the primary agricultural zone) is generally flat or gently sloping. Elevations range from about 200 feet above sea level at the north county line to about 1,000 feet above sea level at the rim of the valley. Most of the valley floor ranges from about 300-500 feet above sea level.

The San Joaquin Valley basin is essentially a deep structural trough from 10,000 to 20,000 feet deep filled with sedimentary materials. Most of the sediment is marine in origin and contains water too saline for use. The upper 3,000 feet of sediments consist of fine and coarse-grained alluvium, which were washed down from the surrounding mountains by the Kern, Tule, Kaweah, Kings and San Joaquin rivers and other small streams, providing a basin of generally excellent soils.

Delano-Earlimart Irrigation District

The District is situated on the eastern part of the San Joaquin Valley, about 10 miles west of the Sierra Nevada foothills. It occupies floodplain and alluvial fans of present streams. Slopes are generally to the west, ranging from about 25 feet to the mile on the east side to 10 to 15 feet to the mile at the western boundary. Highest elevation is about 500 feet above sea level in the southeast corner and the lowest approximately 275 feet in the northwest portion.

The geological sequences of permeable, water-bearing sediments within DEID, from youngest to oldest, are: 1) continental deposits, 2) the Santa Margarita formation, and 3) the Olcese sand.

Sediments that comprise DEID's main groundwater basin are unconsolidated deposits of Tertiary and Quaternary age, including alluvium, lacustrine, deltaic and flood basin deposits of sand and gravel. Thin lenses of silt and clay are scattered throughout the basin at various depths, but are most pronounced in the southwestern and northwestern portions of the basin.

District soils consist of recent alluvial deposits, moderately developed soils underlain by hardpan, and alkali-affected soils. The recent deposits, covering most of the district, are deep, permeable soils of light to medium texture that occupy the alluvial floodplain and fans formed by White River and Rag Gulch. The hardpan soils occupy older alluvial fans in the eastern portion of the District. The alkali soils are found in the lower-lying lands in the western part of the area. The recent alluvial soils and most of the hardpan soils are presently irrigated and are producing good yields of a variety of crops. Detailed soils maps covering the District are included at Tab 5, and are also available from the NRCS-Soil Survey of Tulare County (Internet accessible at www.ca.nrcs.usda.gov/wtulare/index.html).

In 1946, the Bureau made a semi-detailed land classification of the district. The land classes assigned to the district lands represent varying degrees of suitability for irrigation and were determined by evaluation of the factors of soil, topography, and drainage in relationship to adapted crops, productivity and land management. The table below presents the land classification data for the Delano-Earlimart Irrigation District.

LAND CLASSIFICATION*

Land Class	Classification	Percent of Total Area (%)
1	Land capable of producing high yields of any climatically adapted crop at minimum cost.	54.3
2	Slight to moderate restriction in productivity or ease of management because of minor limitations in soil, topography, or damage.	35.2
3	Moderate to severe limitations in soil, topography or damage.	7.8
4	Unsuitable for general cropping because of severe limitations, but has limited utility for special crops.	1.1
6	Unsuitable for irrigation because of extreme limitations.	1.6
	TOTAL	100.0%

* From 1946 U.S. Bureau of Reclamation Land Classification Study.

2. District soil association map (Agricultural only)
See Attachment B, District Soils Map

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

Soil Problem	*Estimated Acres*	*Effect on Water Operations and Management*
Salinity	0	NA
High-water table	0	NA
High or low infiltration rates	0	NA
Other (define)	0	NA

D. Climate

1. General climate of the district service area
Kern and Tulare counties have three distinct climate zones - valley, mountain, and high desert - within a relatively short distance. Within the valley itself there are two distinct regions with diverse climatic conditions: (1) The valley floor falls in a rain shadow cast by the Coastal Range of mountains; (2) The foothill region elevations on the south and east of the valley generally enjoy more frost-free days than the valley floor, allowing perennials such as citrus to flourish where the thermal belt provides some natural protection against frost.

The Sierra Nevada Mountains to the northeast shut out most of the cold air that flows southward over the continent during winter. The Tehachapi Mountains, forming the southern boundary, act as an obstruction to northwest wind, resulting in heavier precipitation on the windward slopes, high wind velocity over the ridges and, at times, continuing cloudiness in the south end of the valley after skies have cleared elsewhere.

The Climate in the Delano-Earlimart area is generally representative of the entire San Joaquin Valley. During the summer months the days are generally hot and dry with daytime temperatures typically exceeding 95 degrees F and during the winter months the days are generally mild and damp with daytime temperatures typically averaging 40 degrees F. The mean annual temperature at Lake Woollomes, located within and near the south central district border, is 62.2 degrees F. The average

minimum and maximum temperatures are 48.4 degrees F and 76.1 degrees F respectively. The average frost-free period for the entire District is 250 days per year. The mean wind speed for the area is 6.4 miles per hour and the prevailing direction is northwest.

The average seasonal rainfall for the Delano-Earlimart area is 8.48 inches, based on district's estimated by the U.S. Bureau of Reclamation that approximately 3 inches represents the effective precipitation.

The average annual evaporation for the Delano-Earlimart area is 76.4 inches with the greatest evaporation occurring during the months of May, June, July and August.

	Jan	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Annual*
Avg Precip.	1.37	1.47	1.43	.98	.31	.09	0	.08	.33	.39	1.12	.91	8.48
Avg Temp.	45.7	51.1	54.1	60.3	67.7	74.8	79.5	77.9	72.6	63.8	52.9	45.8	62.2
Max. Temp.	56.2	63.3	66.8	74.6	83.6	91.3	95.6	93.4	88.1	79.1	65.4	55.7	76.1
Min. Temp	35.6	39.4	42.1	46.2	52.1	58.7	63.3	61.8	56.9	48.5	40.4	35.5	48.4
ETo	1.4	2.1	4.3	6.9	10.2	12.0	12.3	10.6	7.9	5.0	2.4	1.3	76.4

Weather station ID: Hanford *Data period: Year* unknown *to Year* unknown

Average wind velocity: 6.4 miles per hour *Average annual frost-free days:* 250

2. *Impact of microclimates on water management within the service area*
   There are no known micro-climates in the District.

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*
   NA

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

Name	*Estimated Acres*	*Description*
None		

F. Operating Rules and Regulations

1. *Operating rules and regulations*
   See Attachment C, District Agricultural Water Policy; Municipal and Industrial Water Policy

2. *Water allocation policy (Agricultural only)*
   See Attachment C, District Agricultural Water Policy, page 1

Summary – District water to water users based upon their ability to put the water to reasonable and or otherwise in an imprudent manner.

3. *Official and actual lead times necessary for water orders and shut-off (Agricultural only)*
See Attachment C, District Agricultural Water Policy, Page 2-3

Summary – The District has two separate water ordering requirements for growers:
Water users without float systems:
The District requires that all water orders be placed in person, by telephone, or through the District's web sit and requests that they are made by 9:00 a.m., twenty-four (24) hours in advance. Those orders placed 24 hours in advance will receive priority. Water orders placed after 9:00 a.m. and with less than 24 hours notice will be accepted if possible as determined by the Operations Technician. Water ordered runs continuously until ordered off. Minimum water order duration is twenty-four (24) hours unless the Operations Technician approves a shorter duration in advance, or in case of a verifiable emergency.
Water users with float systems:
Growers that have had a pressure-compensating float system installed on their turnout(s) are allowed to operate that particular turnout(s) through a separate operating valve on the grower's side of the turnout. Growers with float systems may make changes at any time, including weekends and holidays, provided that they notify the District of all water requests and changes twenty-four (24) hours in advance. Notification may be accomplished in person, by telephone, or through the District's web site. An exception to this notification requirement is a change in an existing flow that is less than 100 gpm. Water ordered by growers with float systems run continuously until ordered off. A water order of a duration that is less than twenty-four (24) hours is acceptable provided advance notification has occurred, as described above, or in case of a verifiable emergency.

4. *Policies regarding return flows (surface and subsurface drainage from farms) and outflow (Agricultural only)*
NA-the District has no return flows from water users.

5. *Policies on water transfers by the district and its customers*
See Attachment C, District Agricultural Water Policy, Page 2

Summary - Water users owning or leasing multiple parcels within the District that are eligible for water may transfer water without restriction between those parcels. Transfers between individuals or entities within the District are allowed subject to completion of a water transfer request signed by both parties. Consistent with the District's water conservation and management plan and conjunctive use needs, water users may not transfer, sell or otherwise dispose of any District water outside of the District's boundaries.

G. Water Measurement, Pricing, and Billing

1. *Agricultural Customers*
   a. *Number of farms:* 425
   b. *Number of delivery points (turnouts and connections):* 527
   c. *Number of delivery points serving more than one farm:* 0

d. Number of measured delivery points (meters and measurement devices): 527

e. Percentage of delivered water that was measured at a delivery point: 100

f. Delivery point measurement device table (Agricultural only)

Measurement Type	*Number*	*Accuracy (+/- %)*	*Reading Frequency (Days)*	*Calibration Frequency (Months)*	*Maintenance Frequency (Months)*
Orifices					
Propeller meter	527	+/- 3%	Every 3rd day	< 36 mos.	As needed
Weirs					
Flumes					
Venturi					
Metered gates					
Acoustic doppler					
Other (define)					
Total	527				

2. Urban Customers

a. Total number of connections: 79

b. Total number of metered connections: 79

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"	68	+/- 3%	90 days	< 36 mos.	As needed
3"	3	+/- 3%	90 days	< 36 mos.	As needed
4"	8	+/- 3%	90 days	< 36 mos.	As needed
6"					
8"					
10"					
Compound					
Turbo					
Other (define)					
Total	79				

3. Agriculture and Urban Customers

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

See Attachment C, District Agricultural Water Policy, page 4-5; Municipal and Industrial Water Policy, page 1-2

b. Annual charges collected from customers (current year data)

Fixed Charges			
Charges ($ unit)	*Charge units ($/acre), ($/customer) etc.*	*Units billed during year (acres, customer) etc.*	*$ collected ($ times units)*
$15.40	$/acre	54,890 acres	$845,307
$26.75	$/acre	54,890 acres	$1,578,089

Volumetric charges (2009 to-date)			
Charges ($ unit)	*Charge units ($/AF), ($/HCF), etc.*	*Units billed during year (AF, HCF) etc.*	*$ collected ($ times units)*
$48.00	$/acre-foot	231 acre-feet	$11,088
$49.50	$/acre-foot	83,450 acre-feet	$4,130,775
$80.25	$/acre-foot	10,199 acre-feet	$818,470
$98.25	$/acre-foot	375 acre-feet	$36,844

See Attachment D, District Sample Bills

c. Water-use data accounting procedures
The District reads meters routinely during the month and at the end of each month for billing. Reading and billing procedures are computerized and stored indefinitely. Following verification of monthly volumetric measurements, data is transferred to the billing department for creation of a monthly statement and collection of billed charges.

H. Water Shortage Allocation Policies

1. *Current year water shortage policies or shortage response plan - specifying how reduced water supplies are allocated*
   See Attachment E, District Water Shortage Plan
   Summary - When the demand for District water is greater than the available supply, the supply is distributed evenly among landowners and water users with approved Water Applications on file for the current water year.

2. *Current year policies that address wasteful use of water and enforcement methods*
   See Attachment C, District Agricultural Water Policy, page 1

Section 2: Inventory of Water Resources

A. Surface Water Supply

1. *Acre-foot amounts of surface water delivered to the water purveyor by each of the purveyor's sources*
   See Water Inventory Tables, Table 1

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

B. Ground Water Supply

1. *Acre-foot amounts of ground water pumped and delivered by the district*
   See Water Inventory Tables, Table 2

2. *Ground water basin(s) that underlies the service area*

Name	*Size (Square Miles)*	*Usable Capacity (AF)*	*Safe Yield (AF/Y)*
San Joaquin Valley Basin (Tule Sub-basin)	733	14,600,000	28,500

3. *Map of district-operated wells and managed ground water recharge areas*
   See Attachment F, District Map of Ground Water Facilities

4. *Description of conjunctive use of surface and ground water*
   Historically, the District has accomplished direct groundwater recharge during surplus water years through operations within White River channel as well as a small 5 acre recharge basin. In 1993, the District purchased an 80 acre parcel specifically for development into a groundwater recharge basin. This new site has been fully developed for groundwater recharge purposes, with five separate cells, and dual methods of introducing water to each cell, either from the District's distribution system or from direct diversions out of White River. In 2007, the District began a pilot project on this site to determine the feasibility of conducting a groundwater banking program. The pilot project now includes a recovery well that was installed in 2009, with plans for additional extraction and monitoring wells to be installed in 2010. The goal is to actively manage both the surface water and groundwater resources of the area for the benefit of District water users.

5. *Ground Water Management Plan*
   See Attachment G, Ground Water Management Plan

6. *Ground Water Banking Plan*
   In progress- the district is in the process of gathering data and information for the groundwater banking pilot project that will be used in developing a Banking Plan. The Banking Plan is not yet available for inclusion in this document.

C. Other Water Supplies

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

D. Source Water Quality Monitoring Practices

1. *Potable Water Quality (Urban only)*
   NA

2. *Agricultural water quality concerns*: *Yes __ No* X
   (If yes, describe)

3. *Description of the agricultural water quality testing program and the role of each participant, including the district, in the program.*
   None presently. Groundwater quality tests are anticipated to be a part of the District's Banking Plan once implemented. Limited groundwater quality analysis will be conducted as part of the groundwater banking pilot project.

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

Analyses Performed	*Frequency*	*Concentration Range*	*Average*
None			

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

Analyses Performed	*Frequency*	*Concentration Range*	*Average*
None			

E. Water Uses within the District

1. *Agricultural*
   See 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*
Information not collected						

3. *Urban use by customer type in current year*

Customer Type	*Number of Connections*	*AF*
Single-family	NA	
Multi-family		

Customer Type	*Number of Connections*	*AF*
Commercial		
Industrial		
Institutional		
Landscape irrigation		
Wholesale		
Recycled		
Other (specify)		
Other (specify)		
Other (specify)		
Unaccounted for		
Total		

4. Urban Wastewater Collection/Treatment Systems serving the service area – current year

Treatment Plant	*Treatment Level (1, 2, 3)*	*AF*	*Disposal to / uses*
NA			
	Total		
Total discharged to ocean and/or saline sink			

5. Ground water recharge/management in current year (Table 6)

Recharge Area	*Method of Recharge*	*AF*	*Method of Retrieval*
District basins	direct	0	NA
	Total		

6. Transfers and exchanges into or out of the service area in current year (Table 6)

From Whom	*To Whom*	*AF*	*Use*
DEID	Shafter-Wasco ID	250	Ag deliveries

7. Trades, wheeling, wet/dry year exchanges, banking or other transactions in current year (Table 6)

From Whom	*To Whom*	*AF*	*Use*
None			

8. Other uses of water in current year

Other Uses	*AF*
None	

F. Outflow from the District (Agricultural only)

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 Appendix B (include in plan as Attachment L)

1. *Surface and subsurface drain/outflow in current year*

Outflow point	*Location description*	*AF*	*Type of measurement*	*Accuracy (%)*	*% of total outflow*	*Acres drained*
NA						

Outflow point	*Where the outflow goes (drain, river or other location)*	*Type Reuse (if known)*
NA		

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

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

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

Outflow (subsurface drainage) Quality Testing Program

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.*
   The District is a participant in the Southern San Joaquin Valley Water Quality Coalition, Kern Sub-region. Through this participation, the District has facilitated a number of landowners that

have determined that they may be potential dischargers to “waters of the state” to become members of the Coalition. The District has a monthly water quality monitoring protocol that it follows with respect to flows in White River, which has been approved under the MRP on file with the Control Board by the SSVWQC.

G. Water Accounting (Inventory)

1. *Water Supplies Quantified*
   a. *Surface water supplies, imported and originating within the service area, by month*
      See Table 1
   b. *Ground water extracted by the district, by month*
      See Table 2
   c. *Effective precipitation by crop*
      See Table 5
   d. *Estimated annual ground water extracted by non-district parties*
      See Table 2
   e. *Recycled urban wastewater, by month*
      See Table 3
   f. *Other supplies, by month*
      See Table 1

2. *Water Used Quantified*
   a. *Agricultural conveyance losses, including seepage, evaporation, and operational spills in canal systems*
      See Table 4
   b. *Consumptive use by riparian vegetation or environmental use*
      See Table 6
   c. *Applied irrigation water - crop ET, water used for leaching/cultural practices (e.g., frost protection, soil reclamation, etc.)*
      See Table 5
   d. *Urban water use*
      See Table 6
   e. *Ground water recharge*
      See Table 6
   f. *Water exchanges and transfers and out-of-district banking*
      See Table 6
   g. *Estimated deep percolation within the service area*
      See Table 6
   h. *Flows to perched water table or saline sink*
      See Table 6
   i. *Outflow water leaving the district*
      See Table 6
   j. *Other*
      See Table 6

3. *Overall Water Inventory*
      See Table 6

H. Assess Quantifiable Objectives:

Identify the Quantifiable Objectives that apply to the District (Planner, chapter 10) and provide a short narrative describing past, present and future plans that address the CALFED Water Use Efficiency Program goals identified for the District.

QO #	*QO Description*	*Past, Present & Future Plans*
183	Decrease flows to salt sinks	None-no salt sinks in DEID
186	Provide long-term diversion flexibility (PixNR)	District would consider addressing this QO when funding is available for this QO
187	Provide long-term diversion flexibility (salt soils)	District would consider addressing this QO when funding is available for this QO

Section 3: 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%*

Number of turnouts that are unmeasured or do not meet the standards listed above: 0

Number of measurement devices installed last year: 43

Number of measurement devices installed this year: 35

Number of measurement devices to be installed next year: 90

Types of Measurement Devices Being Installed	*Accuracy*	*Total Installed During Current Year*
Micrometer flow meters (measures both flow and volume)	+/-5%	

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

Name: Dale Brogan *Title:* General Manager

Address: 14181 Avenue 24 Delano, Ca 93215

Telephone: (66i) 725-2526 *E-mail:* dbrogan@deid.org

3. *Provide or support the availability of water management services to water users*
See Attachment I, Notices of District Education Programs and Services Available to Customers.

a. On-Farm Evaluations

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	unknown	147	159	160	160
Number of farms	unknown	4	3	4	4

2) *Timely field and crop-specific water delivery information to the water user*
Water delivery information is provided to each water users monthly by individual turnout (point of delivery to the water user). This information is then used by the water user to account for water used by field and crop.

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

The District promotes use of real time irrigation scheduling and crop ET information by providing information to water users through District's published annual Water Policy, its newsletter, and its website. The District maintains a direct link on its website to CIMIS, including CIMIS data collected at the CIMIS station sponsored by the District at its headquarters.

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

DEID is part of the Southern San Joaquin Valley Water Quality Coalition. A water quality measurement plan for DEID was submitted and approved by the Central Valley Water Quality Control Board staff, which includes standards for measuring water quality of surface water runoff in White River on an event basis. Results of those tests are available to the public upon request.

The District initiated a groundwater banking pilot project in 2007 that includes a groundwater quality monitoring plan. The first water quality samples were collected in the fall of 2009 with results pending. At least annual testing will occur through the life of the pilot program. Test results will be available to the public upon request.

The District will be installing a series of groundwater monitoring wells that will be used for collecting water quality samples in the future. Installation of these wells is slated for 2010, dependent upon receipt of an approved state AB303 grant in the amount of $250,000.

Local well drillers also provide groundwater quality analysis to customers in the District.

Friant Water Authority provides water quality information on Friant-Kern Canal surface water. The District makes that data available to District growers upon request.

The District has no drainage water.

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

Program	*Co-Funders (If Any)*	*Yearly Targets*
District newsletter	None	Quarterly to all landowners, water users, and others
Annual Water Policy	None	Quarterly to all landowners and water users
District website	None	Consistent updating of information on website
District website	None	Provide links to other educational websites
District DVD	None	Production and distribution of water conservation DVD (installation of float systems)
ACWA programs	Many	Funding of ACWA educational programs
CA Farm Water Coalition	Many	Funding of CFWC educational programs
Local Farm Bureaus	Many	Funding of FB educational programs
Water Assoc. of Kern Co.	Many	Funding of WAKC educational programs
Water Education Foundation	Many	Funding of WEF educational programs
CA Ag in the Classroom	Many	Funding of CAITC educational programs
Kern Co. Teachers Ag Day	Many	Funding of program to take teachers to ag operations

See Attachment K for samples of provided materials and notices

e. other

4. *Pricing structure - based at least in part on quantity delivered. Describe the quantity-based water pricing structure, the cost per acre-foot, and when it became effective.*
   All water is billed from measured volumes delivered. The annual water price is designed to collect all water-related expenses for that year including Bureau charges for water, canal conveyance charges, attributable delta water costs (Exchange Contractors water), SWRCB fees, and a portion of CVPIA-fees and charges. Most of the CVPIA-related fees and charges are collected on a per acre assessment charged to all lands within DEID.

   Annual water pricing becomes effective March 1 of each year, subject to potential change based on conditions. The 2009 base water rate was $49.50 per acre-foot for irrigation water.

5. *Evaluate and describe the need for changes in policies of the institutions to which the district is subject.*
   USBR water transfer policy- needs revision to allow water management transfers and exchanges to non-long-term contractors. Current policy prevents most such transfers and exchanges

   USBR water banking policy- needs revision to allow for unbalanced banking programs. Current banking outside of 1:1 exchanges are difficult to gain approval.

6. *Evaluate and improve efficiencies of district pumps. Describe the program to evaluate and improve the efficiencies of the contractor's pumps.*
   District budgets for routine maintenance of District pumps and has participated in SCE pump testing programs on those pumps where configuration allows in-place testing. Latest tests conducted in 2009. District and SCE have explored potential pump testing facilities that could provide off-site testing where in-place testing is not possible.

B. Exemptible BMPs for Agricultural Contractors

(See Planner, Chapter 2, Appendix C for examples of exemptible conditions)

1. Facilitate alternative land use

Drainage Characteristic	*Acreage*	*Potential Alternate Uses*
High water table (<5 feet)	None	NA
Poor drainage	None	NA
Ground water Selenium concentration > 50 ppb	None	NA
Poor productivity	None	NA

Describe how the contractor encourages customers to participate in these programs.
The District has no lands identified that would necessitate the need to evaluate potential alternative land uses.

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

Sources of Recycled Urban Waste Water	*AF/Y Available*	*AF/Y Currently Used in District*
None	NA	NA

The District's distribution system is completely pipeline and pressurized.

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

Funding source Programs	*How provide assistance*
District	DEID provides information to water users of available opportunities of loans, grants, cost-sharing, and any other financial assistance programs offered by others through the District newsletters and annual Water Policy.

4. Incentive pricing

Structure of incentive pricing	*Related goal*
Surface water priced at or below cost of pumping groundwater from private wells	Conjunctive use of groundwater

5. a) Line or pipe ditches and canals

Canal/Lateral (Reach)	*Type of Improvement*	*Number of Miles in Reach*	*Estimated Seepage (AF/Y)*	*Accomplished/ Planned Date*
NA-Completely pipelined system				

b) Construct regulatory reservoirs

Reservoir Name	*Annual Spill in Section (AF/Y)*	*Estimated Spill Recovery (AF/Y)*	*Accomplished/ Planned Date*
NA-Completely pipelined system with no operational spills			

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

The District has taken a number of steps in its pursuit of providing the most efficient and flexible water operations possible that are both economic and functional for the benefit of our water users. These steps include:

(a) purchasing new water ordering and accounting software in 2006 (at a cost of $15000) for tracking water ordered, used, and ultimately billed;

(b) launching of a new feature on the District's website that allows growers to order water 24 hours a day, seven days a week and also allows secured grower access of water use data by turnout for each month of the current water year, available for the first time in 2007 (cost of $40,000);

(c) construction of a SCADA system for the entire District, allowing remote monitoring and control of all pumping plants and related facilities (constructed in 2000 at a cost of $425,000);

(d) maximizing water delivery opportunities for growers through flexible water ordering hours which was further enhanced in 2007 with the addition of implementing web based water orders for growers, 24 hours a day, seven days a week; further enhanced and improved in 2008 (cost of $650)

(e) completion of a three-year turnout renovation project in 2002 that updated and converting all agricultural turnouts to an improved design with new valve, meter, and delivery components (approximate cost of $2.4 million);

(f) ongoing promotion and installation of turnout “float systems” that allow constant volumetric flow to the grower by automatically adjusting for variations in pressure within the District’s distribution system (315 installed from 2003 through 2009 at an approximate cost of $3,500 each); this project is being accelerated during 2007 through 2009 with the use of a $300,000 "Water 2025" challenge grant that the District will use exclusively to encourage and install additional float systems (DEID is matching the grant with $300,000 of its own funds);

(g) the District has invested in new motor control centers at 15 of its 18 pumping plants at a cost of $1.365 million; the new MCCs provide greater reliability, and hence flexibility to the District’s distribution system (begun in 2005 and completed in 2007).

All of these capital improvements allow for greater flexibility in our system through quicker, more responsive controls. Further, all are also a part of an overall goal of the District transitioning to a delivery system that is based on grower demands on a real-time basis. Such a system will provide constant water flows and variable start and stop times for water deliveries based on the needs of the grower. This has been achieved for those growers with float systems installed.

See Attachment L, contractor ‘agricultural water order’ form

7. *Construct and operate district spill and tailwater recovery systems*

Distribution System Lateral	*Annual Spill (AF/Y)*	*Quantity Recovered and reused (AF/Y)*
NA-Distribution system in completely pipelined with no operational spills		

Drainage System Lateral	*Annual Drainage Outflow (AF/Y)*	*Quantity Recovered and reused (AF/Y)*
NA-district has no drainage issues or impacted lands		

8. Plan to measure outflow.

Total # of outflow (surface) locations/points NA
Total # of outflow (subsurface) locations/points NA
Total # of measured outflow points NA
Percentage of total outflow (volume) measured during report year NA

Identify locations, prioritize, determine best measurement method/cost, submit funding proposal

Location & Priority	*Estimated cost (in $1,000s)*				
	2009	*2010*	*2011*	*2012*	*2013*
NA					

9. Optimize conjunctive use of surface and ground water

DEID is currently in its second year of conducting an in-district direct groundwater recharge pilot project. The pilot project involves conversion of the District's existing 80-acre groundwater recharge basin into a full groundwater bank, complete with recovery wells and tie-ins with the District's distribution system. In 2008-09, the District constructed the first groundwater recovery well on the site. The well was operated during the summer months to gather data. Recharge operations were also conducted in the spring and fall months, again stressing the collection of data as part of the pilot project. Additional planned activities for the pilot project:

a) Construction of a second recovery well in 2010, which is being partially funded through a USBR Challenge Grant.

b) Installation of a series of dedicated groundwater monitoring wells. The wells are being partially funded through a State AB303 grant.

c) Construction of up to three additional groundwater recovery wells and miscellaneous basin improvements in 2010. This phase of the pilot project (phase 2) is being partially funded by an ARRA grant administered by the USBR.

d) Expansion of the current 80-acre pilot project site to a total of 160 acres in 2010-11. Escrow was opened in 2009 on the purchase of an 80-acre parcel immediately adjacent to the existing pilot project site. The new property will be developed into additional recharge area in 2010-11.

e) Further land acquisition opportunities will be sought in subsequent years with the target being up to 400 acres of in-district recharge areas.

The District is also involved in out-of-district banking opportunities which include:

a) Continued review and coordination of other water management/conjunctive use opportunities through membership and participation in the Poso Creek Integrated Regional Water Management Planning Group.

b) Continue a joint groundwater banking investigation with neighboring Pixley Irrigation District for the purpose of determining the feasibility of developing a new regional groundwater bank. The feasibility study was completed in 2007, with additional investigations commissioned in 2008.

c) The District completed a groundwater banking agreement in 2006 with North Kern Water Storage District that allowed DEID to bank nearly 30,000 acre-feet of surplus 2006 CVP water in NK for later withdrawal and use by DEID. Withdrawals occurred in both 2007 and 2009 to supplement below-average water years. In 2009, the District entered into negotiations with NKWSD to expand the current banking program by allowing additional water to be banked through the remaining 17-year life of the banking agreement.

d) In 2009 the District has pursued a groundwater banking agreement with Rosedale Rio-Bravo Water Storage District that would allow the banking of surplus project and non-project water in Rosedale by DEID for later return in below-average water years. The proposed project anticipates an active program of deposits and withdrawal over the next 25 years.

The District is also involved in activities supporting increased conjunctive use programs, including:

a) Extensive groundwater monitoring and mapping within the DEID boundaries.

b) Continued participation in a regional groundwater monitoring and mapping program with six other neighboring districts.

10. *Automate canal structures*

NA-District distribution system is completely pipelined.

11. *Facilitate or promote water customer pump testing and evaluation*

The District continues to promote on-farm pump testing by including information on entities and companies that provide this service periodically in its newsletter and in the “Water Conservation” section of the District’s annual Water Policy that is sent to all landowners and water users. The information is also posted on the District's web site. The local utility company is also invited to promote its pump testing services at periodic water user meetings held by the District.

See Attachment K, Notices of District Education Programs and Services Available to Customers

12. Mapping

GIS maps	*Estimated cost (in $1,000s)*				
	2009	*2010*	*2011*	*2012*	*2013*
*Layer 1 – Distribution system**	4	0	0	0	0
Layer 2 – Drainage system	NA				
Suggested layers:					
*Layer 3 – Ground water information***	0	0	0	0	0
*Layer 4 – Soils map****	0	0	0	0	0
Layer 5 – Natural & cultural resources	NA				
Layer 6 – Problem areas	NA				

* Majority of work and expense in converting District map to GIS-based map was expended in 2008.

** Groundwater information is mapped on a separate mapping system for ease in analysis. No plans to adapt to District base map as it would serve no purpose.

*** Soils map will remain on NRCS data base map. No plans to convert to District base map as it would serve no purpose.

C. Provide a 3-Year Budget for Implementing BMPs

1. Amount actually spent during current year.

BMP #		*BMP Name*	*Actual Expenditure (not including staff time)*	*Staff Hours*
A	*1*	*Measurement*	*$108,000*	*50*
	2	*Conservation staff*	*$0*	*50*
	3	*On-farm evaluation /water delivery info*	*$8,000*	*135*
		Irrigation Scheduling	*$7,500*	*135*
		Water quality	*$5,000*	*50*
		Agricultural Education Program	*$191,000*	*175*
	4	*Quantity pricing*	*$304,000*	*9,360*
	5	*Policy changes*	*$10,000*	*50*
	6	*Contractor's pumps*	*$14,000*	*250*
B	*1*	*Alternative land use*	*$0*	*0*
	2	*Urban recycled water use*	*$0*	*0*
	3	*Financing of on-farm improvements*	*$10,000*	*175*
	4	*Incentive pricing*	*$1,500*	*35*
	5	*Line or pipe canals/install reservoirs*	*$0*	*0*
	6	*Increase delivery flexibility*	*$189,400*	*368*
	7	*District spill/tailwater recovery systems*	*$0*	*0*
	8	*Measure outflow*	*$0*	*0*
	9	*Optimize conjunctive use*	*$1,170,000*	*5,000*
	10	*Automate canal structures*	*$0*	*0*
	11	*Customer pump testing*	*$1,500*	*30*
	12	*Mapping*	*$4,000*	*30*
		Total	*$2,023,900*	*15,893*

2. *Projected budget summary for the next year.*

BMP #		BMP Name	Budgeted Expenditure (not including staff time)	Staff Hours
A	1	Measurement	$110,000	50
	2	Conservation staff	$0	0
	3	On-farm evaluations/water delivery info	$8,000	135
		Irrigation Scheduling	$7,500	135
		Water quality	$7,000	60
		Agricultural Education Program	$195,000	175
	4	Quantity pricing	$307,000	9,360
	5	Policy changes	$10,000	50
	6	Contractor's pumps	$16,000	250
B	1	Alternative land use	$0	0
	2	Urban recycled water use	$0	0
	3	Financing of on-farm improvements	$10,000	175
	4	Incentive pricing	$1,500	35
	5	Line or pipe canals/install reservoirs	$0	0
	6	Increase delivery flexibility	$82,000	160
	7	District spill/tailwater recovery systems	$0	0
	8	Measure outflow	$0	0
	9	Optimize conjunctive use	$2,833,000	7,500
	10	Automate canal structures	$0	0
	11	Customer pump testing	$1,500	30
	12	Mapping	$0	0
		Total	$3,588,500	18,115

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

BMP #		BMP Name	Budgeted Expenditure (not including staff time)	Staff Hours
A	1	Measurement	$115,000	50
	2	Conservation staff	$0	50
	3	On-farm evaluations/water delivery info	$8,000	135
		Irrigation Scheduling	$7,500	135
		Water quality	$8,500	70
		Agricultural Education Program	$200,000	175
	4	Quantity pricing	$310,000	9360
	5	Policy changes	$10,000	50
	6	Contractor's pumps	$18,000	250
B	1	Alternative land use	$0	0
	2	Urban recycled water use	$0	0
	3	Financing of on-farm improvements	$10,000	175
	4	Incentive pricing	$1,500	35
	5	Line or pipe canals/install reservoirs	$0	0
	6	Increase delivery flexibility	$41,000	80
	7	District spill/tailwater recovery systems	$0	0
	8	Measure outflow	$0	0
	9	Optimize conjunctive use	$150,000	3,000

(continued) BMP #	BMP Name		Budgeted Expenditure (not including staff time)	Staff Hours
10	*Automate canal structures*		*$0*	*0*
11	*Customer pump testing*		*$1,500*	*30*
12	*Mapping*		*$0*	*0*
		Total	*$88,100*	*13,155*

Section 4: Best Management Practices (BMPs) for Urban (Municipal and Industrial) Contractors

1. All new service connections are metered.
2. 79 metered connections; 68 residential; 3 industrial; 8 commercial.
3. 68 meters read every 30 days; 11 every 90 days.
4. All billed by volume used.
5. Residential accounts are billed each month (see page 11 for rates).
6. Billings per year: residential-12 (monthly); commercial- 4 (quarterly); industrial- 4 (quarterly).

Section 5: District Water Inventory Tables

Supplemental Tables

Table 1

Surface Water Supply

2008 Month	Federal Ag Water (acre-feet)	Federal non-Ag Water. (acre-feet)	State Water (acre-feet)	Local Water (acre-feet)	Other Water (acre-feet)	Upslope Drain Water (acre-feet)	Total (acre-feet)
Method							
January	0	0	0	0	0	0	0
February	1317	13	0	0	0	0	1,330
March	5984	1	0	0	0	0	5,985
April	9439	11	0	0	0	0	9,450
May	11334	78	0	0	0	0	11,412
June	19286	12	0	0	0	0	19,298
July	21919	10	0	0	0	0	21,929
August	17392	120	0	0	0	0	17,512
September	11265	10	0	0	0	0	11,275
October	8629	9	0	0	0	0	8,638
November	2808	55	0	0	0	0	2,863
December	789	0	0	0	0	0	789
TOTAL	110,162	319	0	0	0	0	110,481

Table 2

Ground Water Supply

2008 Month	District Groundwate (acre-feet)	Private Groundwate *(acre-feet)
Method		
January	0	0
February	0	0
March	0	4,150
April	0	21,024
May	0	26,859
June	0	23,195
July	0	9,481
August	0	4,773
September	0	0
October	0	0
November	0	0
December	0	0
TOTAL	0	89,482

*normally estimated

Table 3

Total Water Supply

2008 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	1,330	0	0	1,330
March	5,985	0	0	5,985
April	9,450	0	0	9,450
May	11,412	0	0	11,412
June	19,298	0	0	19,298
July	21,929	0	0	21,929
August	17,512	0	0	17,512
September	11,275	0	0	11,275
October	8,638	0	0	8,638
November	2,863	0	0	2,863
December	789	0	0	789
TOTAL	110,481	0	0	110,481

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

Table 4

Distribution System

2008 Canal, Pipeline, Lateral, Reservoir	Length (feet)	Width (feet)	Surface Area (square feet)	Precipitatio (acre-feet)	Evaporation (acre-feet)	Spillage (acre-feet)	Seepage (acre-feet)	Total (acre-feet)
D-11 reservoir	75	200	15,000	0	2	0	0	(2)
D-17 reservoir	56	279	15,624	0	2	0	0	(2)
D-12 reservoir	130	385	50,050	1	7	0	0	(6)
D-14 reservoir	95	385	36,575	0	5	0	0	(4)
Terminal reservoir	114	105	11,970	0	2	0	0	(1)
	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			129,219	2	17	0	0	(16)

Table 5

Crop Water Needs

2008 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	725	3.99	0.20	0.00	0.04	3,007
Citrus	1,966	2.89	0.10	0.00	0.04	5,794
Grapes w/cover cro	29,426	2.33	0.10	0.72	0.04	91,427
Tree Fruit w/cover crop	1,504	3.55	0.20	0.72	0.04	6,658
Field/Row Crops	1,444	1.65	0.10	0.00	0.04	2,465
Nut Crops w/cover	14,084	2.70	0.10	0.72	0.04	48,970
	0	0.00	0.00	0.00	0.00	0
	0	0.00	0.00	0.00	0.00	0
	0	0.00	0.00	0.00	0.00	0
	0	0.00	0.00	0.00	0.00	0
	0	0.00	0.00	0.00	0.00	0
	0	0.00	0.00	0.00	0.00	0
	0	0.00	0.00	0.00	0.00	0
	0	0.00	0.00	0.00	0.00	0
	0	0.00	0.00	0.00	0.00	0
	0	0.00	0.00	0.00	0.00	0
	0	0.00	0.00	0.00	0.00	0
	0	0.00	0.00	0.00	0.00	0
	0	0.00	0.00	0.00	0.00	0
	0	0.00	0.00	0.00	0.00	0
	0	0.00	0.00	0.00	0.00	0
	0	0.00	0.00	0.00	0.00	0
	0	0.00	0.00	0.00	0.00	0
Crop Acres	49,149					158,320

Total Irrig. Acres 49,149 (If this number is larger than your known total, it may be due to double cropping)

Table 6

2008 District Water Inventory

Water Supply	Table 3		110,481
Riparian ET	(Distribution and Drain)	minus	0
Groundwater recharge	intentional - ponds, injection	minus	0
Seepage	Table 4	minus	0
Evaporation - Precipitation	Table 4	minus	16
Spillage	Table 4	minus	0
Transfers/exchanges/trades/wheel	(into or out of the district)	plus/minus	(250)
Non-Agri deliveries	delivered to non-ag customers	minus	319
Water Available for sale to agricultural customers			109,896
Compare the above line with the next line to help find data gaps			
2005 Actual Agricultural Water Sales	From District Sales Records		110,465
Private Groundwater	**Table 2**	**plus**	**89,482**
Crop Water Needs	Table 5	minus	158,320
Drainwater outflow	(tail and tile not recycled)	minus	0
Percolation from Agricultural Land	(calculated)		41,627

Table 7

Influence on Groundwater and Saline Sink

2008

Agric Land Deep Perc + Seepage + Recharge - Groundwater Pumping = District Influence	0
Estimated actual change in ground water storage, including natural recharge)	0
Irrigated Acres (from Table 5)	49,149
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 (acre-feet)	Other Water (acre-feet)	Upslope Drain Water (acre-feet)	Total (acre-feet)
1999	128,267	123	0	9,500	0	0	137,890
2000	130,582	191	0	5,065	0	0	135,838
2001	110,432	108	0	5,043	0	0	115,583
2002	123,333	213	0	4,130	0	0	127,676
2003	108,459	125	0	5,165	6,684	0	120,433
2004	121,229	152	0	6,837	0	0	128,218
2005	100,355	239	0	2,904	15,318	0	118,816
2006	109,274	198	0	0	8,998	0	118,470
2007	69,512	265	0	0	1,858	0	71,635
2008	110,162	319	0	0	0	0	110,481
Total	1,111,605	1,933	0	38,644	32,858	0	1,185,040
Average	111,161	193	0	3,864	3,286	0	118,504

TABLE 2A

Calculation of Private Groundwater Pumped-2008

Month	Crop Demand(1) (acre-feet)	Irrigation Efficiency (2) (percent)	Total Water Requirement (acre-feet)	Quantity Available(3) (acre-feet)	Quantity Pumped(4) (acre-feet)	Deep Percolation(5) (acre-feet)
January	188	85%	221	221	0	0
February	274	85%	322	1,652	0	995
March	8,615	85%	10,135	5,985	4,150	0
April	25,903	85%	30,474	9,450	21,024	0
May	32,686	85%	38,455	11,596	26,859	0
June	36,119	85%	42,493	19,298	23,195	0
July	26,699	85%	31,410	21,929	9,481	0
August	18,942	85%	22,285	17,512	4,773	0
September	8,143	85%	9,580	11,275	0	1,685
October	1,244	85%	1,463	9,457	0	7,166
November	259	85%	305	3,168	0	2,503
December	224	85%	263	1,052	0	526
TOTAL	159,294		187,405	112,595	89,481	12,875

(1) Percentage distribution from Table 5B below
(2) Estimated District average for all crops, soil types, and irrigation methods
(3) Surface supplies (table 1) + effective precipitation available (table 5A) to meet crop demand
(4) estimate (total water requirement minus quantity available)
(5) available surface supply (table 1) in excess of total water requirement

Table 4A

Calculation of Precipitation/Evaporation/Seepage

2008 Precipitation Worksheet					2008 Evaporation Worksheet					Seepage		
	inches precip	ft precip	acres	AF/Year		inches evap	ft evap	acres	AF/YEAR	acres	AFY	AF/ac seepage
Jan	2.17	0.18	0.34	0.18	Jan	2.17	0.18	0.34	1.99	0.34	0.00	0.00
Feb	1.76	0.15	0.36	0.18	Feb	2.8	0.23	0.36	2.07	0.36	0.00	0.00
Mar	0.00	0.00	1.15	0.59	Mar	4.8	0.40	1.15	6.64	1.15	0.00	0.00
Apr	0.00	0.00	0.84	0.43	Apr	5.31	0.44	0.84	4.85	0.84	0.00	0.00
May	0.09	0.01	0.27	0.14	May	10.52	0.88	0.27	1.59	0.27	0.00	0.00
Jun	0.00	0.00	0.00	0.00	Jun	9.2	0.77	0.00	0.00	0.00	0.00	0.00
Jul	0.00	0.00	0.00	0.00	Jul	9.04	0.75	0.00	0.00	0.00	0.00	0.00
Aug	0.00	0.00	0.00	0.00	Aug	10.42	0.87	0.00	0.00	0.00	0.00	0.00
Sept	0.00	0.00	0.00	0.00	Sept	5.84	0.49	0.00	0.00	0.00	0.00	0.00
Oct	0.40	0.03	0.00	0.00	Oct	5.5	0.46	0.00	0.00	0.00	0.00	0.00
Nov	0.91	0.08	0.00	0.00	Nov	2.28	0.19	0.00	0.00	0.00	0.00	0.00
Dec	0.81	0.07			Dec	1.48	0.12			2.97	0.00	0.00
TOTAL	6.14	0.51			TOTAL	69.36	5.78			5.93	0.00	

TABLE 5A

Effective Precipitation Calculation-2008

	Measured amt. (inches)	50% of total (feet)	Potential Supply from Eff.Precip.(af)	Crop Demand (af)	Water Supply from Eff.Precip.(af)
January	2.17	0.09	4444	221	221
February	1.76	0.07	3604	322	322
March	0	0.00	0	10,135	0
April	0	0.00	0	30,474	0
May	0.09	0.00	184	38,455	184
June	0	0.00	0	42,493	0
July	0	0.00	0	31,410	0
August	0	0.00	0	22,285	0
September	0	0.00	0	9,580	0
October	0.4	0.02	819	1,463	819
November	0.91	0.04	1864	305	305
December	0.81	0.03	1659	263	263
TOTAL	6.14	0.26	12574	187,405	2114

precip.@DEID office assumed from Table 5B

2008 irrigated acreage = 49149

average effective precipitation (AF/Ac) = 0.043

TABLE 5B (page 1 of 5)

Et for Crops in DEID - 2008

ET for crops in DEID-inches per acre

	Alfalfa			Citrus (1)		
	in./ac.	acres	**ac.ft.**	in./ac.	acres	**ac.ft.**
Jan	0.99	725	**59.81**	0.78	1966	**127.79**
Feb	1.44	725	**87.00**	1.14	1966	**186.77**
Mar	3.16	725	**190.92**	2.33	1966	**381.73**
Apr	4.58	725	**276.71**	3.37	1966	**552.12**
May	6.33	725	**382.44**	4.67	1966	**765.10**
Jun	7.3	725	**441.04**	4.99	1966	**817.53**
Jul	7.57	725	**457.35**	5.18	1966	**848.66**
Aug	6.41	725	**387.27**	4.39	1966	**719.23**
Sep	4.77	725	**288.19**	3.26	1966	**534.10**
Oct	3.2	725	**193.33**	2.36	1966	**386.65**
Nov	1.44	725	**87.00**	1.05	1966	**172.03**
Dec	0.69	725	**41.69**	1.11	1966	**181.86**
total-inches	47.88			34.63		
total-feet	3.99		**2892.75**	2.89		**5673.55**
Leaching Factor			145			196.6
Total			3037.75			5870.15

(1) 0.3 ac.in. addded in Dec use for frost protection

TABLE 5B (page 2 of 5)

	Grapes w/ Cover Crop				
	Crop	Cover***	Total-in./ac.	acres	**ac.ft.**
Jan				29,426	**0.00**
Feb				29,426	**0.00**
Mar	0.7	1.29	1.99	29,426	**4879.81**
Apr	3.18	3.19	6.37	29,426	**15620.30**
May	5.64	2.09	7.73	29,426	**18955.25**
Jun	6.5	2.1	8.6	29,426	**21088.63**
Jul	6.09	0	6.09	29,426	**14933.70**
Aug	4.2	0	4.2	29,426	**10299.10**
Sep	1.59	0	1.59	29,426	**3898.95**
Oct		0	0	29,426	**0.00**
Nov				29,426	**0.00**
Dec				29,426	**0.00**
total-inches	27.9	8.67	36.57		
total-feet	2.33	0.72	3.05		**89675.74**
Leaching Factor					2942.6
Total					92618.34

TABLE 5B (page 3 of 5)

	Tree fruit with cover crop				
	in./ac.	over**	Total-in./ac.	acres	**ac.ft.**
Jan			0	1,504	**0.00**
Feb			0	1,504	**0.00**
Mar	1.9	1.29	3.19	1,504	**238.13**
Apr	1.9	3.19	5.09	1,504	**238.13**
May	5.43	2.09	7.52	1,504	**680.56**
Jun	6.87	2.1	8.97	1,504	**861.04**
Jul	9.41	0	9.41	1,504	**1179.39**
Aug	7.88	0	7.88	1,504	**987.63**
Sep	5.61	0	5.61	1,504	**703.12**
Oct	3.55	0	3.55	1,504	**444.93**
Nov		0	0	1,504	**0.00**
Dec		0	0	1,504	**0.00**
total-inches	42.55	8.67	51.22		
total-feet	3.55	0.72	4.27		**5332.93**
Leaching Factor					300.8
Total					5633.73

TABLE 5B (page 4 of 5)

	Field/Row Crops			Almonds/ Other Nuts with Cover Crop (6)				
	in./ac.	acres	**ac.ft.**	Crop (5)	Cover	Total-in./ac.	acres	ac.ft.
Jan		1,444	**0.00**				14,084	**0.00**
Feb		1,444	**0.00**				14,084	**0.00**
Mar	2	1,444	**240.67**	0.81	1.29	2.10	14,084	**2464.70**
Apr	4.93	1,444	**593.24**	3.69	3.19	6.88	14,084	**8074.83**
May	7.82	1,444	**941.01**	6.55	2.09	8.64	14,084	**10140.48**
Jun	5.01	1,444	**602.87**	7.55	2.1	9.65	14,084	**11325.88**
Jul		1,444	**0.00**	7.07	0	7.07	14,084	**8297.82**
Aug		1,444	**0.00**	4.88	0	4.88	14,084	**5727.49**
Sep		1,444	**0.00**	1.85	0	1.85	14,084	**2171.28**
Oct		1,444	**0.00**	0.00	0	0.00	14,084	**0.00**
Nov		1,444	**0.00**				14,084	**0.00**
Dec		1,444	**0.00**				14,084	**0.00**
total-inches	19.76			32.4	8.67	41.07		
total-feet	1.65		**2377.79**	2.70	0.72	3.42		**48202.49**
Leaching Factor			144.4					1408.4
Total			2522.19					49610.89

(5) Used total of 2.7 af/ac w/same monthly use curve as grapes

TABLE 5B (page 5 of 5)

	total	Leaching Factor (7)		Total Irrig. Demand		Assumed	**Total Wtr.**
	ac.ft	distribution	ac.ft.	ac.ft.	percent	Irrig. Eff.	**Requirement**
Jan	188			**188**	**0.12%**	85%	**221**
Feb	274			**274**	**0.17%**	85%	**322**
Mar	8396	4.26%	219	**8615**	**5.41%**	85%	**10135**
Apr	25355	10.65%	547	**25903**	**16.26%**	85%	**30474**
May	31865	15.99%	822	**32686**	**20.52%**	85%	**38455**
Jun	35137	19.11%	982	**36119**	**22.67%**	85%	**42493**
Jul	25717	19.11%	982	**26699**	**16.76%**	85%	**31410**
Aug	18121	15.99%	822	**18942**	**11.89%**	85%	**22285**
Sep	7596	10.65%	547	**8143**	**5.11%**	85%	**9580**
Oct	1025	4.26%	219	**1244**	**0.78%**	85%	**1463**
Nov	259			**259**	**0.16%**	85%	**305**
Dec	224			**224**	**0.14%**	85%	**263**
total-inches							
total-feet	154155	100%	5139	**159294**	**100.00%**		**187405**

5137.8

159,293

(7) Assumed leaching Factor distribution

Total Acres 49149

DELANO - EARLIMART IRRIGATION DISTRICT
DISTRIBUTION SYSTEM

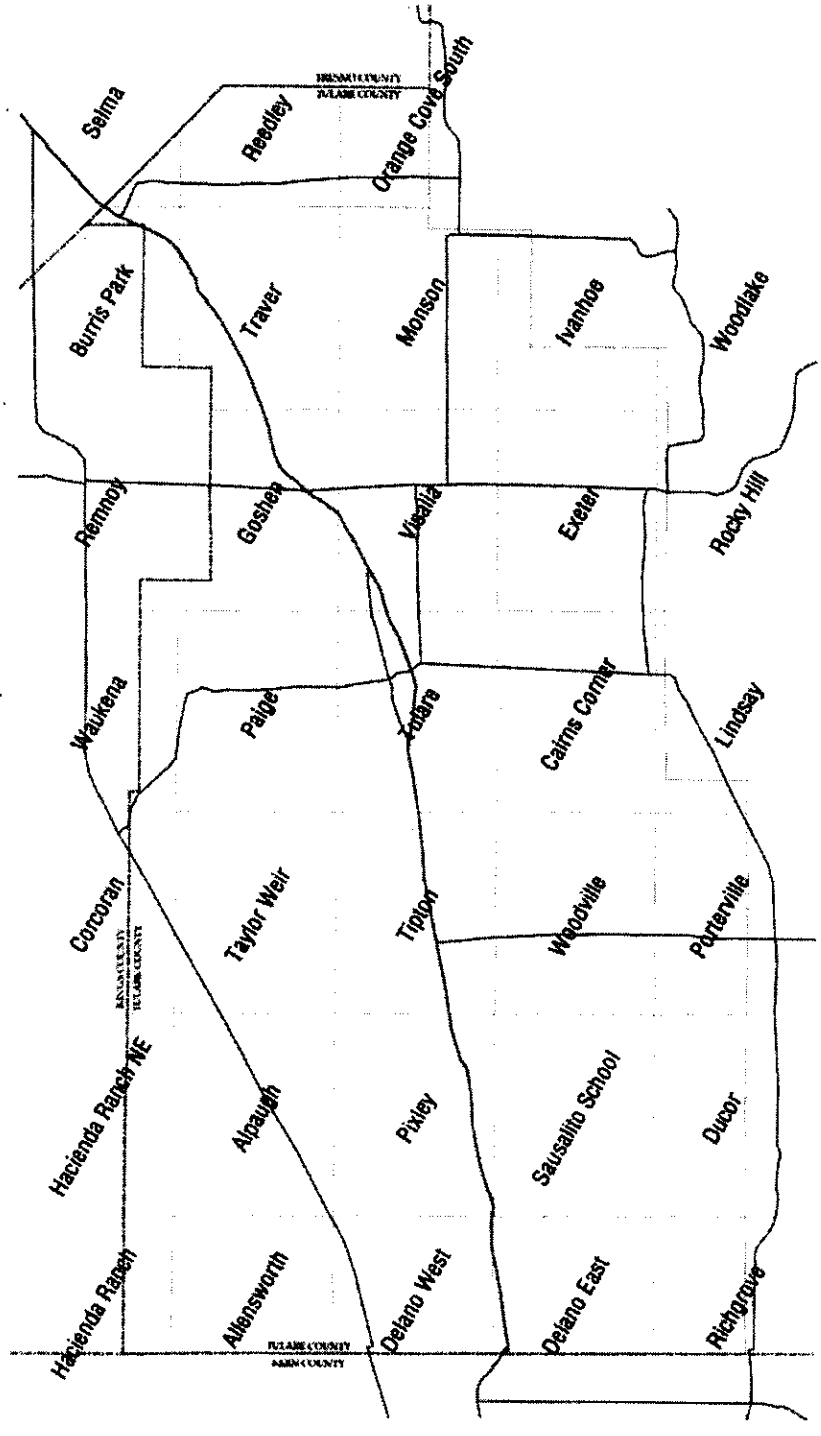
MOSS SCREEN
PUMPING PLANT
DISTRICT DELIVERY/METER
RESERVOIR

N

0 1/2 1 2
MILES

Index to Map Sheets

Soil Survey of Tulare County, Western Part



Map prepared using ArcView 3.2a
by NRCS Soils Staff, Davis, CA
Map ID: tul_qwacb 05/02/01

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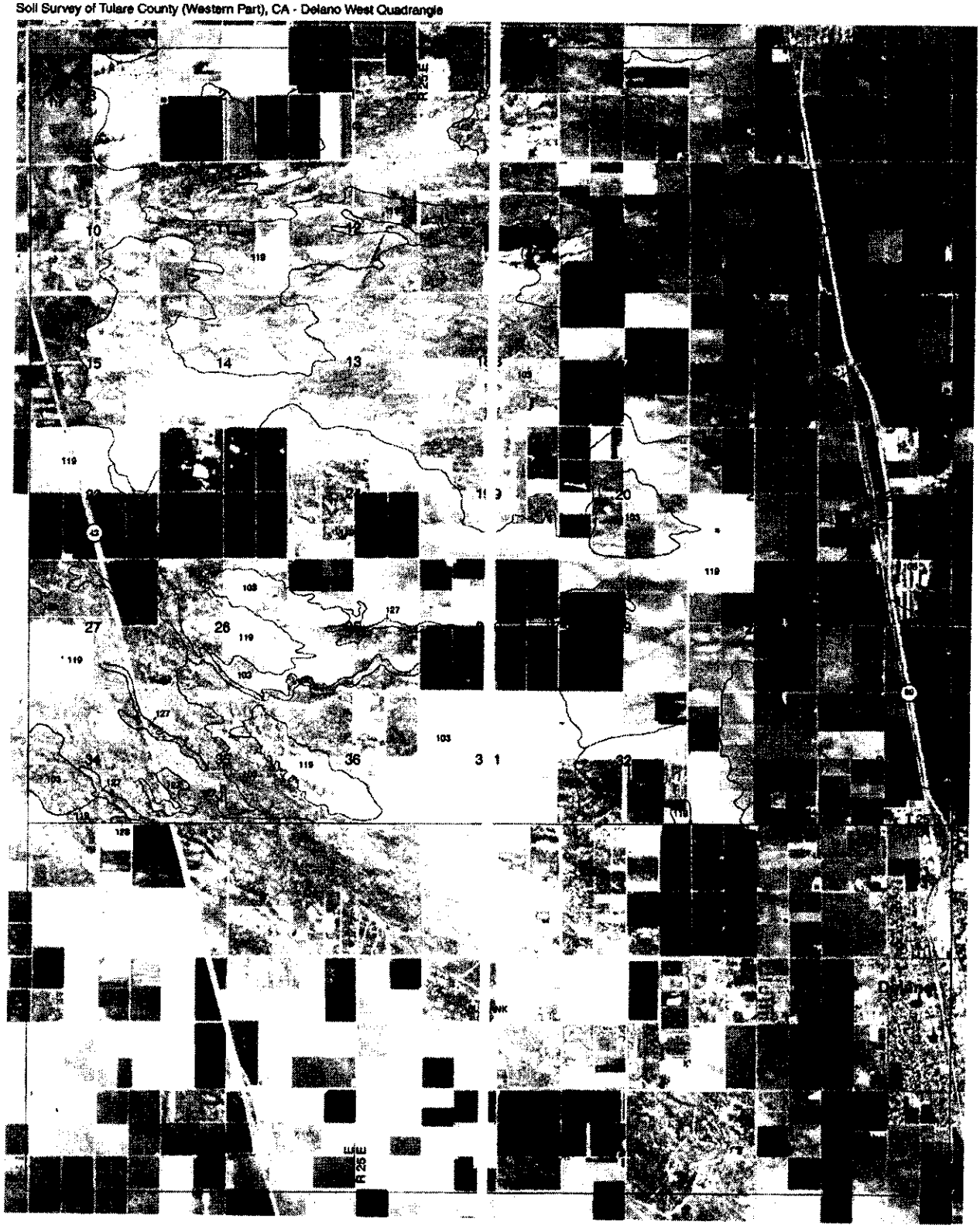
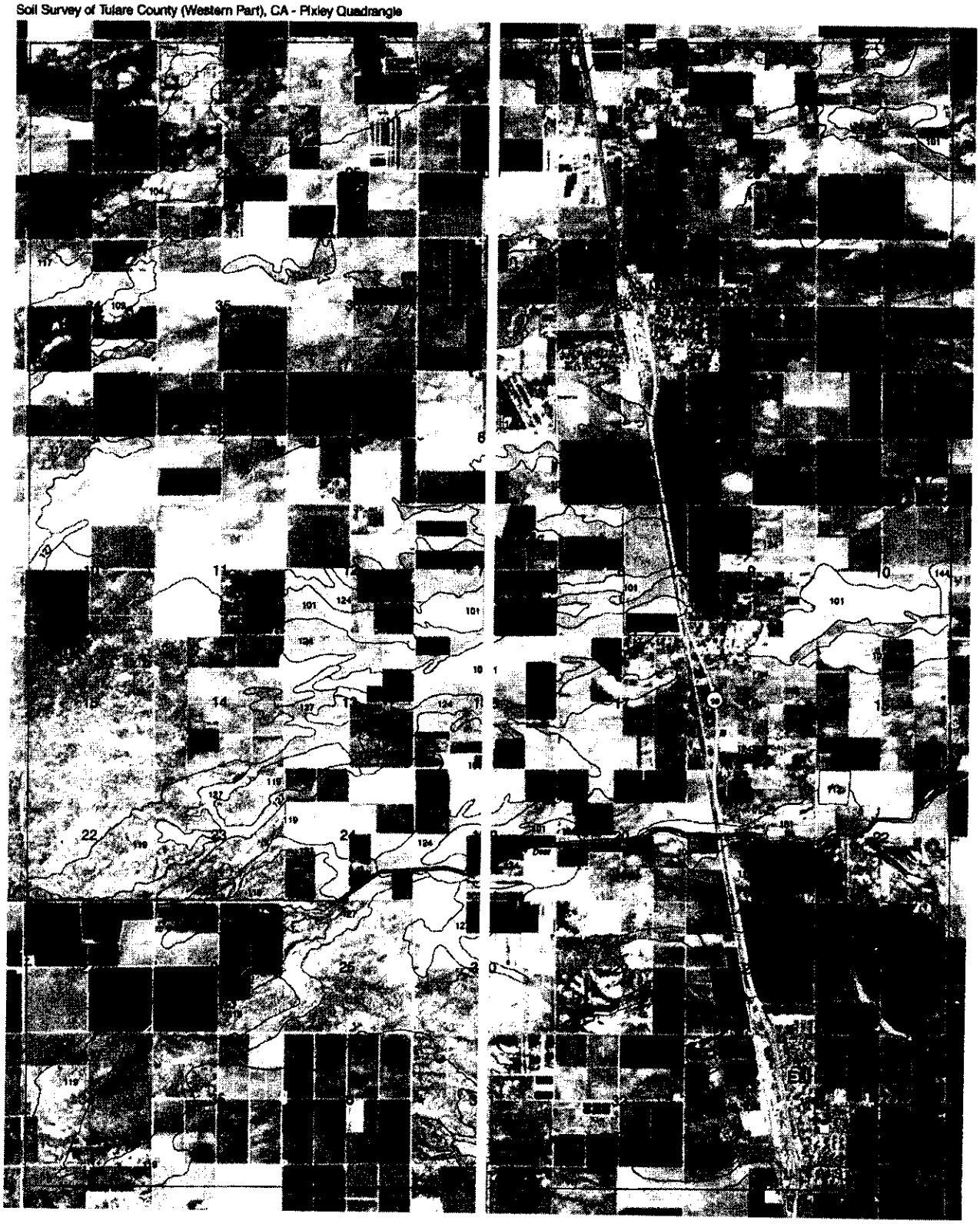
USDA

Soil Survey of Tulare County (Western Part), CA - Delano West Quadrangle

Soil Survey of Tulare County (Western Part), CA - Delano West Quadrangle



Soil Survey of Tulare County (Western Part), CA - Pixley Quadrangle



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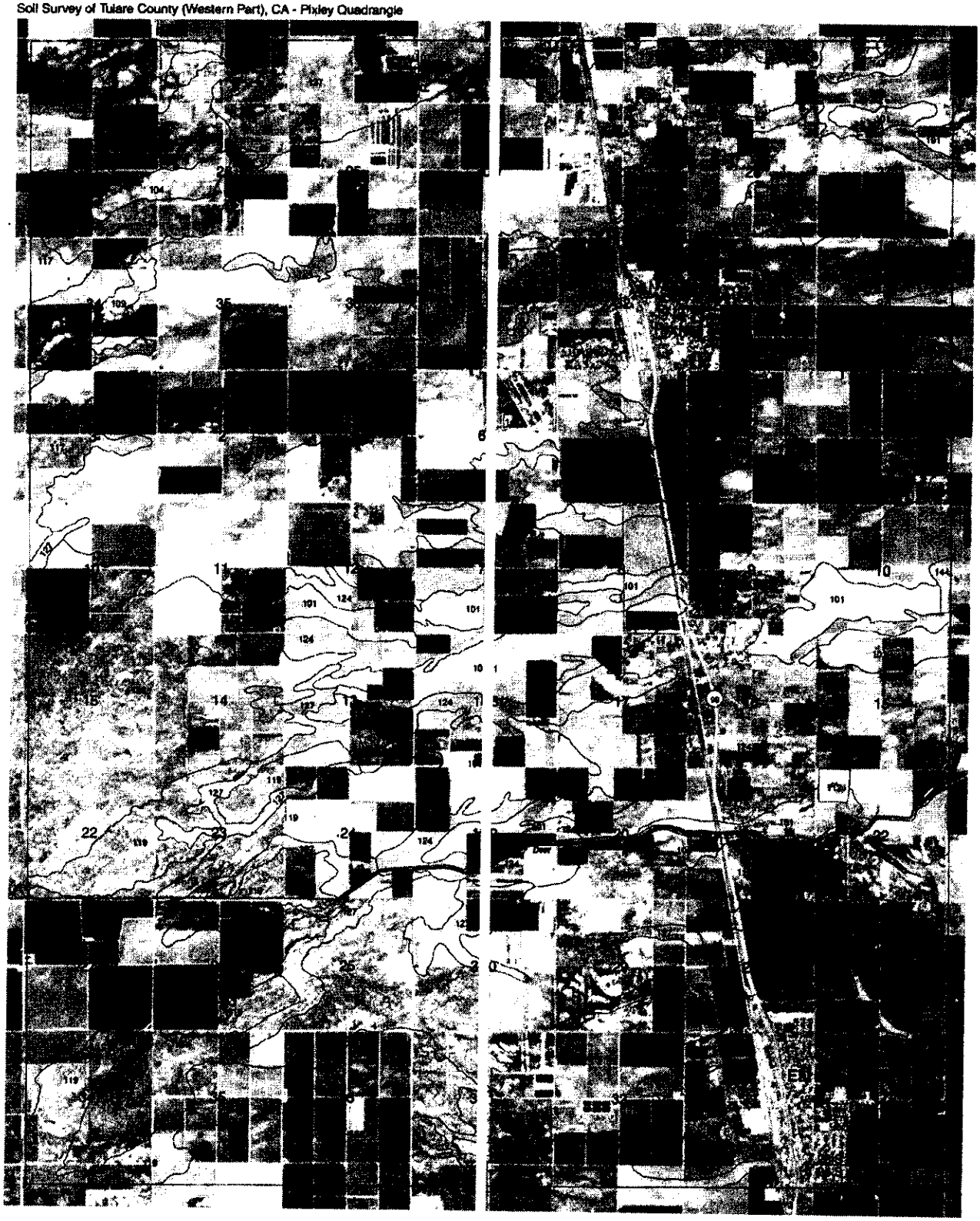
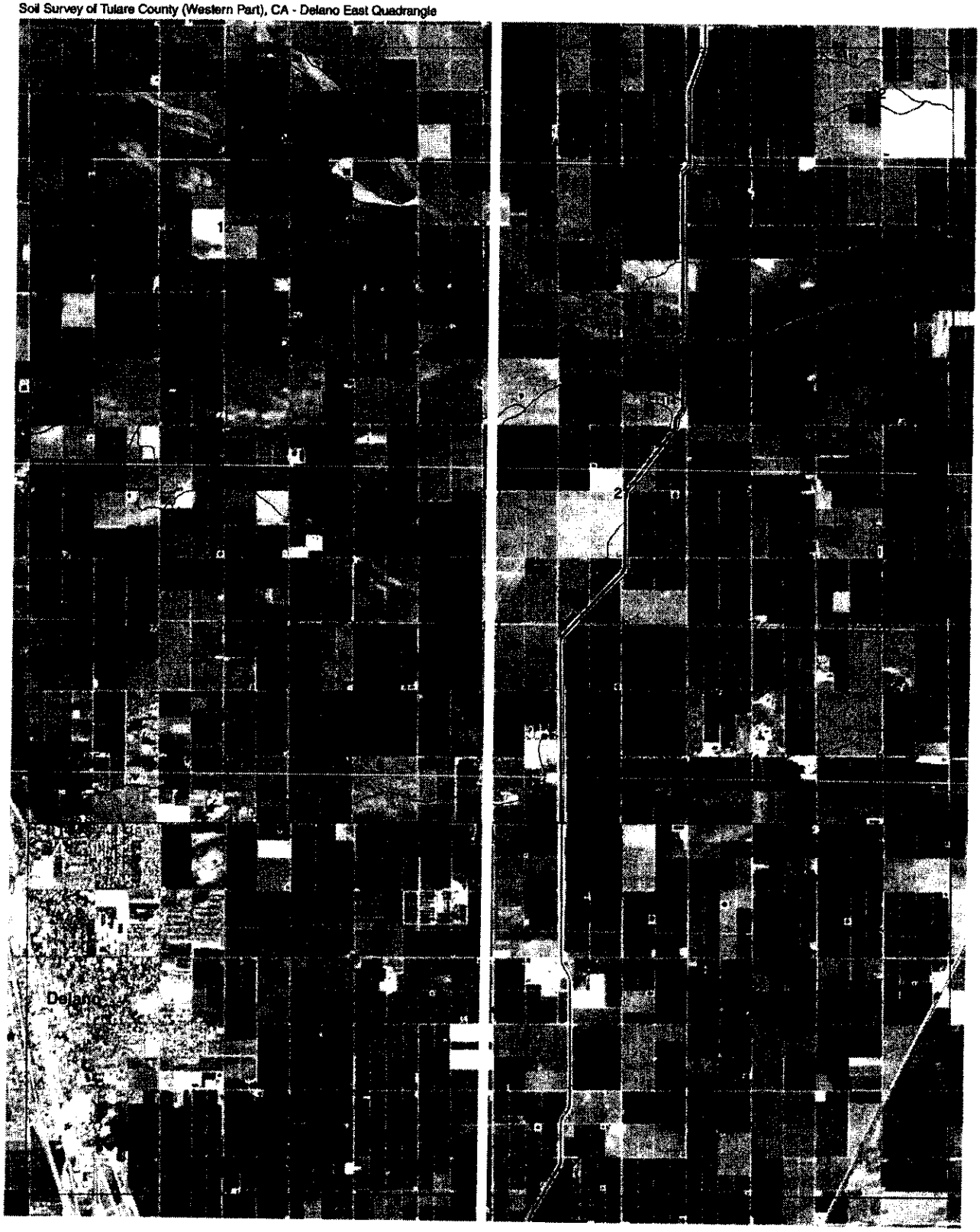


Soil Survey of Tulare County, CA - Sausalito School Quadrangle

Soil Survey of Tulare County, CA - Sausalito School Quadrangle

Soil Survey of Tulare County (Western Part), CA - Delano East Quadrangle



Soil Survey of Tulare County (Western Part), CA - Delano East Quadrangle

2009 AGRICULTURAL WATER POLICY

DELANO-EARLIMART IRRIGATION DISTRICT

WEB SITE: www.deid.org

APPLICATION FOR WATER

a. All Delano-Earlimart Irrigation District (District) water deliveries must be preceded by an accepted **"Application for Water"** (Application) that is completed by the water user. The Application shall be completed in full for the particular land or lands under the applicant's ownership or control for which water service is being requested.

b. Applications cover the water year, beginning March 1, 2009 and running through February 28, 2010.

c. **Applications will be accepted at the District office until 3:30 p.m. on February 9, 2009.** Applications postmarked by this date will be accepted. Applications received or postmarked after February 9, 2009 may be subject to approval by the Board of Directors. Regardless of when the Application is received, the water user is not eligible to receive water until the Application is processed and all other required forms are received, processed, and approved. Early submittal of all required forms will insure against unnecessary delays in water service

RECLAMATION LAW COMPLIANCE

a. The District receives its water supply from the U.S. Bureau of Reclamation (Bureau). As a recipient of federal water, the District and its water users must comply with federal Reclamation law. This requirement includes the submittal of certain Bureau forms by landowners and lessees with landholdings that exceed a preset acreage threshold prior to receiving irrigation water. Additionally, the Bureau requires the filing of specific Bureau forms by farm operators under certain circumstances. Please contact the District office for more information. **In accordance with federal Reclamation law, irrigation water will not be delivered until all required Bureau forms from all parties involved in the farming operation (landowner, lessee and/or farm operator) have been submitted to the District, and the District and/or the Bureau has approved these forms.**

b. Bureau forms are somewhat complex and confusing. District staff is available to assist you with these forms. All water users and landowners are encouraged to complete these forms well in advance of the date you anticipate needing District water. **Water deliveries will not be made during the processing period.**

c. Landowners with excess lands (not otherwise eligible to receive District water due to restrictions contained within federal Reclamation law) are not permitted to use water from a federal Reclamation project on said ineligible lands. However, where the landowner owns both eligible and ineligible lands that are contiguous, the Bureau may allow the co-mingling of federal Reclamation project water with private water supplies (i.e. well water or non-Reclamation project water that is obtained by the District on an as available basis) so that all of the acreage may be irrigated at the same time. Landowners are advised that this may be done only with a pre-approved co-mingling plan submitted to the District and accepted by the Bureau.

USE OF WATER

a. This Policy is for District water delivered for agricultural irrigation and uses incidental to irrigation. The determination of appropriate irrigation and incidental uses is subject to the ongoing regulations of the Bureau. Therefore, irrigation and other incidental uses that are currently approved by the Bureau may be changed, restricted, or reviewed at any time if necessary to meet Bureau requirements.

b. District water is not intended for human consumption and may not be introduced into a dwelling or structure for any household use whatsoever.

c. District water must be put to reasonable and beneficial use. The District will refuse to continue water deliveries if water is used excessively, wastefully or otherwise in an imprudent manner.

WATER ENTITLEMENT

a. When the demand for District water is greater than the available supply, the supply shall be distributed among landowners and water users with approved Applications on file for the current water year, and shall be based upon the irrigable acreage as reported on the Applications.

b. Any landowner may assign to another water user for use within the District all or any portion of the water prorated to him, subject to District provisions governing the transfer of water.

WATER TRANSFERS

a. Transfers of District water will not be allowed from water users who submit an Application after February 9, 2009 without prior approval from the Board of Directors.

b. Transfers between individuals or entities within the District are allowed subject to completion of a water transfer request signed by both parties. The District will assume no responsibility for collection or disbursing any monies between transferring parties.

c. Consistent with the District's water conservation and management plan and conjunctive use needs, water users may not transfer, sell or otherwise dispose of any District water outside of the District's boundaries.

d. Water users owning or leasing multiple parcels within the District that are eligible for water may transfer water without restriction between those parcels.

e. **IMPORTANT NOTICE TO LANDOWNERS – Landowners who lease their land to others are hereby notified that the District considers the individual who signs the Application to have complete management of the water allocated to the lands included on the Application.**

WATER ORDERING PROCEDURES FOR TURNOUTS *WITHOUT* FLOAT SYSTEMS

a. The District requests that all water orders be placed in person, by telephone, through fax transmittal, or through the District's web site (www.deid.org) by 9:00 a.m., twenty-four (24) hours in advance. Those orders placed in accordance with this request will receive priority.

Water orders placed after 9:00 a.m. and with less than 24 hours notice will be accepted if possible as determined by the Operations Technician.

b. Water orders must include the following information:

- Three digit turnout number.
- Name of water user.
- Name of person placing order.
- Details of order (quantity, ordered on, off or changed).

c. On the day the order is to be put into effect, District personnel will turn water on or off as ordered. No one other than District personnel may make any water delivery change, or otherwise operate any component of the District's distribution system. No person shall molest, tamper, or interfere with any District facility or structure. Water users found in violation of this provision will be subject to termination of water service.

d. Water ordered will run continuously until ordered off. Minimum water order duration is twenty-four (24) hours unless the Operations Technician approves a shorter duration in advance, or in case of a verifiable emergency.

e. The District maintains on-call personnel to respond to after-hour, unavoidable emergencies. This service is available at no charge. However, water users requesting emergency service where no emergency can be verified by responding personnel will be charged $50 for the first call-out and $100 for every call-out thereafter.

WATER ORDERING PROCEDURES FOR TURNOUTS *WITH* FLOAT SYSTEMS

a. Growers that have had a pressure-compensating float system installed on their turnout(s) are allowed to operate that particular turnout(s) through a separate operating valve on the grower's side of the turnout. Growers with float systems are still required to notify the District of all water requests and changes twenty-four (24) hours in advance (notification may be accomplished in person, by telephone, through fax transmittal, or through the District's web site (www.deid.org). An exception to this notification requirement is a change in an existing flow that is less than 100 gpm.

Advance notification of water orders by growers operating their own turnout(s) is required so that the District can order the amount of water necessary to meet daily demands from the Friant-Kern Canal and other critical operational needs. A grower that violates this advance notification requirement will loose the privilege of operating his/her own turnout.

b. Water orders must include the following information:

- Three-digit turnout number.
- Name of water user.
- Name of person placing order.
- Details of order (quantity and time of water ordered on, off or changed).

c. Growers with float systems may only operate their separate operating valve that is on the grower's side of the turnout to affect a delivery. No one other than District personnel may operate any component of the District's distribution system. No person shall molest, tamper, or interfere with any District facility or structure. Water users found in violation of this provision will be subject to termination of water service.

d. Water ordered by growers with float systems are to run continuously until ordered off. A water order of a duration that is less than twenty-four (24) hours is acceptable provided advance notification has occurred, as described above, or in case of a verifiable emergency.

WATER RATES AND LIFT CHARGES

a. The Board of Directors annually determines the water rates for agricultural water users in response to federal water pricing policies and other factors. Water rates are established at the beginning of the new water year. Water rates are subject to revision throughout the water year based on changing water supply conditions and/or other factors. Water rates may also be adjusted to conform to other requirements of the Bureau and federal Reclamation law. Please contact the District office for the most current agricultural water rates.

b. In addition to the above water rates, lift charges are also assessed on a per acre-foot basis for water delivered that requires pumping. Lift charge rates are established at the beginning of the new water year and are subject to revision. A map is available from the District office that delineates the various lift zones and corresponding rates. Please contact the District office should you have additional questions regarding zone locations and charges.

c. The District will conduct a specific landowner notification and public hearing process in accordance with state law prior to any proposed increase in water rates and/or lift charges.

WATER BILLING PROCEDURES

a. The District meters all water deliveries and bills according to the metered use.

b. The District shall bill each water user monthly indicating acre-feet used, accrued water costs, and lift charges. Upon receipt of the monthly statement, the water user shall remit by the 25th of that month the full amount as billed. Failure to make payment in full by the due date shall result in all of the following:

- Assessment of a 10 percent late penalty on the unpaid charges.
- Assessment of finance charges equal to 18 percent per annum on the unpaid balance, assessed monthly.
- Termination of water service until such time that the delinquent charges are paid in full.

c. Water service will not be provided to any parcel that has delinquent assessments, standby charges, or any other unpaid charges from a previous year. Any current year (2008) assessment or standby charge that remains unpaid on September 1, 2008 will have water service terminated to that parcel effective on that date.

d. The District does not require an advance deposit on water accounts. However, individual water users may be required to maintain a substantial deposit should they allow their water account to become delinquent at any time during the water year.

e. Water users who own only excess land (land not otherwise eligible to receive the District's federal water supply) that are receiving non-project water from the District (available in some years), shall be required to pay for all water ordered in advance of use.

f. **IMPORTANT NOTE TO LANDOWNERS – Landowners are advised that any unpaid water or lift charges that become delinquent for 90 days or more may be assessed as a lien against the land that benefited from the irrigation water, or any other parcel of land**

owned by the landowner in the District, as provided by the California Water Code. This action of assessing unpaid water charges against the land shall be adhered to regardless of who ordered or applied the water to the land (i.e. lessee). Water service will not be provided to any property with delinquent charges.

WATER CONSERVATION

a. Water conservation is an important aspect of the District's water management plan. District water users have a long history of employing various on-farm water conservation measures as appropriate for their individual operations. The District will continue to support water conservation by its water users.

b. Certain water users may find it advisable to avail themselves of the services of a private irrigation management consultant and/or other public agencies that provide similar services. For the convenience of those water users that may wish to seek such services, the District maintains a list of individuals and agencies that can provide on-farm water conservation and management assistance. Please contact the District office for a copy of this list.

c. The District encourages water users to use crop evapotranspiration (ET) data as a part of their water management plan. The District has installed a CIMIS weather station at its headquarters that provides daily local weather-related information, including ET. This information may be accessed through the Internet by logging on to the California Department of Water Resources web site at *www.cimis.water.ca.gov*. Crop ET information may also be obtained from the Tulare or Kern County Extension Service, local newspapers, and various radio station farm reports.

d. The District maintains historic water use by turnout. This data, in addition to water use information provided on the monthly water statement, may be beneficial to water users in making on-farm water management decisions. Please contact the District office for additional information if desired.

e. Recognizing that in some years the District cannot supply the total water needs within the District, most water users also have private groundwater wells. Water and energy conservation can be assisted by proper maintenance of these wells. Pump testing is an integral part of any maintenance program. The Southern California Edison Company provides pump-testing services to well owners. The District encourages your use of this service. Edison representatives may be contacted at 1-800-634-9175.

MISCELLANEOUS PROVISIONS

a. The employees and authorized contractors of the District shall have free access at all times to land irrigated with District water for District purposes, including examination or repair of water delivery facilities and related appurtenances, and maintenance of the flow of water therein.

b. Modifications to the District's turnout or other water distribution system components are prohibited without advance review and approval by the District. Requests for modifications shall be made to the District office. An approved modification shall be completed by District personnel only. Advance payment from the water user requesting the modification may be required.

c. Those who are planning to work in the vicinity of a District pipeline or other facilities are required to contact the District office prior to the commencement of work so that all underground components can be marked. Anyone causing damage to the District's distribution system will be subject to paying for the costs of repairs including labor, overhead, material and equipment. Additionally, a $500 penalty for the first offense and $1,000 penalty for every offense thereafter may also be levied, at the discretion of the Board of Directors, based on the circumstances of the incident and if prior notification was given.

d. Water service may be discontinued without notice upon violation of any of these rules and regulations, in which event service will be restored only upon order of the Board of Directors and upon such conditions as the Board may determine.

DISTRICT LIABILITY

a. The District assumes no responsibility for the quality of water delivered. This water is not intended for human consumption and may not be introduced into a dwelling or structure for any household use whatsoever.

b. The District may experience water supply shortages in any year imposed by the United States pursuant to our federal water service contract. In no event shall any liability accrue against the District or any of its' officers, agents or employees for any damages, direct or indirect, arising from a shortage on account of errors in operation, drought, or unavoidable cause.

c. The District has allowed some water users to install hydrants or similar valves to permit access to District water for fire suppression. The District does not commit or provide water for such purposes and shall not be responsible for the use of any water facility used for fire suppression or for the adequate supply of water for fire suppression. Water users with said fire hydrant connections shall be required to submit an annual "Application For Fire Hydrant" that acknowledges these and other limitation/conditions of service as a requirement for continuance of the connection.

2009 MUNICIPAL AND INDUSTRIAL WATER USE POLICY

DELANO-EARLIMART IRRIGATION DISTRICT
WEB SITE: www.deid.org

APPLICATION FOR WATER

a. All Delano-Earlimart Irrigation District (District) water deliveries to Municipal and Industrial (M&I) water users must be preceded by an accepted **"Application for Water"** (Application) that is completed by the water user. This Application shall be completed in full for the particular land or lands under the applicant's ownership or control and which water service is being requested.

b. Applications cover the water year, beginning March 1, 2009 running through February 28, 2010.

c. **Applications will be accepted at the District office until 3:30 p.m. on February 9, 2009.** Applications postmarked by this date will be accepted. Applications received or postmarked after February 9, 2009 may be subject to approval by the Board of Directors. Regardless of when the Application is received, the water user is not eligible to receive water until the Application is processed and approved.

RECLAMATION LAW COMPLIANCE

a. The District receives its water supply from the U.S. Bureau of Reclamation (Bureau). As a recipient of federal water, the District and all of its water users must comply with federal Reclamation law. This requirement includes the metering of all water delivered to water users.

b. As required by Reclamation law, the District meters all water deliveries and bills according to the metered use.

USE OF WATER

a. This Policy is for District water delivered for M&I uses. The determination of appropriate M&I uses are subject to the regulations of the U.S. Bureau of Reclamation and the California Department of Health Services (DHS). Therefore, such uses that are currently approved by the Bureau and/or DHS may be changed, restricted, or reviewed at any time if necessary to meet regulatory requirements. **This water is not intended for human consumption and may not be introduced into a dwelling or structure for any household use whatsoever.**

b. District water must be put to reasonable and beneficial use. The District will refuse to continue water deliveries if the water is used excessively, wastefully or otherwise in an imprudent manner.

c. **Landowners and water users are advised that M&I water supplied by the District should not be considered or otherwise assumed to be the primary water supply for property within the District. The annual water supply that is available for delivery by the District is highly variable and may not be sufficient to meet the total demands within the District.** The District reserves the right to limit and/or terminate M&I water deliveries due to insufficient supplies or other reasons.

WATER RATES AND LIFT CHARGES

a. The Board of Directors annually determines the M&I water rate in response to federal water pricing policies and other factors. M&I rates are established at the beginning of the new water year and are subject to revision. Please contact the District office for the current M&I water rate. M&I water use will be billed out to the nearest one-hundredth (.01) of an acre-foot.

b. In addition to the above water rates, lift charges are also assessed on a per acre-foot basis for water delivered that requires pumping. Lift charges are established at the beginning of the new water year and are subject to revision. A map is available from the District office that delineates the various lift zones

and corresponding rates. Please contact the District office should you have additional questions regarding zone locations and charges.

c. The District will conduct a specific landowner notification and public hearing process in accordance with state law prior to any proposed increase in water rates and/or lift charges.

WATER BILLING PROCEDURES

a. Water service will not be provided to any parcel that has delinquent assessments, standby charges, or any other unpaid charges from a previous year. Any current year (2007-08) assessment or standby charge that remains unpaid on September 1, 2008 will have water service terminated to that parcel effective on that date.

b. For M&I accounts that historically have total annual water billings less than $25.00, a minimum annual charge of $25.00 will be levied at the beginning of the water year. Periodically throughout the year, the water meter for these accounts will be read, with supplemental water billings sent to the water user if the actual amount used exceeds the $25.00 minimum annual charge. Supplemental water billings may not be sent to the water user until the end of the water year.

c. For M&I water accounts that historically have total annual water billings that are greater than the annual minimum charge of $25.00, the District shall bill the water user periodically for the actual quantity of water used based on the meter reading. Depending on the amount of water used by each customer, periodic billings may occur monthly, quarterly, or semi-annually. The billing shall include applicable lift charges. Upon receipt of the statement, the water user shall remit by the 25th of that month the full amount as billed. Failure to make payment in full by the due date shall result in all of the following:

- Assessment of a 10% late penalty on the unpaid charges.
- Assessment of finance charges equal to 18% per annum on the unpaid balance, assessed monthly.
- Termination of water service until such time that the delinquent charges are paid in full.

Additionally, M&I water users that allow their water account to become delinquent at any time may be required to maintain a substantial deposit for the balance of the water year.

d. **IMPORTANT NOTICE TO LANDOWNERS - Landowners are advised that any unpaid water or lift charges that become delinquent for 90 days or more may be assessed as a lien against the land that benefited from the irrigation water, or any other parcel of land owned by the landowner in the District, as provided by the California Water Code. This action of assessing unpaid water charges against the land shall be adhered to regardless of who ordered or applied the water to the land (i.e. lessee). Water service will not be provided to any property with delinquent charges.**

WATER CONSERVATION

a. Water conservation is an important aspect of the District's water management plan. District water users have a long history of employing various water conservation measures as appropriate for their individual operations. The District will continue to support water conservation by its water users.

b. Certain water users may find it advisable to avail themselves of the services of a private irrigation management consultant and/or other public agencies that provide similar services. For the convenience of those water users that may wish to seek such services, the District maintains a list of individuals and agencies that can provide water conservation and management assistance. Please contact the District office for a copy of this list.

MISCELLANEOUS PROVISIONS

a. The employees and authorized contractors of the District shall have free access at all times to parcels served by District water for District purposes, including examination or repair of water delivery facilities and related appurtenances, and maintenance of the flow of water therein.

b. Modifications to the District's M&I meter or other water distribution system components are prohibited without advance review and approval by the District. Requests for modifications shall be made to the District office. An approved modification shall be completed by District personnel only. Advance payment from the water user requesting the modification may be required.

c. Those who are planning to work in the vicinity of a District pipeline or other facilities are required to contact the District office prior to the commencement of work so that all underground components can be marked. Anyone causing damage to the District's distribution system will be subject to paying for the costs of repairs including labor, overhead, material and equipment. Additionally, a $500 penalty for the first offense and $1,000 penalty for every offense thereafter may also be levied, at the discretion of the Board of Directors, based on the circumstances of the incident and if prior notification was given.

d. Water service may be discontinued without notice upon violation of any of these rules and regulations, in which event service will be restored only upon order of the Board of Directors and upon such conditions as the Board may determine.

e. In no case shall anyone other than District personnel make any water delivery changes, or otherwise operate any component of the District's distribution system. No person shall molest, tamper, or interfere with any District facility or structure. Water users found in violation of this provision will be subject to termination of water service.

DISTRICT LIABILITY

a. The District assumes no responsibility for the quality of water delivered. This water is not intended for human consumption and may not be introduced into a dwelling or structure for any household use whatsoever.

b. The District may experience water supply shortages during any year imposed by the United States pursuant to our federal contract. In no event shall any liability accrue against the Delano-Earlimart Irrigation District or any of its' officers, agents or employees for any damages, direct or indirect, arising from a shortage on account of errors in operation, drought, or unavoidable cause.

c. The District has allowed some water users to install hydrants or similar valves to permit access to District water for fire suppression. The District does not commit or provide water for such purposes and shall not be responsible for the use of any water facility used for fire suppression or for the adequate supply of water for fire suppression. Water users with said fire hydrant connections shall be required to submit an annual "Application for Fire Hydrant" that acknowledges these and other limitations/conditions of service as a requirement for continuance of the connection.

DELANO-EARLIMART IRRIGATION DISTRICT

14181 AVENUE 24
DELANO, CALIFORNIA 93215
Phone (661) 725 - 2526

Water Usage Statement For
SEPTEMBER 2009

Due By - October 25TH 2009

[redacted]

ACCT # 7
BILL # 15599
BILL DATE 10/1/2009

Account Balance	
Previous Balance	$0.00
Overpayments/Credits	$0.00
Charges	$17,046.63
Total Due	**$17,046.63**

Water Usage	
Billing Period (September)	9/1/2009 To 9/30/2009
Billed Usage	323.82 Af

Turnout #	Usage Acre-Feet	Billing Rate Water	Water Charge	Billing Rate Lift	Lift Charge	Total Charge
104	0.12 Af	$49.50	$5.94	$7.85	$0.94	$6.88
107	86.28 Af	$49.50	$4,270.87	$7.85	$677.30	$4,948.17
116	43.22 Af	$49.50	$2,139.39	$7.85	$339.28	$2,478.67
133	0.21 Af	$49.50	$10.40	$0.00	$0.00	$10.40
134	85.00 Af	$49.50	$4,207.50	$0.00	$0.00	$4,207.50
184	82.95 Af	$49.50	$4,106.03	$0.00	$0.00	$4,106.03
218	26.04 Af	$49.50	$1,288.98	$0.00	$0.00	$1,288.98

Total Balance Forward	$.00
Current Month Charges	$17,046.63
TOTAL DUE (Including Previous)	$17,046.63

Payment due upon receipt and is delinquent if not received IN THE OFFICE by 3 30 P M on the 25th of the month If the 25th falls on a Saturday, Sunday or a holiday, payment is due by 3 30 P M on the next working day DELINQUENT ACCOUNTS WILL BE ASSESSED A 10% PENALTY AND WATER SERVICE WILL BE TERMINATED
Accounts delinquent after 30 days are assessed a finance charge equal to 1 1/2 percent per month on the unpaid balance

$17,046.63

Detach Here and return with payment

Due Date - October 25TH 2009

[redacted]

ACCT # 7
BILL # 15599

Amount Enclosed _____

Monthly Water Usage

October 2009

#7

[redacted]

Turnout	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Total
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
102	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
103	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104	42.87	70.43	118.16	116.82	104.99	96.74	0.12	0.09	0.00	0.00	0.00	0.00	550.22
107	0.00	0.00	96.40	118.17	76.70	147.65	86.28	0.00	0.00	0.00	0.00	0.00	525.20
116	0.00	0.00	92.52	100.52	109.64	69.51	43.22	99.41	0.00	0.00	0.00	0.00	514.82
119	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
133	0.10	0.14	44.35	35.24	0.00	67.42	0.21	0.10	0.00	0.00	0.00	0.00	147.56
134	0.00	0.00	64.34	153.25	158.14	73.40	85.00	20.00	0.00	0.00	0.00	0.00	554.13
184	0.00	14.38	88.86	107.43	74.34	52.83	82.95	12.35	0.00	0.00	0.00	0.00	433.14
218	12.98	17.57	17.45	31.46	18.19	19.25	26.04	0.00	0.00	0.00	0.00	0.00	142.94
Total	55.95	102.52	522.09	662.89	542.00	526.80	323.82	131.95	0.00	0.00	0.00	0.00	2,868.02

Total Irrigated Acres	1,702.26	**Acres**	**Total Water Available**	5,106.78	**AF**			
Allocation	3	**AF/Acre**	**Total Water Delivered**	5,728.28	**AF**	**Water Per Acre**	3.37	**AF/Acre**
Total Base Allocation	5,106.78	**AF**	**Remaining Water**	-621.50	**AF**	**Water Per Acre**	-0.37	**AF/Acre**
Allocation Adjustments	0.00	**AF**						

DELANO-EARLIMART IRRIGATION DISTRICT

14181 AVENUE 24
DELANO, CALIFORNIA 93215
Phone (661) 725 - 2526

Water Usage Statement For
AUGUST 2009

Due By - September 25TH 2009

[redacted]

ACCT # 238
BILL # 15488
BILL DATE 9/1/2009

Account Balance	
Previous Balance	$0.00
Overpayments/Credits	$0.00
Charges	$34.80
Total Due	**$34.80**

Water Usage	
Billing Period (August)	8/1/2009 To 8/31/2009
Billed Usage	0.51 Af

Turnout #	Usage Acre-Feet	Billing Rate Water	Water Charge	Billing Rate Lift	Lift Charge	Total Charge
806B-MI	0.51 Af	$48.00	$24.24	$14.65	$7.40	$31.64

PENALTY / INTEREST CHARGES $3.16

Total Balance Forward	$.00
Current Month Charges	$34.80
TOTAL DUE (Including Previous)	$34.80

Payment due upon receipt and is delinquent if not received IN THE OFFICE by 3 30 P M on the 25th of the month If the 25th falls on a Saturday, Sunday or a holiday, payment is due by 3 30 P M on the next working day DELINQUENT ACCOUNTS WILL BE ASSESSED A 10% PENALTY AND WATER SERVICE WILL BE TERMINATED
Accounts delinquent after 30 days are assessed a finance charge equal to 1 1/2 percent per month on the unpaid balance

---

$34.80

Detach Here and return with payment
Due Date - September 25TH 2009

[redacted]

ACCT # 238
BILL # 15488

Amount Enclosed _____

Monthly Water Usage

October 2009

#238

[redacted]

Turnout	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Total
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
806B-MI	0.00	0.00	0.00	0.00	0.00	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.51
Total	0.00	0.00	0.00	0.00	0.00	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.51

Total Irrigated Acres	1.00 Acres	**Total Water Available**	3.00 AF			
Allocation	3 AF/Acre	**Total Water Delivered**	0.51 AF	**Water Per Acre**	0.51	AF/Acre
Total Base Allocation	3.00 AF	**Remaining Water**	2.50 AF	**Water Per Acre**	2.50	AF/Acre
Allocation Adjustments	0.00 AF					

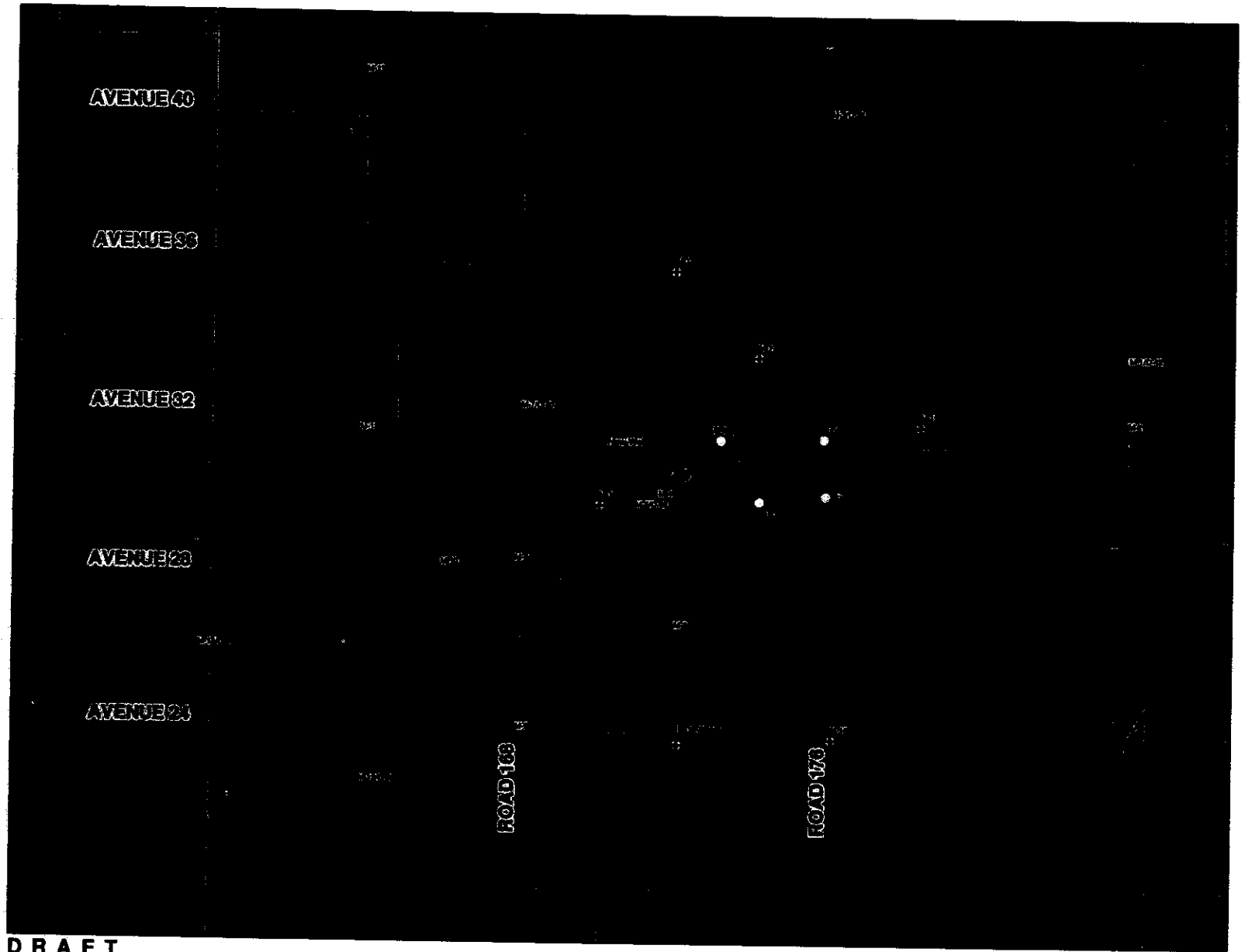
Attachment E

Water Shortage Policy

See Attachment 1 enclosure:

2009 Agricultural Water Policy

(Page 2-Water Entitlement)



DRAFT

DRAFT

DEID

Turnipseed Basin Monitoring Well & Land Ownership Map

Legend

Monitoring Network

Proposed Monitoring Well

Existing Domestic Well

Existing Injection Well

Existing Monitoring Well

Recovery Facilities

Recovery Well #2

Future Recovery Well

N

0 1,000 2,000

Feet

GROUNDWATER MANAGEMENT PLAN

DELANO-EARLIMART IRRIGATION DISTRICT

ADOPTED

August 9, 2007

PREPARED BY:

PROVOST AND PRITCHARD
ENGINEERING GROUP, INC.

www.ppeng.com

PROVOST & PRITCHARD
ENGINEERING GROUP
An Employee Owned Company

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A - Public Participation in Plan Adoption

List of Abbreviations

AB	Assembly Bill
AF	Acre-feet
bgs	below ground surface
CVP	Central Valley Project
DBCP	dibromochloropropane
DEID	Delano-Earlimart Irrigation District
DWR	Department of Water Resources
EPA	Environmental Protection Agency
ET	evapotranspiration
F	Fahrenheit
FKC	Friant-Kern Canal
FWA	Friant Water Authority
FWUA	Friant Water Users Authority
GAC	Groundwater Advisory Committee
GMP	Groundwater Management Plan
GPM	gallons per minute
GPS	Global Positioning System
ID	Irrigation District
IRWMP	Integrated Regional Water Management Plan
NRCS	Natural Resources Conservation Service
SB	Senate Bill
TDS	total dissolved solids
USBR	United States Bureau of Reclamation
USGS	United States Geological Survey

1 - INTRODUCTION

This Groundwater Management Plan (GMP or Plan) is an update of a Plan that was adopted by the Delano-Earlimart Irrigation District (DEID) in December 2003. The original Plan was prepared in accordance with the requirements prescribed in Assembly Bill No. 3030 (California Water Code Section 10750 et seq.). The 2003 Plan was revised to satisfy the new requirements for GMPs created by the September 2002 California State Senate Bill No. 1938, which amended Sections 10753 and 10795 of the California Water Code. This Plan also addresses recommended components for a Groundwater Management Plan described in Appendix C of Department of Water Resources Bulletin 118 (2003 Update).

1.1 - Background Information on Delano-Earlimart Irrigation District

Below is a brief description of the origin, physiography, geology, water supplies and facilities in DEID.

Origin

The Delano-Earlimart Irrigation District (DEID) is a political subdivision of the State of California, formed in 1938 for the purpose of delivering water to growers within DEID. DEID's original water service contract with USBR was signed in 1950 for water delivery from the Friant Unit of the Central Valley Project (CVP). Use of CVP surface water in the District reversed a serious trend of declining groundwater levels that had been experienced since 1905.

Geography

DEID is located in southern Tulare County and northern Kern County on the eastern part of the San Joaquin Valley, about 10 miles west of the Sierra Nevada foothills, and northeast of the City of Delano (see **Attachment 1** for a vicinity map and **Attachment 2** for a location map). This GMP covers the area within the DEID boundaries, but the physiography and geology of neighboring lands are also discussed. The District covers about 56,500 acres (~88 square miles) of which about 92%, or 51,700 acres, is irrigated. The topography slopes generally from east to west at 10 to 25 feet to the mile. The White River passes through DEID, which owns a one-mile length of its channel.

Climate

The District is characterized as having hot and very dry summers, with relatively mild winters. Annual average precipitation and temperature are 7.9 inches and 62 degrees F, respectively. The majority of the rain falls during the winter and early spring months. It is not uncommon to have a four or five month period without significant rainfall during the late spring through early fall.

Soils and Agronomy

Refer to **Attachment 3** for a NRCS (Natural Resources Conservation Service) soils map of DEID. Soils in the district are deep and permeable with light to medium texture

underlain by hardpan. There are also small areas of lightly alkali-affected soils. About 51,700 acres, or 92% of the total District area, is cropped. Eighty percent of the total acreage in the District (95 percent of the irrigated acres) are planted in permanent crops (2006 data). Thus, it is important to have a firm water supply since most of the land cannot be fallowed in dry years. The major crops include grapes, pistachios, almonds, and other fruit and nut trees, with a total of 23 different crops grown (2006 data). Irrigation methods include drip and micro (62%), gravity (35%), and sprinkler (3%). The combined average irrigation efficiency is estimated to be about 75%.

Geology

DEID is located in both the Tule and Kern County Groundwater Sub-basins (see **Attachment 4**). The geological sequences of permeable, water bearing sediments within DEID, from youngest to oldest, are: 1) continental deposits, 2) the Santa Margarita formation, and 3) the Olcese sand. Sediments that comprise DEID's main groundwater basin are unconsolidated deposits of Tertiary and Quaternary age, including alluvium, lacustrine, deltaic, and flood plain deposits of sand and gravel. Thin lenses of silt and clay are scattered throughout the basin at various depths, but are most pronounced in the southwestern and northwestern portions of the basin. Recent standing groundwater levels average about 130 to 150 feet below ground surface (bgs). DEID cooperates with the USBR in monitoring groundwater levels. There are about 200 wells located throughout the District, all owned by water users. Refer to Section 2 for more details on the geology in DEID.

Water Supplies

DEID has a Federal CVP contract (175r-3327-LTR1) for up to 108,800 AF of Class 1 water and up to 74,500 AF of Class 2 water annually. In addition, the District enters into annual contracts for Section 215 water (surplus CVP water) from the United States Bureau of Reclamation. Because of the nature of Friant water supplies, annual District water supplies have ranged from a low of 34,000 AF to as much as 171,000 AF. Surface water deliveries averaged 115,000 - 120,000 AF/year from 1990 - 2002. During the same period, estimated groundwater pumping from private wells averaged 35,000 - 40,000 AF/year.

The District also contracts on an opportunity basis for water that can be delivered to lands not otherwise eligible to receive CVP water. Approximately 10% of the lands in the District are deemed ineligible to receive Friant water due to Federal Reclamation Law restrictions. Surface water for these lands is typically obtained through mutually beneficial exchanges with other Friant districts for local non-Friant water supplies.

Facilities

The Friant-Kern Canal flows from north to south through the District. The District delivers water from the Friant-Kern Canal to landowners through an extensive pipeline distribution system. The distribution system has 172 miles of concrete pipe, 503 irrigation turnouts, and 52 smaller metered deliveries (non-potable) to municipal and industrial water users. Because it's a completely closed system, losses are very low. In

recent years the District constructed the 80-acre Turnipseed Recharge Basin. The District also has a small 5-acre recharge basin near Highway 99.

For more information on DEID refer to the *Delano-Earlimart Irrigation District Water Management Plan – 2002 Update.*

1.2 - Goals and Objectives of Groundwater Management Plan

This GMP documents the existing groundwater management efforts in DEID and planned efforts to improve groundwater management. The purpose of the GMP is to help DEID meet the following objectives:

1. Preserve and enhance the existing quality of the area's groundwater.
2. Preclude surface or ground water exports that would reduce the long-term supply of groundwater.
3. Coordinate groundwater management efforts between regional water users.
4. Maintain local management of the groundwater resources.
5. Implement a groundwater-monitoring program to provide an "early warning" system to future problems.
6. Stabilize groundwater levels in order to minimize pumping costs and energy use, and provide groundwater reserves for use in droughts.
7. Maximize the use of surface water, including available flood water, for beneficial use.
8. Participate in regional efforts to effectively manage available water supplies when beneficial to project participants.

In addition, the District will take a proactive role in the legislative process. DEID will participate in development of sound legislation concerning groundwater management if it becomes necessary. DEID will also take an active role in opposing any legislation that is detrimental to local groundwater management efforts.

1.3 - Statutory Authority for Groundwater Management

The 2003 DEID Groundwater Management Plan was adopted according to statutory language in Assembly Bill No. 3030 (AB 3030). The GMP has been updated to include components listed in California Senate Bill No. 1938 (SB 1938). AB 3030, as chaptered, (California Water Code, Division 6, Part 2.75, SEC. 10750-10753.9) grants specified "local agencies" authority to undertake groundwater management. AB 3030 also confers upon local agencies the powers of a water replenishment district. These authorities remained unchanged with the amendments to the law provided by SB 1938. In addition, agencies adopting a GMP are authorized to enter into agreements with other local agencies or private parties to manage mutual groundwater supplies, including those existing in overlapping areas.

1.4 - Groundwater Management Plan Components

This GMP includes the required and voluntary components for a GMP as identified in California Water Code Section 10753, et. seq. This Plan is also consistent with the recommended elements for a GMP as identified in DWR Bulletin 118 (2003), Appendix C. **Table 1.1** identifies the location within this document where each of the components is addressed.

Table 1.1 – Location of Groundwater Management Plan Components

Description	Plan Section(s)
California Water Code Mandatory Requirements (10750 *et seq.*)	
1. Documentation of public involvement	1.5, Appendix A
2. Groundwater basin management objectives	1.2, 3
3. Monitoring and management of groundwater elevations, groundwater quality, land subsidence, and surface water	5
4. Plan to involve other agencies located in the groundwater basin	4.3
5. Monitoring protocols	5.3
6. Map of groundwater basin and agencies overlying the basin	Attachment 4
California Water Code Voluntary Components (10750 *et seq.*)	
7. Control of saline water intrusion	6.3
8. Identification and management of wellhead protection areas and recharge areas	6.2, 7.2
9. Regulation of the migration of contaminated groundwater	6.3, 6.4
10. Administration of well abandonment and well destruction program	6.1
11. Mitigation of overdraft conditions	7.1, 7.2
12. Replenishment of groundwater extracted by water users	7.2
13. Monitoring of groundwater levels and storage	5.1, 9.2
14. Facilitating conjunctive use operations	7.3
15. Identification of well construction policies	8.1
16. Construction and operation by local agency of groundwater contamination cleanup, recharge, storage, conservation, water recycling, and extraction projects	6.4, 7, 8.2
17. Development of relationships with state and federal regulatory agencies	4.2, 4.3
18. Review of land use plans and coordination with land use planning agencies	9.1
Additional Components Recommended by DWR (App. C of Bulletin 118)	
19. Advisory committee of stakeholders	4.1
20. Description of the area to be managed under the Plan	1.1, 2
21. Descriptions of actions to meet management objectives and how they will improve water reliability	4 - 9
22. Periodic groundwater reports	9.2
23. Periodic re-evaluation of Groundwater Management Plan	9.4

1.5 - Adoption of Plan

Refer to **Appendix A** for documentation on the adoption of the GMP and the public process that was followed.

Public Participation in Plan Development
The public was invited to participate in the development of the updated GMP through newspaper notices and public hearings.

Groundwater Advisory Committee
A Groundwater Advisory Committee (GAC) was formed to help update the GMP (see Section 4.1 for more details on the GAC). The initial GAC consisted of the DEID Board of Directors, which were given a copy of the GMP for review and comments. At a meeting on July 12, 2007 the draft GMP was presented and explained to the GAC. Comments were solicited on the GMP content and ideas for improving groundwater management.

The initial GAC was later replaced with an expanded GAC with a diverse membership consisting of 14 growers from throughout the District. The new GAC met on August 1, 2007, where the draft GMP was presented for review and comment. Copies of the draft GMP were given to each GAC member, with the invitation to provide additional comments.

Public Notice of Intention to Update the Groundwater Management Plan
As required by the California Water Code, a public hearing was duly noticed on June 7, 2007 and June 14, 2007 consistent with California Water Code Section 10753.2(a), and held on June 21, 2007, to discuss updating DEID's existing GMP. No public comments beyond those offered by the GAC were received at this meeting.

Resolution of Intention to Update the Groundwater Management Plan
DEID adopted a Resolution for Intention to Update the Groundwater Management Plan on June 21, 2007. This resolution was then published on July 5, 2007 and July 12, 2007 consistent with California Water Code Section 10753.2(a).

Public Notice of Intention to Adopt the Updated Groundwater Management Plan
As required by the California Water Code, a public hearing was duly noticed on July 26, 2007 and August 2, 2007, consistent with California Water Code Section 10753.2(a), and held on August 9, 2007 to discuss adoption of the updated GMP. No public comments were received at this meeting.

Resolution Adopting the Updated Groundwater Management Plan
DEID adopted a Resolution to Adopt the Updated Groundwater Management Plan on August 9, 2007. This resolution was then published on August 16. 2007 and August 23, 2007 consistent with California Water Code Section 10753.2(a).

2 - GEOLOGY AND HYDROGEOLOGY

This section discusses the geology and hydrogeology of DEID and the surrounding area. The purpose of this section is to provide general background information on the local hydrogeology that will aid in selecting and implementing groundwater management programs. Most of the information in this section was derived from USBR (December 1950), Provost and Pritchard (2000), DWR (2003) and Klausing and Lofgren (1969).

2.1 - Regional Geology

The Delano-Earlimart Irrigation District (DEID) is located entirely within the confines of the San Joaquin Valley. Numerous United States Geological Survey (USGS) reports discuss the San Joaquin Valley as being a large asymmetric structural trough that has been receiving sediments from the Sierra-Nevada Mountains to the east and from the Coast Ranges to the west. In the area of DEID, these sediments and corresponding structures control the direction of groundwater flow and the quality of groundwater available to wells. In general, DEID is underlain by (oldest to youngest) basement complex meta-sedimentary and meta-volcanic, and intrusive plutonic rocks. The basement complex is overlain by Tertiary marine sediments that in turn are overlain by continental rocks and deposits. All of these units dip and thicken to the west under the District from a thickness of about 4,000 feet near Richgrove to about 7,000 feet thick under Delano. The focus of this report is to present the significant hydrogeological deposits underlying the District.

Groundwater Basin

DEID is located in the Tulare Lake Hydrologic Region. This region has 12 distinct groundwater basins and 7 subbasins. DEID is located in two of the subbasins: the Kern County Sub-basin and the Tule River Sub-basin (**Attachment 4**). The majority of the District is located in the Tule Sub-basin. Both of the Sub-basins are considered to be critically overdrafted. According to DWR Bulletin 118, 2003 update, eleven basins/subbasins in California are identified as being in critical conditions of overdraft.

Topography

DEID lies on the eastern side of the San Joaquin Valley and includes three types of topography: rolling foothills to the east, remnants of original Pleistocene aggraded alluvial terraces, and floodplains and alluvial fans built by present streams. The rolling foothills to the east have pronounced relief that can be as much as 100 feet higher in elevation than the District lands. West of the foothills are remnants of the original surface of the Older Alluvium. These features are broad undulating slopes that extend to about 15 feet above the ephemeral drainage courses. Most of the District is covered by the floodplains and fans of present streams. White River and Rag Gulch meander on floodplains, which widen westerly into broad aprons forming alluvial fans.

2.2 - Stratigraphy

The following discussion focuses on significant hydrogeologic units that could have an impact on the groundwater resources within the District. From the surface to a depth of approximately 3,000 feet important hydrogeologic units are topsoil, continental rocks and deposits, and the uppermost section of the marine sediments. Depth to bedrock is too deep under most of the District to impact groundwater conditions and therefore will not be discussed here.

Topsoils

Topsoils in the DEID area consist of permeable to moderately permeable and poorly permeable deposits. Permeable to moderately permeable soils cover the majority of the District and correspond to soils in the Kimberlina, Wasco, and Panoche series. These soils are roughly contiguous with recent alluvial fan and flood-basin deposits having formed on mixed granitic and sedimentary alluvium. These soils are very deep, well drained, and lack hardpan horizons. The poorly permeable surface deposits in the area correspond to soils in the San Joaquin, Cometa, and Madera series. These soils are located in the northeast and southeast portions of the District in interfan areas and are formed on slightly dissected older stream terraces derived from mainly granitic rock sources. These soils have dense horizons and hardpans that could impede percolation of recharged groundwater.

Subsurface Geology

The upper portion of the Marine Deposits and the Continental Deposits comprise the main groundwater reservoirs in DEID. Klausing and Lofgren (1969) provided two subsurface cross sections that extend east to west in the area. The northern of the two cross sections is located between Earlimart and Pixley just north of the District boundary and the southern cross section runs through Richgrove and the City of Delano. These cross sections show the westward dipping trend of the Marine and Continental Deposits beneath the District.

Marine Sediments

The Basement complex is overlain by west dipping Tertiary marine sediments in the District. For the most part the Tertiary sediments have little influence on groundwater with the exception of the Santa Margarita Formation and Olcese Sand. Both sands are friable, massive, fine to medium grained, contain varying amounts of silt, and have fair to good permeabilities. The Santa Margarita is about 400 feet thick along the eastern margin of the District and is found at depths of 2,000 feet or more. It becomes progressively finer to the west and grades into shale under the central part of the District. The Olcese Sand is about 400 feet thick and is found beneath the entire District at depths from about 2,500 feet near Richgrove to about 5,000 feet near the western edge of the District. Both of these units are known to have good quality water east of the Friant-Kern Canal. The Santa Margarita Formation and/or the Olcese sand are tapped by several wells in the Richgrove area and the wells show yields up to 1,950 gpm.

Continental Deposits

The Lofgren and Klausing cross sections show alluvial deposits, both oxidized and reduced, originating from the Sierra-Nevada to the east extending to depths from about 600 feet near Richgrove to approximately 1,000 feet near Delano. These deposits, termed Older Alluvium, are a significant part of the area's aquifer being commonly tapped by wells. Below the alluvium are deposits termed Continental Deposits from the Sierra Nevada. These deposits like the Older Alluvium deepen and thicken to the west and south, and are commonly tapped by wells. However, east of Highway 99 these deposits contain brackish water at depths of approximately 2,000 feet. USBR (December 1950) indicates that the Older Alluvium and the underlying Continental Deposits are members of the Kern River Series, in which the Kern River Formation would correspond to the Continental Deposits and underlie the Older Alluvium. Most groundwater stored in the area is in the Kern River Formation.

USBR (December 1950) discusses a significant water-bearing sand layer within the Continental Deposits (Kern River Formation) called the Schenley Sand. The Schenley Sand, a thick sand member, underlies the western and central portions of the District. It is 1,000 to 1,500 feet deep and thickens from less than 100 feet in the east to almost 600 feet in the west. The top of the Schenley sand is between 50 to 100 feet below the Blue clay (discussed below). USBR (December 1950) states that the Schenley Sand is the most important aquifer in the area. In addition to the Schenley Sand, the Kern River Formation also contains a significant clay layer called the Blue Clay or "300 foot" clay. The Blue Clay is about 300 feet deep and 50-100 feet thick. As of 1950, water contained in the Schenley Sand was thought to be confined by the overlying Blue Clay thus improving its water-bearing properties.

A widespread lacustrine clay layer (Corcoran Clay member of the Tulare Formation) is present in the area extending in the subsurface westerly from just east of Highway 99. Along its eastern edge, the Corcoran Clay is approximately 200 feet below ground surface (bgs) and deepens to about 500 feet bgs towards the center of the Central Valley. The Corcoran Clay averages between 50 to 80 feet thick and is generally used to differentiate between a lower confined aquifer and an upper unconfined aquifer west of its eastern extent.

Younger Alluvium

Younger Alluvium occupies the channels and floodplains of the White River, Rag Gulch, and other minor streams of the area. These materials are composed of sands, with interstitial finer material. Silty lenses are common but clay is seldom found.

2.3 - Aquifer Characteristics

Specific Yield

USBR (December 1950) derived estimates of specific yield for a lower zone and upper zone within the District. These values are based on specific yield estimates from studies done in similar geologic settings. The upper zone includes the depth interval dewatered between 1921 and 1946 (approximately 90 to 200 feet bgs). This zone averages 7.5 percent specific yield. It is important to note that a significant portion of the upper zone has been partially re-watered since the District began receiving CVP surface water in 1950.

The lower zone is the interval from the 1946 low water table to the top of the lower Blue Clay. This zone historically supplied much of the water production in the District. This zone has an average specific yield of 8.7 percent in the central and southwest portions of the District. Specific yield data is lacking in the remainder of the District. Areas of higher specific yields correspond to deposits of the White River and Rag Gulch. Specific yields associated with Rag Gulch deposits average about 10 percent. Specific yields associated with the White River floodplain are greater than 10 percent and extend further west than the Rag Gulch "high"—a lobe of highly transmissive Younger Alluvium associated with recent Rag Gulch deposits. A large "depression" of low specific yields—less than 6 percent—lies along the Tulare County line. Many of the area's wells are in or adjacent to this area, and, due to its relatively shallow depth, derive little of their water from above the Blue clay.

Below the Blue Clay, the specific yield of the Schenley Sand is estimated to be as high as 15 to 20 percent. No information was available on the specific yields in the Santa Margarita Formation or the Olcese sands.

Safe Yield

In 1950, the USBR stated that the safe firm groundwater supply in DEID was 1,100 AF/year. However, conditions have changed substantially since then and this value is no longer considered valid. Provost and Pritchard (2006) indicated that surface water deliveries averaged 115,000-120,000 AF/year for the time interval from 1990 to 2002. Over the same interval groundwater pumpage for agricultural purposes averaged 35,000-40,000 AF/year, but groundwater levels remained relatively stable (**Attachment 6**). This suggests that safe yield for the District with CVP surface water deliveries is on the order of average groundwater pumpage.

Transmissivity

Transmissivity data from the literature is sparse. A study by Davis et al., (1964) summarized numerous specific capacity values from Pacific Gas & Electric pump tests. Using data from more than 300 field tests in the DEID District area, they calculated specific capacities ranging from 19 to 27 gpm per foot. An approximate relationship between specific capacity data and transmissivities was developed by the U.S.

Geological Survey for the San Joaquin Valley. Using their methods, transmissivity values for the District and immediately surrounding areas range from 38,000 to 82,000 gpd/ft.

Wells Yields and Depths

The deepest irrigation wells in the area are generally along Highway 65, where some are deeper than 2,000 feet, and probably tap the Santa Margarita Formation and/or the Olcese sand. These wells (in the Richgrove area) are known to produce as much as 1,950 gpm. Domestic wells are commonly less than 200 feet deep and most irrigation wells are less than 700 feet deep. Most modern-day irrigation wells range from about 400 to 600 feet deep. According to DWR (2003), wells in the Tule subbasin can have yields as high as 3,000 gpm and wells in the Kern County subbasin can have yields as high as 4,000 gpm averaging between 1,200-1,500 gpm.

2.4 - Groundwater Levels

Current groundwater levels in DEID are shown on **Attachment 5**. Average groundwater depths are currently about 130 feet. The period of record from about 1925 to 1950 is marked by a steady decline in average groundwater levels under the District (see **Attachment 6**). For this period, the water table declined approximately 125 feet (90 feet to 215 feet bgs). Between 1950 and 1954, water levels remained fairly level. From 1950 to 2000, average water levels have recovered 95 feet, equal to about 72 percent of pre-CVP deliveries. In general, groundwater levels fluctuate in response to the amount of surface water delivered but are now considered to be fairly stable.

Attachment 5 shows a steep east-dipping groundwater gradient in the Richgrove area, which indicates that in this portion of the District groundwater flows out of DEID. In other parts of the District, the groundwater generally appears to follow the regional groundwater gradient (southwesterly), but is also influenced by some local pumping depressions.

2.5 - Groundwater Quality

Groundwater quality in DEID is known only from limited and sporadic testing. Groundwater appears to have suitable chemical quality for irrigation in most of DEID, although there may be some localized problems.

Generally, water is considered suitable for agriculture if the total dissolved solids (TDS) is less than 700 mg/L (Cherry, 1979). According to DWR (2003), TDS in the Tule Groundwater Sub-basin averages 256 mg/L with a range from 200 to 30,000 mg/L. In the Kern County Groundwater Sub-basin, TDS averages 400-450 mg/L, with a range from 150 to 5,000 mg/L. According to P&P (2006), TDS in DEID averages 330 mg/L over the entire saturated thickness of the usable aquifer, and 490 mg/L in the shallow mixing zone. An overall trend is for lower salinity at greater depths; this has been

shown in a number of test holes for wells in the Delano-McFarland areas, and has been observed by DEID staff and local growers.

Elevated nitrate concentrations are found in the shallow groundwater, particularly in areas where citrus is grown. The pesticide DBCP has also been found in shallow groundwater. This pesticide was formerly used as a nematocide, and reached the groundwater primarily in areas where vineyards are grown on sandy soil underlain by sandy alluvium. Because of this, areas with DBCP in the shallow groundwater may coincide with hydrogeologically favorable areas for intentional recharge. Groundwater below a depth of 1,100 to 1,200 feet in the Delano-McFarland area (south of DEID) contains blue-green deposits, and hydrogen sulfide is common in the associated groundwater.

Underlying the fresh water contained in the regional aquifer system is a zone of brackish and saline waters. These waters originated as connate sea water remaining in the deep valley sediments as the valley filled with younger sediments and the sea water was displaced by fresh water emanating from the Sierra Nevada to the east and the Coast Ranges to the west. The trapped brackish water occurs at a depth of greater than 2,000 feet in the east part of the District and shallows to a depth of about 1,500 feet in the west part of the District. The deeper saline water on the east side is presumably due to flushing of fresh water from subsurface inflow originating from Sierran streams.

Upconing of saline water can be induced by deep wells that pump from near the saline-fresh water interface. Pumping freshwater by a well located above the transition zone produces upconing of the latter, eventually salinizing the pumped water, forcing shut-off. Following the well's shut-off, the upconed saltwater mound undergoes decay, tending to return to the pre-pumping regime (Zhou, 2004). This condition could occur in DEID in very deep wells (>1,500 feet deep).

3 - BASIN MANAGEMENT OBJECTIVES

The District's basin management objectives include the following primary elements:

- Stakeholder Involvement;
- Monitoring Program;
- Groundwater Resources Protection;
- Groundwater Sustainability;
- Groundwater Operations; and
- Groundwater Planning and Management.

This GMP includes a number of activities that the District intends to evaluate or undertake for each of these primary elements. The subsequent sections describe both existing and planned management actions, and how each action will contribute to a more reliable groundwater supply.

Existing Activities

- All existing and on-going basin management objectives described in Sections 4-9 will be maintained, unless stated otherwise. (In Sections 4-9 the Existing Activities are not be repeated under Planned Actions, even though they will be continued in the future).

Planned Actions

- All new policies and projects described in Sections 4-9 will be pursued, but their implementation will be subject to available funding and staff time.

4 - STAKEHOLDER INVOLVEMENT

4.1 - Groundwater Advisory Committee

A Groundwater Advisory Committee (GAC or Committee) was formed in 2007 to assist with the development of this GMP. The initial Committee was comprised of the DEID General Manager and the District Board of Directors, which includes a broad cross section of local growers. The GAC was reconstituted in July of 2007 to include 14 growers that represent a diverse cross-section of DEID. The GAC offered several useful and insightful comments that were incorporated into this GMP. The GAC will also monitor and evaluate the technical progress made in achieving the goals of this GMP.

Existing Activities

Assisted with the development of this GMP.

Planned Actions

The Committee will attempt to meet annually, or more frequent if deemed appropriate, and will have the following responsibilities:

- Review trends in groundwater levels and available information on groundwater quality;
- Evaluate the effectiveness of current groundwater management policies and facilities;
- Discuss the need for new groundwater supply/enhancement facilities;
- Educate landowners on groundwater management issues;
- Assess the overall progress in implementing the programs outlined in the Groundwater Management Plan;
- Recommend updates or amendments to the Groundwater Management Plan;
- Identify regional and multi-party groundwater projects; and
- Review and comment on the Annual Groundwater Report.

4.2 - Relationships with Other Agencies

The District is located in the both the Kern County and Tule Groundwater Sub-basins, which extends beyond many political boundaries and includes other municipalities, irrigation districts, water districts, private water companies, and private water users (see **Attachment 4**). This emphasizes the importance of inter-agency cooperation, and the District has historically made efforts to work conjunctively with many other water management agencies.

Below is a list of some agencies that the District has worked with in managing the local groundwater:

- Friant Water Authority
- Friant Water Users Authority

- United States Bureau of Reclamation
- Department of Water Resources
- Poso Creek Regional Management Group
- Southern San Joaquin Valley Water Quality Coalition
- Deer Creek and Tule River Authority
- Local irrigation and water districts (Pixley Irrigation District, Kern-Tulare Water District, Rag Gulch Water District, etc.)
- Kern County Water Agency

Existing Activities

Friant Water Authority

The Friant Water Authority (FWA) is a joint powers authority comprised of 22 member districts located in Fresno, Tulare, and Kern Counties. In addition to its primary mission of operating and maintaining the Friant-Kern Canal, FWA also addresses various water supply, financial, legislative, legal and other policy issues on behalf of its members. As a member of FWA, DEID is almost always involved in several multi-agency water management projects.

Friant Water Users Authority

The Friant Water Users Authority (FWUA) is a joint powers authority that has member districts in Madera, Fresno, Tulare, and Kern Counties. The FWUA is staffed by employees of the Friant Water Authority under an agreement between the two organizations. FWUA is maintained to work on projects and legal matters that preceded the formation of the Friant Water Authority.

USBR/DWR

DEID currently participates in the Semi-annual Groundwater Measurement Program administered by the USBR. This program requires DEID to take water level measurements from specified wells two times a year and share the data with USBR. USBR shares this data with the DWR.

Water Quality Coalition

DEID is a member of the Southern San Joaquin Valley Water Quality Coalition (Coalition). The Coalition encompasses the entire Tulare Lake Basin (4.4 million acres) and is comprised of four subwatershed groups (Kings, Kaweah, Tule and Kern River). DEID is a member of the Kern River subwatershed group. The Coalition is organized under a MOU, adopted in 2002, to jointly and cooperatively address water quality issues. The Coalition monitors surface water (irrigation and stormwater) and prepares annual reports. In 2005-2006, the water quality in the White River in DEID was tested as part of Coalition efforts.

Poso Creek Regional Management Group

The Poso Creek Regional Management Group (Poso Creek Group) comprises the seven agricultural districts and one resource conservation district listed below:

- Semitropic Water Storage District (Lead Agency)
- Cawelo Water District
- Delano-Earlimart Irrigation District
- Kern-Tulare Water District
- North Kern Water Storage District
- Rag Gulch Water District
- Shafter-Wasco Irrigation District
- North West Kern Resource Conservation District

These Districts are all within the Tulare Lake Basin Hydrologic Region and are located in the northerly portion of Kern County. The Poso Creek Group is in the process of preparing an Integrated Regional Water Management Plan (IRWMP). The IRWMP is planned for completion in 2007. The IRWMP emphasizes resolving the Region's short-term and long-term water supply challenges through an integrated water-resource planning approach. The group has already identified numerous multi-agency projects, including several that could benefit DEID's groundwater resources.

Deer Creek and Tule River Authority

In 2007, DEID began preparing regional groundwater contour maps with six neighboring agencies (Deer Creek and Tule River Authority). See Section 5.1 for more details.

Pixley Irrigation District

Pixley ID is DEID's neighbor to the north. DEID and Pixley ID are jointly pursuing a Groundwater Banking Reconnaissance Study to investigate the feasibility of banking surplus waters from DEID in Pixley ID during wet years (likely delivering the water to Pixley ID growers as in-lieu recharge), and returning a similar quantity of water to DEID in dry years from Pixley ID's banked reserves. The project is currently envisioned to be able to deliver between 10,000 AF and 30,000 AF of water to DEID in a dry year. The reconnaissance study is expected to be completed in mid-2007.

Kern County Water Agency

DEID is a member district of the KCWA and works cooperatively on water projects and data development that is of mutual interest to each.

Planned Actions

- Implement multi-agency projects identified in the Poso Creek Group IRWMP.

4.3 - Plan to Involve the Public and Other Agencies

The District is already involved with many neighboring and regional agencies on groundwater management projects. Nevertheless, DEID is always interested in building

new relationships with other agencies that share the same groundwater basins. DEID will also strive to involve the public in groundwater management decisions. Additional cooperative relationships can be achieved through the sharing of data, inter-agency committees, interagency meetings, memorandums of understandings, formal agreements, and collaborations on groundwater projects.

Existing Activities

- Conducted public hearings to discuss the content of this GMP prior to its adoption.

Planned Actions

- Hold annual Groundwater Advisory Committee meetings that are open to the public.
- Provide copies of the annual groundwater reports to the public at their request. Notify the public of the availability of the annual reports on the DEID website and quarterly newsletter.
- Publish information on groundwater management accomplishments on the DEID website and quarterly newsletter.
- Evaluate the merits of engaging the City of Delano and the Community of Earlimart in discussions on groundwater issues, such as groundwater levels, groundwater quality, groundwater recharge, and the use of reclaimed water.
- Utilize the GAC in reviewing and monitoring any new recharge and banking facilities that may be pursued.

5 - MONITORING PROGRAM

This section discusses monitoring of groundwater levels, groundwater quality, land surface subsidence, and surface water. Monitoring is considered critical to future management decisions, and the District's monitoring program is intended to:

1. Provide warning of potential future problems;
2. Use data gathered to generate information for water resources evaluations;
3. Develop meaningful long-term trends in groundwater characteristics; and
4. Provide data comparable from place to place in the District.

5.1 - Groundwater Level Monitoring

Groundwater level monitoring in DEID includes data collection, entering the data into a database, sharing the data with other agencies, and development and evaluation of groundwater contour maps.

Data Collection

DEID hires a contractor to measures water levels each spring and fall in about 90 wells. DEID only owns one monitoring well; all other monitored wells are privately owned and are monitored by agreement with the owner. **Attachment 7** illustrates the location of all the wells that are monitored. **Attachment 8** includes a list of attributes for these wells. DEID also has a photograph of each monitoring well. DEID plans to collect more detailed well attribute information (such as well depth, screened interval, type of well, etc.) in the future. The location of each well was determined with a hand-held GPS device. A more accurate survey may be performed in the future.

Sharing of Groundwater Level Data

DEID currently participates in the Semi-annual Groundwater Measurement Program administered by the USBR. This program requires DEID to take water level measurements from specified wells two times a year and share the data with USBR.

Groundwater Database

The DEID maintains a spreadsheet groundwater database with historical groundwater-level data as far back as the 1950's in some wells. This data has been used to generate groundwater elevation contours. In 2007, DEID was developing a Geographic Information System geo-database with groundwater level data from DEID and neighboring districts. This geo-database will be used to create regional contour maps, which are discussed below.

Groundwater Contour Maps

In 2007, DEID began preparing regional groundwater contour maps with the following districts: Lower Tule River Irrigation District, Pixley Irrigation District, Saucelito Irrigation District, Porterville Irrigation District, Vandalia Irrigation District, and Tea Pot Dome Water District. This group is collectively called the Deer Creek and Tule River Authority.

Groundwater level data was collected from the California DWR for 900 wells. Maps have been prepared for each year from 1995-2005 and the group plans to continue preparing the maps annually. The districts have found that preparation of regional maps is more cost effective than having each district individually prepare their own maps. The regional maps also provide more accurate contours near district borders, since groundwater levels in neighboring districts can now be used in the generation of contours.

Existing Activities

- Measurement of groundwater levels each spring and fall.
- Development of regional groundwater contour maps with the Deer Creek and Tule River Authority.

Planned Actions

- Periodically review the monitoring network to determine if it provides sufficient areal coverage to evaluate groundwater levels.
- Protect wells in monitoring program from being abandoned.
- Encourage landowners and developers to convert unused wells to monitoring wells.
- Collect more detailed information on the attributes of each monitoring well.
- Prepare annual groundwater reports, which will include detailed evaluations of groundwater level trends (see Section 9.2).
- Survey the elevations of all monitoring well heads using a common survey datum.

5.2 - Groundwater Quality Monitoring

The District has not historically monitored groundwater quality and has left individual growers the responsibility of testing groundwater quality in their own wells. However, the District may begin to monitor groundwater quality in the vicinity of new groundwater recharge facilities, if they are constructed. The District would also like to measure electrical conductivity in selected wells each year. The District also has a tentative goal to collect and review the results from groundwater quality tests performed by others, such as the Cities of Delano and Earlimart, USBR, DWR and USGS. However, it is recognized that data from these sources is probably limited and is not regularly available. After a moderate amount of data is collected, a groundwater database will be created to store, organize, and evaluate the water quality data.

These groundwater quality-monitoring efforts will have one or more of the following objectives:

1) Spatially characterize water quality according to soils, geology, surface water quality, and land use;
2) Establish a baseline for future monitoring;
3) Compare constituent levels at a specific well over time (i.e. years and decades);
4) Determine the extent of groundwater quality problems in specific areas;
5) Identify groundwater quality protection and enhancement needs;
6) Determine water treatment needs;

7) Identify impacts of recharge and banking projects on water quality;
8) Identify suitable crop types that are compatible with the water characteristics; and
9) Monitor the migration of contaminant plumes.

Existing Activities
None

Planned Actions
- Collect historical water quality information for DEID to establish a baseline for future monitoring efforts.
- Regularly collect new water quality information from other agencies and review it to identify any impending groundwater quality problems.
- Protect wells in monitoring program from being abandoned.
- Prepare groundwater quality maps when sufficient information is available with the aid of a qualified hydrogeologist. Attempt to characterize groundwater quality with depth and provide the information to growers so they can use it when designing and installing wells.
- Measure electrical conductivity at selected wells on an annual basis.

5.3 - Groundwater Monitoring Protocols

Monitoring protocols are necessary to ensure consistency in monitoring efforts and are required for monitoring evaluations to be valid. Consistency should be reflected in factors such as location of sample points, sampling procedures, testing procedures, and possibly even time of year when the samples were taken. Without such common ground, comparisons between reports must be carefully considered. Consequently, uniform data gathering procedures will be practiced by the District. Specific protocols for water level and water quality monitoring are discussed below.

Water-Level Monitoring Protocols

The District hires a contractor to measure groundwater levels. No information is available on their protocols, but the following protocols are recommended for all future efforts:
- Contact landowners for permission to access their property prior to any fieldwork.
- Perform all water level measurements in as short a period as possible.
- Perform year-to-year measurements at the same time of the year.
- Document the measurement reference point for each well, the measuring device, and calibration date for the measuring device.
- A well sounder with an electronic sensor is preferred over a sonic sounder (since it provides more accurate measurements).
- Document the date and time of each measurement.
- Test the groundwater level in each well twice, or more if needed, until consistent results are obtained.

- If there is reason to suspect groundwater contamination, decontaminate water level measuring equipment, and in general, perform measurements from the least to the most contaminated wells. Also use standardized decontamination procedures.

Water-Quality Monitoring Protocols

The following water-quality monitoring protocols will be followed for future monitoring efforts:

1) Landowners will be contacted for permission to access their property prior to any fieldwork.
2) Pump well for an adequate period of time prior to sample collection with documentation of stabilized parameters;
3) Use proper sample containers, preservatives, and holding times;
4) Use secure chain-of-custody procedures;
5) Ideally, use the same laboratory for all testing, except for split samples sent to separate laboratories for comparison;
6) Perform tests only at accredited, state-certified laboratories that use proper quality control and quality assurance procedures;
7) Give each sample a quality assurance code, which represents the relative confidence in the water sample. The following codes will be used:
   0: No information available to rank the quality assurance
   1: Questionable measurement; some quality assurance procedures not followed
   2: Reliable measurement with all quality assurance procedures followed
8) Include spiked, duplicate, and field-blank samples for comparison to genuine samples;
9) Use proper handling procedures (e.g. placing the containers in an ice chest immediately after collection);
10) Document all protocols and procedures;
11) Perform year-to-year measurements at the same time of year (during periods of both minimal pumping in the winter and heavy pumping in the summer); and
12) Document the name, contact information, and qualifications of the individuals taking measurements.

Existing Activities

None

Planned Actions

- Review the suitability and thoroughness of the monitoring protocols used by the contractor that monitors groundwater levels for DEID.

5.4 - Surface Water Monitoring

Surface water sources in DEID include the White River, an ephemeral stream traversing the District, and San Joaquin River water, which is delivered to DEID through the Friant-Kern Canal.

White River

White River is an intermittent waterway that traverses the District flowing from east to west. The White River watershed is located in the Sierra Nevada Mountains immediately east of the District and historically ended in an undefined flood plain that eventually reached Tulare Lake. The White River channel has been modified and resembles a canal along much of the District.

The District owns a small section of the White River channel, approximately one mile in length. Other than this section, the District has no responsibility for operation and maintenance of the White River channel. However, as a public service to the District landowners and surrounding communities, the District facilitated the installation of and maintains two gauging stations on White River that are in addition to an existing station that was established by the USGS a number of years ago. The District and others use these stations to monitor River levels, rainfall, and other meteorological conditions. Real-time information from each station is accessible through a quick link on the DEID website, www.deid.org.

The riverbed is sandy and experiences high infiltration. Consequently, flows rarely reach DEID, but White River flows did occur in DEID during the relatively wet years 2005-2006. The quality of White River run-off was tested in 2005-2006 as part of efforts by the Southern San Joaquin Valley Water Quality Coalition. The Coalition will continue to test the water quality when flows reach the District.

Friant-Kern Canal

The Friant-Kern Canal traverses DEID from north to south. The Canal delivers Central Valley Project water from Millerton Lake to DEID and numerous other agencies. DEID monitors diversions from the Friant-Kern Canal and the Friant Water Authority monitors water quality in the Canal. The quality of this water is very good; total dissolved solids range from about 30 to 50 mg/L.

Surface water flows can impact groundwater levels and groundwater quality if the two water sources are hydrologically connected. In addition, pumping may also affect nearby surface water rights if the surface supplies are hydrologically connected to the groundwater. Neither of these issues are a concern for the White River or Friant-Kern Canal.

Existing Activities

- Monitor flowrates in the White River.
- Monitor surface water quality in the White River.
- Periodically review data on the quality of Friant-Kern Canal water.

Planned Actions

None

5.5 - Land Surface Subsidence Monitoring

Klausing and Lofgren (1969) documented substantial land subsidence in DEID through the 1960's. No information was found on subsidence rates since the 1960's. There is often a time delay in subsidence after groundwater withdrawals, so the District may still be experiencing subsidence. In addition, groundwater levels can drop appreciably in extended droughts, which could also lead to subsidence in DEID. On the other hand, it is likely that some of the land subsidence has been arrested with the importation of large volumes of surface water since the 1950's. Lands within the District will be observed for land subsidence, and, if land subsidence becomes a problem, this Plan will be amended to include preventative and mitigative measures.

Existing Activities

None

Planned Actions

- Periodic resurvey of control points and local benchmarks to check for land subsidence. The control points and local benchmarks will be checked relative to High Precision Geodetic Network benchmarks.

6 - GROUNDWATER RESOURCES PROTECTION

6.1 - Well Abandonment

Proper destruction of abandoned wells is necessary to protect groundwater resources and public safety. Abandoned or improperly destroyed wells can result in contamination from surface sources, or undesired mixing of water of different chemical qualities from different strata. This is especially important in DEID because part of the District has a confined aquifer.

The administration of a well construction, abandonment and destruction program has been delegated to the Counties by the State legislature. Many counties have adopted a permitting program consistent with Department of Water Resources Bulletin 74-81 for well construction, abandonment, and destruction.

The District will properly abandon their own wells when they are no longer useful. In addition, the District will encourage landowners and developers to properly abandon their own wells, or preferably, convert unusable wells to monitor wells so that they can become a part of the District's groundwater monitoring program.

Existing Activities
None

Planned Actions
- Destroy any District owned wells according to County and State standards.
- When possible, convert unusable production wells to monitor wells.

6.2 - Wellhead Protection

Need for Wellhead Protection
Contaminants from the surface can enter an improperly designed or constructed well along the outside edge of the well casing or directly through openings in the well head. A well is also the direct supply source to the customer, and such contaminants entering the well could then be pumped out and discharged directly into the distribution system. Therefore, essential to any wellhead protection program are proper well design, construction, and site grading to prevent intrusion of contaminants into the well from surface sources.

Furthermore, since wells can be a direct conduit to the aquifer, they must be properly destroyed and abandoned or they will provide an unimpaired route for pollutants to enter the groundwater, particularly if pumping equipment is removed from the well and the casing is left uncapped. Well Abandonment is discussed in Section 6.1.

Wellhead Protection Policy

Wells constructed by the District will be designed and constructed in accordance with DWR Bulletin 74-81. In addition, the District will encourage landowners to follow the same standards for privately owned wells. DWR Bulletin 74-81 provides specifications for the following:

- Methods for sealing the well from intrusion of surface contaminants;
- Covering or protecting the boring at the end of each day from potential pollution sources or vandalism;
- Site grading to assure drainage is away from the well head; and
- Set-back requirements from known pollution sources.

Wellhead Protection Area

As defined in the Federal Safe Drinking Water Act Amendments of 1986, a wellhead protection area is "the surface and subsurface area surrounding a water well or well field supplying a public water system, through which contaminants are reasonably likely to move toward and reach such water well or well field." Agricultural wells are randomly spaced throughout the District. Therefore, the entire District is treated as a wellhead protection area.

Existing Activities

None

Planned Actions

- Provide wellhead protection on all newly constructed DEID wells according to County and State standards.
- Encourage local growers to incorporate proper wellhead protection into all new wells, and retrofit old wells with proper wellhead protection.

6.3 - Saline Water Intrusion

Saline water has been identified at depths (>1,500 feet) beneath the District but no wells are currently known to be affected by this zone of saline water. Saline water intrusion could be impacted by upconing if very deep wells are installed and used (see Section 2.6 for more details). The District will review available water quality data on a periodic basis. Should saline intrusion become a problem in the future, a GMP amendment will be prepared to address the issue. Currently, the District strives to prevent the importation of saline surface waters that could ultimately degrade the groundwater. When alternative water sources are available for importation, the District considers not only the cost but also the quality, including salinity, of the water. The District will evaluate all possible alternatives, and, when practical and feasible, select water sources with acceptable levels of salinity.

Existing Activities

None

Planned Actions

- Review available water quality data to identify areas with the potential for saline water intrusion.

6.4 - Migration of Contaminated Groundwater

Groundwater contamination can be human induced or caused by naturally occurring processes and chemicals. Sources of groundwater contamination can include irrigation, dairies, improper application of agricultural chemicals, septic tanks, industrial sources, stormwater runoff, and disposal sites.

Groundwater quality problems in DEID include DBCP and nitrates. The problems are thought to generally be widespread, but no groundwater quality maps are available. However, groundwater in the District is generally of excellent quality for agricultural use and migration of contaminated groundwater is not a present concern. Groundwater quality in the District generally improves with depth as most of the present contamination problems occur in an upper mixing zone due to recharge and pumping cycles.

Nevertheless, the District recognizes that migration of contaminated groundwater is always possible. The District will continue to review groundwater quality data from other sources and remain cognizant of the possibility of contaminated groundwater migration into DEID.

Existing Activities

- Regularly review data and reports from regulatory agencies on contaminant plumes to provide warning of potential future problems.

Planned Actions

- Seek to locate recharge basins next to areas with water quality problems to blend water supplies and create a hydraulic barrier to impede movement of contaminant plumes.

6.5 - Groundwater Quality Protection

The District's surface water allocations cannot support their crop demand alone, and some groundwater will always be necessary. The groundwater, however, will have limited or no use if it has poor quality. Therefore, protecting the quality of the groundwater is a cardinal component of this GMP. Groundwater quality can be protected through proper use of pesticides, herbicides and fertilizers, stormwater quality management, septic system management, and water vulnerability planning and management. Some of these tasks are the responsibility of cities and communities, but DEID will support their efforts whenever possible.

Existing Activities

- Surface-water quality monitoring as part of the Southern San Joaquin Water Quality Coalition.
- Educate growers on the proper use of pesticides, herbicides and fertilizers in the District newsletter.

Planned Actions

- Seek funding to improve security at DEID water facilities and reduce the potential for contamination from acts of vandalism or terrorism.

7 - GROUNDWATER SUSTAINABILITY

Groundwater comprises about 25% of the water used in DEID in a typical year, but can comprise up to 80% of water supplies in a drought. During years with low surface water allocations, groundwater is essential to prevent the loss of permanent crops. In addition, some water users rely entirely on groundwater and do not use any surface water. Therefore, preserving the sustainability of groundwater is essential for the economic well being of the District and its growers.

Groundwater levels declined rapidly in DEID during the early 1900's (see **Attachment 6**). Groundwater levels began rising after DEID secured a CVP surface water contract in 1950. Since then, groundwater levels have risen almost 100 feet and are now fairly stable, but they do vary during wet and dry periods. A decline in groundwater levels would reduce groundwater reserves, increase pumping lifts, and could require deepening or abandonment of wells. Therefore, maintaining these stable groundwater levels is a high priority for DEID.

7.1 - Issues Impacting Groundwater Sustainability

Issues of concern for groundwater sustainability in DEID are discussed below:

San Joaquin River Settlement

The San Joaquin River Settlement will reduce CVP water supplies for DEID. One estimate shows that deliveries would be reduced by an average of 6,000 AF/year of Class I water and 7,000 AF/year of Class II water. However, total losses could be as high as 24,000 AF/year through sustained drought years. This would represent about 16% of the District's total water demands. DEID has a goal of fully recovering from these lower deliveries through water management programs, especially groundwater recharge and banking.

Surface Storage

Millerton Lake provides the primary surface storage element for the Friant Unit of the Central Valley Project (CVP). Although Millerton Lake has a maximum storage capacity of 520,000 AF, only 385,000 AF of storage is usable due to the outlet elevations into the Friant-Kern and Madera Canals. Millerton Lake lacks sufficient carry-over storage capacity to balance the wet and dry year needs for conservation storage. Studies are being performed to evaluate the merits of adding more storage dams on the San Joaquin River.

Excess Lands

Approximately 10 percent of the lands in DEID are ineligible to receive CVP water due to the amount of land held by one owner that is being irrigated with CVP water. These are referred to as 'excess lands' or 'ineligible lands'. **Attachment 9** shows the location of excess lands in DEID. (It is important to note that the locations of these lands changes from year to year as land ownership changes). These lands comprise about

10% (~6,000 AF) of the District. These lands primarily use groundwater and therefore cause stress on the District's groundwater reserves. As a result, securing surface water for these lands is a high priority for DEID. DEID has successfully secured some surface water for the excess lands, but in general they still use more groundwater per acre than other lands. According to P&P (2006), the excess lands have a demand of 19,500 AF/year, but surface water deliveries to them have averaged only 3,300 AF/year.

The DEID distribution system has the capacity to deliver full water demands to all excess lands. As a result, whenever possible, DEID has purchased or exchanged for other non-CVP water sources to deliver to the excess lands. Water that is recharged and later extracted can currently also be delivered to excess lands, and is one reason DEID is evaluating recharge and banking projects.

7.2 - Overdraft Mitigation

Groundwater overdraft was a concern in the early 1900's, which was one of the reasons the District sought a CVP contract for surface water. Since then groundwater levels have gradually risen and are now fairly stable. However, continued proper management is needed to maintain these stable groundwater levels, and, if possible, continue to raise groundwater levels. Moreover, the District is concerned that reductions in surface water supply as a result of the San Joaquin River Restoration may lead to groundwater overdraft.

Groundwater recharge can help reduce overdraft and is discussed in Section 7.3. The following groundwater management policies are also followed to help reduce groundwater overdraft:

Limitations on Pumping

The California Water Code gives water and irrigation districts the power to limit or suspend groundwater extractions. However, such limits will only be implemented if the District determines through study and investigation that groundwater replenishment programs, or other alternative sources of water supply, have proved insufficient or infeasible to lessen impacts to groundwater. In the unlikely event that it becomes necessary to reduce groundwater extractions, the District intends to accomplish such reductions under a voluntary program, which would include suitable incentives to compensate users for reducing their groundwater pumping. The District will not attempt to restrict or otherwise interfere with any landowner or water user exercising a valid right to pump and utilize groundwater.

Limitations on the Exportation of Water Supplies

The District generally does not support groundwater pumping for export out of the District unless it involves a transfer or exchange of water that will not reduce the total water supply available to the District. In addition, the District usually opposes surface water transfers that are accompanied with increased groundwater pumping used to replace the transferred surface water. However, such transfers will be

reviewed on a case-by-case basis and will be permitted if they are approved by the Board of Directors.

Economic Inducements

The District recognizes that management of water supplies should reflect water conservation and the protection of groundwater resources. The District currently provides an indirect economic inducement by establishing water rates high enough to promote water conservation yet low enough to compete with groundwater pumping costs. This pricing system encourages the use of surface water to meet irrigation demands when available, thereby preserving the underlying groundwater resource.

Pumping Well Interference from Adjacent Properties

A significant cause of overdraft in many Districts in the San Joaquin Valley is pumping by adjacent landowners. This occurs when water users in a district pump groundwater and the extraction well's capture zone entrains groundwater from a neighboring district. This phenomenon, called pumping well interference, is currently a problem between the District and neighboring agencies. Groundwater mining has historically occurred on DEID's northwestern boundary from the groundwater pumping that occurs within Pixley Irrigation District, and on DEID's southeastern boundary from the pumping activities within the Kern-Tulare Water District. It is recognized that pumping well interference will continue to be prevalent unless groundwater conditions and pumping patterns change appreciably within these neighboring districts. Therefore, pumping well interference will be evaluated in each Annual Groundwater Report. The impact that pumping well interference is having on water levels and well yields in the District will be evaluated through a capture zone analysis that will establish the extent of the problem. DEID will continue to meet with all parties involved to discuss alternatives for resolving the problem.

Existing Activities

- Restrict groundwater exports from the District.
- Set surface water rates low enough to be competitive with groundwater pumping costs.

Planned Actions

- Evaluate annual groundwater contour maps for evidence of pumping well interference from neighboring agencies.

7.3 - Groundwater Replenishment

The natural and artificial forms of groundwater replenishment in DEID are discussed below:

Streambed infiltration. Substantial groundwater replenishment is possible in the White River, but the River only flows about one in every ten years into DEID.

Deep percolation from precipitation. In DEID, deep percolation from normal rainfall events is probably negligible. Some deep percolation occurs during exceptionally long and heavy storms. However, such storms are infrequent. USBR (June 1950) estimated rainfall deep percolation in DEID to average 1,000 AF/year, or less than 1% of the District water demands.

Artificial recharge. Between 1993 and 2004, DEID recharged an average of 2,500 AF/year, with annual volumes ranging from 0 to 6,300 AF. DEID would like to recharge more surface water, but the high cost of the water typically makes recharge uneconomical.

The District has generally used flood water from the Friant CVP or other local rivers for groundwater recharge. Unfortunately, the White River has a high bed load, and, as a result, the District does not use it for irrigation or intentional recharge because it plugs their recharge basins and deposits silt in their distribution system. The River also has flash flood characteristics and it is difficult to capture large quantities of water.

In 1993, the District purchased an 80-acre parcel specifically for development into a groundwater recharge basin. This new site has been fully developed for groundwater recharge purposes, with five separate cells, and dual methods of introducing water to each cell, either from the District's distribution system or from direct diversions out of White River. The site is located next to the White River (see **Attachment 2**) and is called the Turnipseed Groundwater Recharge Basin. The District also has another 5 acre recharge basin near Highway 99.

DEID is exploring the option of expanding the Turnipseed Groundwater Recharge Basin. The basin could be expanded to about 400 acres with a desired recharge capacity of 20,000 AF/year. A feasibility study on this proposed expansion began in 2007 and is expected to be finished in 2008.

In general, the areas near the present and ancestral channels of the major streams (such as White River) have higher permeability than other areas. Refer to Section 2 for discussions on geologic factors that influence groundwater recharge in DEID.

Groundwater banking. Groundwater banking agreements often require that a portion of the banked water be left in the aquifer as a payment to the banking agency. If DEID established a groundwater banking program they would also require that some water be left in their aquifer, and thus groundwater banking could help to partially replenish groundwater supplies.

In-lieu deliveries. The District views in-lieu deliveries as the most practical and effective means of groundwater replenishment. In-lieu deliveries, also called indirect deliveries, involve the delivery of surface water to landowners and water users who would otherwise have pumped groundwater, thus leaving water in the aquifer for

future use. With the importation of around 120,000 AF of surface water annually, DEID is performing a significant amount of in-lieu recharge.

Deep percolation from irrigation. Deep percolation occurs when some of the water applied for irrigation percolates beyond the crop root zone and accumulates in the aquifer. The extent of deep percolation varies with the irrigation method, irrigation efficiency, and antecedent moisture condition.

Seepage from distribution facilities. The District's entire distribution system is pipelined. Therefore, seepage losses are small and probably represent less than 1% of total water deliveries, but may be higher in pipeline sections that are in poor condition. The seepage flows directly to the groundwater and therefore is not considered a true loss.

Existing Activities

- Groundwater recharge in 85 acres of existing recharge basins.
- Performing a study to evaluate the feasibility of expanding the 80-acre Turnipseed Groundwater Recharge Basin.
- Measure the volume of water delivered to groundwater recharge basins.
- Periodically remove sediment and rip the soils in recharge basins to maintain recharge rates.

Planned Actions

- Work cooperatively to minimize development on lands that are favorable for artificial recharge.
- Increase groundwater recharge capabilities in the District.

7.4 - Conjunctive Use of Water Resources

Conjunctive use of water is defined as the coordinated use of both subsurface and surface water sources so that the combination will result in optimum benefits. Recognizing that in some years the District cannot supply their total water demands, most water users also have private groundwater wells. Therefore, landowners in the District practice their own conjunctive use because of necessity.

The District does not operate any groundwater wells but does perform groundwater recharge and thus also practices conjunctive use. DEID has considered installing extraction wells to supplement their surface water supply. The wells would be larger and probably more economical to construct and operate than smaller grower wells.

Since there has not been a dry year in several years, some local growers may have a false sense of security, and believe that DEID can provide a firm and reliable water supply every year. Currently this is not possible, but the District would like to achieve this through groundwater recharge and banking projects. Accordingly, when

determined practical and appropriate, the policies below will be followed to encourage and facilitate conjunctive use of the District's water resources:

Transfers to Districts within the Same Groundwater Basin
In above-normal water years, DEID has transferred surplus CVP contract water to neighboring districts that share the same groundwater basin. This is done since a reduction in pumping in the neighboring districts has a beneficial impact on DEID groundwater levels. These transfers are performed primarily with Kern-Tulare/Rag Gulch Water Districts, and with Lower Tule River Irrigation District (LTRID) for the benefit of Pixley Irrigation District.

Exchanges for Non-Project Water to Serve Excess Lands
In above normal water years, DEID has exchanged surplus CVP contract water for non-project water so the water can be delivered to lands that are ineligible to receive Central Valley Project water under Reclamation law (excess lands). This reduces pumping on the excess lands and helps to preserve groundwater levels.

Regional Conjunctive Use Projects
Existing conjunctive use operations can be expanded by adding interconnections and promoting water supply exchanges between districts that allow for more flexibility in the region's water supply. The region's assets of federal, state, and local water supplies, dewatered groundwater storage, and significant irrigation demand make it an ideal location to regulate surface supplies conjunctively.

The region must absorb wet year water supplies in order to maintain a reliable and economical water supply. Wet-year water is available on short notice and not always at times when the water can be delivered for an irrigation demand. Therefore, it is important that the Region work cooperatively to increase its ability to absorb surface water when available. The Poso Creek Group is actively identifying conjunctive use projects that could benefit DEID (see Section 4.2).

Existing Activities

- DEID and Pixley ID are jointly pursuing a Groundwater Banking Reconnaissance Study to investigate the feasibility of banking surplus waters from DEID in Pixley ID during wet years (likely delivering the water to growers as in-lieu recharge), and returning a similar quantity of water to DEID in dry years from Pixley ID's banked reserves. The project is currently envisioned to be able to deliver between 10,000 AF and 30,000 AF of water to DEID in a dry year. The reconnaissance study is expected to be completed in mid-2007.
- Groundwater banking with North Kern Water Storage District. DEID has an agreement that was executed in 2006 that allows for the banking of up to 30,000 acre-feet in North Kern Water Storage District (North Kern) for later return to DEID. During the 2006 water year (March 2006 through February 2007) DEID banked 29,562 acre-feet of water with North Kern. After applying an agreed-to loss factor

of ten percent, North Kern credited DEID with 26,6065 acre-feet of water for later return.

- Pursue water management programs with other entities, including local Districts, to provide non-project water to the District for delivery to eligible and/or excess lands.
- Support and facilitate the delivery of imported water supplies to Kern-Tulare and Rag Gulch Water Districts (located to the southeast) and the Pixley Irrigation District (located to the northwest) for the purposes of reducing groundwater migration out of the District.

Planned Actions

- Support the development of new surface storage and water supply projects that would permit the participants to better utilize surface water supplies.
- Investigate additional groundwater banking projects and facilities.

7.5 - Water Conservation and Education

The District considers water conservation and education important aspects of their overall groundwater management efforts. The District's *2005 Agricultural Water Policy* states:

> *"District water must be put to reasonable and beneficial use. The District will refuse to continue water deliveries if water is used excessively, wastefully or otherwise in an imprudent manner."*

Most District growers use water in a responsible and efficient manner. In addition, many of the District's growers conserve water through the use of highly efficient drip, micro-jet, and micro-sprinkler irrigation system technology.

All water deliveries are metered and billed based on the volume used. Therefore, all customers have an incentive to minimize water usage. In addition, the District's distribution system is entirely pipelined. The system allows the District to make water deliveries with very low losses. Despite all these water conservation achievements, DEID still provides on-going water conservation education to its growers.

Existing Activities

- The District supports the following organizations and events that promote water conservation and publish educational materials on water conservation: Association of California Water Agencies, California Farm Water Coalition, Water Education Foundation, Friant Water Users Authority, Agriculture in the Class Room, and the Kern County Farm Day.
- For the convenience of water users that may seek such services, the District maintains a list of individuals and agencies that provide on-farm water conservation and management assistance.
- The District encourages water users to use crop ET data as part of their water management plan. The District installed a weather station at its headquarters that

provides daily weather information, including ET. The data is available on the DWR website.

- Monthly water statements include water use information for each customer. In addition, the District maintains historic water use by turnout. This data is available to water users on request as it could be beneficial in making on-farm water management decisions.
- The District publishes a quarterly newsletter to help educate local growers on important issues such as water conservation and water quality protection.

Planned Actions

- When available, provide information on groundwater quality versus depth to growers so they can use it when designing and installing wells.

7.6 - Water Recycling

DEID does not presently use recycled water (also called reclaimed water or wastewater effluent) from any nearby municipalities. The City of Delano is located just south of DEID and the community of Earlimart is an urban enclave located in the northwest portion of DEID. Both Delano and Earlimart have wastewater treatment plants and send the effluent to percolation ponds. Both wastewater treatment plants are located at the western edge of DEID, and reclaimed water would have to be pumped uphill to serve DEID growers, making its use impractical. However, the current practice of percolation does benefit the regional groundwater levels. The City of Delano has been considering the construction of a gravity pipeline to send their effluent to Alpaugh Irrigation District, located about 8 miles west of DEID. DEID would be open to using reclaimed water for irrigation if a practical supply became available.

Existing Activities

None

Planned Actions

- Remain cognizant of opportunities to purchase recycled water from other municipalities.

8 - GROUNDWATER OPERATIONS

8.1 - Well Construction Policies

The District owns one monitoring well at the Turnipseed Recharge Basin, and one domestic well that provides water to the District office. The District does not presently own or operate any agricultural extraction wells, however, they may be constructing wells in the near future as part of groundwater recharge projects.

Proper well construction is important to ensure reliability, longevity, and protection of groundwater resources from contamination. Department of Water Resources Bulletin 74-81 provides useful guidelines for the construction of groundwater wells. Proper wellhead protection is essential to ensure that contaminants do not inadvertently enter a well. Well construction policies that are intended to ensure proper wellhead protection are discussed in Section 6.2 – Wellhead Protection.

In addition, the following quality assurance procedures will be followed when constructing District owned wells. Landowners are also encouraged to follow these procedures when constructing private wells:

1. Well construction will be performed under contract by a licensed and experienced well driller, in accordance with specifications prepared by a licensed engineer or geologist, and reviewed by legal counsel.
2. A licensed engineer or geologist will oversee construction of the wells.
3. A licensed land surveyor in the State of California will oversee survey of any newly constructed wells.
4. Construct wells according to guidelines in DWR Bulletin 74-81.

Existing Activities

None

Planned Actions

- Construct wells according to DWR Bulletin 74-81.
- Construct wells using qualified and licensed contractors, engineers, geologists and land surveyors.

8.2 - Operation of Facilities

The District operates two groundwater recharge basins. The District also owns one monitoring well at the Turnipseed Recharge Basin, and one domestic well that provides water to the District office. In the future, DEID expects to construct more recharge and banking facilities, monitoring wells, and extraction wells. Proper construction, operation, and maintenance of these groundwater facilities is an important part of groundwater management.

DEID will also strive to provide the best facilities for delivery of surface water supplies, since they are used conjunctively with groundwater. DEID realizes that

the success of conjunctive-use programs is often contingent on the quality of surface water conveyance systems. If extraction wells are constructed then the distribution system may need local upgrades to allow delivery of the pumped groundwater to growers.

Existing Activities

- Feasibility study for expansion of Turnipseed Groundwater Recharge Basin (see Section 7.3).
- Feasibility study for joint groundwater banking study between Pixley ID and DEID (see Section 7.4).
- Maintenance and upgrading of conveyance facilities for capacity and stability.
- Maintenance of recharge facilities including de-vegetation, disking, deep ripping, and de-silting, as necessary to improve recharge potential.

Planned Actions

None

9 - GROUNDWATER PLANNING AND MANAGEMENT

9.1 - Land Use Planning

The intent of this Plan is not to dictate land-use planning policies, but rather to establish some land-use planning goals that can aid in protecting and preserving groundwater resources. DEID does not have direct land-use planning authority. However, DEID does have the opportunity to comment on environmental documents for land-use related activities. DEID will attempt to work cooperatively with other agencies to minimize adverse impacts to groundwater supplies and quality as a result of proposed land-use changes. Some specific land-use planning goals include: (1) preserving areas with high groundwater recharge potential for recharge activities; (2) protecting areas sensitive to groundwater contamination; (3) requiring hydrogeologic investigations, water master plans, and proven and sustainable water supplies for all new developments; and (4) requiring appropriate mitigation for any adverse impacts that land use changes have on groundwater resources.

Existing Activities

- Notify residents and agencies of projects that have the potential to impact groundwater within their sphere of influence.
- When appropriate, comment on environmental documents and land-use plans that have the potential to impact groundwater.

Planned Actions

None

9.2 - Groundwater Reports

The District has a goal to prepare groundwater reports every year to document groundwater levels, available groundwater storage, historical trends, and other important groundwater related topics. This information will be used to forecast future problems, plan future groundwater projects, and develop new groundwater policies. The annual report will cover the prior calendar year and will be completed each year by April 30th. See **Attachment 10** for a report outline.

Existing Activities

- DEID prepares a Water Management Plan every five years for the United States Bureau of Reclamation as a requirement to maintain their Central Valley Project water supply. The Water Management Plan includes sections on groundwater usage and groundwater projects.

Planned Actions

Prepare an annual Groundwater Report that will include the following:

1. Groundwater level data;

2. Groundwater contour maps and groundwater flow directions;
3. Groundwater storage calculations;
4. Evaluation of one-year and five-year historical trends in groundwater levels, contours, and storage, and perceived reasons for any changes;
5. Estimates of deliveries to recharge basins;
6. Summary of important groundwater management actions;
7. Discussion on whether management actions are meeting the management objectives;
8. Summary of proposed management actions for the future;
9. Summary of groundwater related actions taken by other regional groups;
10. Recommendations for changes in the content or format of the annual report;
11. Recommendations for updates to the GMP.

9.3 - Plan Implementation

Implementation of this updated GMP is expected to result in significant amounts of new knowledge and an achievable improvement in groundwater management in DEID. **Attachment 11** includes an implementation schedule for this GMP from 2007-2012. The schedule does not include existing activities that will be continued. DEID will maintain all existing programs unless stated otherwise in this GMP. In addition, the schedule does not include proposed actions that are new policies or guidelines, which will be implemented on a continuous basis. Rather, the schedule only includes new tasks and projects.

9.4 - Plan Re-evaluation

The Groundwater Advisory Committee will be responsible for monitoring the progress in implementing the GMP objectives. Refer to Section 4.1 for more information on the membership, policies, and procedures of the Committee. The Committee will attempt to meet at least once a year to review and evaluate groundwater conditions as well as evaluate the effectiveness of the GMP. As new policies, practices, and ordinances become necessary or desirable to enhance the management of the District's groundwater supply, this Plan will be amended as necessary.

Existing Activities

None

Planned Actions

- Update the GMP at least every five years, or more frequently if deemed appropriate.
- Evaluate the effectiveness of the GMP and need for an update at the annual Groundwater Advisory Committee meetings.
- Document recommendations for improving or updating the GMP in each annual Groundwater Report.

9.5 - Dispute Resolution

No groundwater disputes have occurred in DEID in recent years. However, the following procedures are in place to address conflicts if they do occur:

1. Discuss the dispute with the operations supervisor.
2. If the dispute cannot be resolved with the operations supervisor, or it concerns an issue that goes beyond operation and maintenance, then contact the District Manager to discuss the issue.
3. If the issue cannot be resolved by the District Manager, the District Manager will refer the dispute to the Board of Directors with a recommended resolution, unless the issue is outside the authority of the Board.

If necessary, the District Manager may use legal counsel or technical staff to assist in addressing disputes.

Existing Activities

- Resolve disputes through the District's general dispute resolution procedures.

Planned Actions

- Discuss issues of concern at the annual GAC meetings in an effort to prevent future disputes.

9.6 - Program Funding and Fees

Several alternatives are available to DEID for funding groundwater projects, and are described below:

Water Replenishment Fees

Under AB3030, local agencies have the authority to limit groundwater extractions and implement water replenishment fees based upon the amount of water extracted (extraction based fees must first be approved by majority vote of impacted landowners). Inherent in these powers is the authority to implement metering of private wells. These are considered measures of last resort and DEID will make any and all efforts to ensure the private, non-metered use of groundwater by the local growers.

Capital Improvement Fees

The District has the authority to finance capital improvement projects and collect repayment charges from the benefited parties. This process would require a favorable vote from the constituency, and is considered a realistic alternative for large capital projects, such as groundwater recharge or banking projects.

Grants and Loans

The District will pursue available grants and low-interest loans from the Department of Water Resources as well as other State and Federal agencies. The District realizes that funding from State and Federal agencies for groundwater projects will be partially based on their progress in implementing this GMP.

Other Revenue Sources

Groundwater projects can also be financed through water user fees and assessments that are collected regularly from all district landowners.

Exiting Activities

- Regularly research grant and loan opportunities from the State and Federal government.

Planned Actions

- Identify beneficial groundwater projects that become economically feasible when costs are shared among two or more participants. This will be done primarily through the Poso Creek Group.

10 - REFERENCES

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17. Provost & Pritchard Engineering Group, Inc., *Pixley Irrigation District and Delano-Earlimart Irrigation District Draft Reconnaissance Study on a Joint Groundwater Bank within Pixley Irrigation District*, 2007.

18. Thomson West, *California Water Code, 2003 Desktop Edition, Chapter 3 – Groundwater Management Plans*, 2003.

19. United States Bureau of Reclamation, *Factual Report, Delano-Earlimart Irrigation District*, June 1950.

20. United States Bureau of Reclamation, *Geology, Hydrology and Water Quality in the Terra Bella – Lost Hills Area*, 1963.

21. United States Bureau of Reclamation, *Technical Studies in Support of Factual Report, Delano-Earlimart Irrigation District*, December 1950.

22. Zhou, Q., Bear, J., and Bensabat, J., *Saltwater Upconing and Decay Beneath a Well Pumping above an Interface Zone, Lawrence Berkeley National Laboratory, University of California, Paper LBNL 55486*, 2004.

Attachment H

Groundwater Banking Plan

See Attachment G enclosure:

2007 Groundwater Management Plan

(Full Groundwater Banking Plan being developed as part of the current Turnipseed Basin Groundwater Banking pilot project. Anticipated publish date is 2010)

Attachment I

Notices of District Education Programs and Services Available to Customers

See Attachment C enclosure:

2009 Agricultural Water Policy

(Page 5-Water Conservation)

Other Examples also enclosed

DELANO – EARLIMART IRRIGATION DISTRICT

October 12, 2007

Dear Delano-Earlimart Irrigation District Grower:

You are invited to attend an **informational workshop and barbeque** to learn about distribution system upgrades taking place in the Delano-Earlimart Irrigation District and how these upgrades can save you time and money.

In 1999 DEID began a series of upgrades to our water delivery system, a system that was designed and constructed over 50 years ago. The upgrades that we have installed were designed to bring new operating efficiencies to the system and, in some cases, benefits that can be realized on-farm. One of the new features that we have made available to growers that does provide on-farm benefits is the installation of a pressure regulating float valve system that allows better water control when opening and closing the turnout. Float valve systems also help improve operational efficiency and ensure better reliability and reduced maintenance costs, which will benefit district operations and ultimately the growers we serve. Best of all, the **float valve system allows growers full flexibility and control of when to turn water on and off without the need to wait on DEID personnel to make flow changes.**

So far, we have installed over 200 float valve systems on the 625 farm turnouts that we have in the District. We are pleased to announce that, thanks to a recent $300,000 grant awarded to DEID by the Bureau of Reclamation, we can now accelerate the installation of float valve systems on an additional 161 turnouts serving District water users. At the workshop we will demonstrate how the float valve system works so that you can decide for yourself if it will benefit your operations. We believe it will.

DEID and the Bureau of Reclamation are covering the materials and labor cost of each float valve system. Growers pay only for the cost of installing an operating valve on the grower side of the turnout. We have enclosed a brochure that has more detailed information on the pressure regulating float valve system.

The workshop is scheduled for Tuesday, October 30 from 10:00 A.M. to 12:00 noon and will be followed by a barbeque lunch. There is no cost to attend the workshop or barbeque. You will be provided information on DEID's water system upgrade plans and asked to participate in the program by having the District install a pressure regulating float valve system on your turnout.

If you are interested in finding out more information on this project **and how it can save you time, water and money**, please plan on attending the workshop. **Space is limited** so it is important that you **contact the DEID office by Friday, October 26th** at (661) 725-2526 to reserve your spot.

Sincerely,

Dale Brogan
General Manager

14181 Avenue 24 • Delano, California 93215 • Telephone (661) 725-2526 • Fax (661) 725-2556
email deid@deid.us

Delano-Earlimart Irrigation District
Pressure Regulating Float Valve System
Grower Informational Workshop

Tuesday, October 30 – 10:00 A.M. – 11:30 P.M.

Agenda

10:10 A.M. Welcome and introductions – Dale Brogan

- DEID Board of Directors
- Tony Buelna- Bureau of Reclamation
- Mike Wade- CFWC (announce availability to the media on CA water issues)
- Vendors
  - Pat Day- SCE
  - Ron Lessley- Irrigation Concepts
  - Victor Serda- Hydratec

10:20 Presentation of Reclamation Water 2025 grant award

- Harold Nelson- DEID Board President
- Tony Buelna- South-Central Calif. Area Office

10:30 DEID system upgrades – Dale Brogan

- 1996- SCADA System Project
- 1999- Turnout Renovation Project
- 2003- MCC Replacement Project

Float valve system project

- Purpose of float system (grower demand/schedule system)
- Phase 1 began 1999 with turnout renov. project (200 out of 625)
- Phase 2 begins now (goal of an additional 160 turnouts over the next 2 years)

Description of float system operation and process

- How it works
- Steps of construction
  - Adding another butterfly valve
  - Adding 36" stand extension by Gibsons
  - Installing float assembly
  - Calibration
  - All must be preceded with installation of an operating valve by grower on the grower's side of the turnout

11:00 Float valve demonstration- Miguel Bravo and Art Flores

- English and Spanish
- 20 at a time, we will announce the start of each demonstration
- Those waiting encouraged to visit vendors, review gndwtr info.

11:30 Wrap-up and lunch

- Float system brochure, on-line water ordering brochure provided

RELEASE IMMEDIATE
(Date)

Contact: Dale Brogan, (661) 725-2526

DISTRICT OFFERS WATER SAVINGS TO GROWERS

An Oct. 30 workshop by Delano-Earlimart Irrigation District is designed to inform growers on upgrades to the district's 50-year-old distribution system that could also save water and money for the growers.

The district is in the middle of installing pressure regulating float systems at each point along its distribution system where farmers receive water for irrigation. The float systems provide uniform flow rates from the district and greater flexibility to growers in adjusting water flows that results in the more efficient use their irrigation systems.

Cost for the next round of the district-installed systems is covered by a $300,000 grant from the Bureau of Reclamation. Growers are responsible for paying the costs of installing an operating valve on the grower's side of the turnout.

"This project will help improve operational efficiency and ensure better reliability and reduced maintenance costs, which will benefit district operations and ultimately the growers we serve," wrote district general manager Dale Brogan in a letter inviting growers to attend the informational workshop. "Best of all, the float system allows growers full flexibility and control of when to turn water on and off.

"The district has 625 farm turnouts in its system and 200 float valves have already been installed," added Brogan. "The new funding will cover the installation of an additional 161 turnouts and the selection process will be on a first-come, first-served basis."

Installation of the float valves will begin next month.

The two-hour workshop is set for Tuesday, Oct. 30, beginning at 10 a.m. at the district's headquarters, 14181 Avenue 24, Delano. Bureau of Reclamation Acting Regional Director John Davis will present the District with a check representing the federal agency's support for the project. A barbecue lunch follows the workshop. There is no cost to attend the workshop or lunch but growers are requested to contact the district office to make reservations.

###

THE RESULT

The $2-plus million modernization program that DEID has undertaken is a big step toward our goal of creating a delivery system that is based on our water user's irrigation schedule, not ours.

DEID has implemented many improvements that have resulted in increased water delivery flexibility without compromising reliability.

Along with turnout improvements, DEID has installed a remote telemetry system that allows central control of the District's 18 pumping stations as well as variable speed drives that are economizing operations. The District has also purchased new water ordering software and hand-held data recorders.

The benefits are many: greater opportunities for grower flexibility; delivery system improvements; reduction of operational and maintenance costs. All while saving and better using our most precious resource — **water.**

DEID FLOAT SYSTEM QUESTIONAIRE

Please answer the following questions and then return to our office at 14181 Avenue 24, Delano, CA 93215 or call us to see a demonstration of a float system in action.

Question #1: *Do fluctuations in delivery flows from the District's turnout cause you significant irrigation or operational problems?*
Yes__ No__

Question #2: *Does your own irrigation practices or irrigation system require or result in variable flow rates on your side of the District's turnout?* ***Yes__ No__***

Question #3: *Would you be interested in attending a demonstration of how the float system works?* ***Yes__ No__***

Name:_____

Phone number:_____

DELANO-
EARLIMART
IRRIGATION
DISTRICT

WILL YOU BENEFIT FROM ADDING A FLOW-REGULATING FLOAT SYSTEM TO YOUR DEID TURNOUT?

DEID's recently completed turnout modification project originally included the installation of a flow-regulating float system at each turnout, Water users are encouraged to examine this innovative method of flow regulation for potential application to their own operation.

If you have questions or need more information please call the DEID office

Telephone: (661) 725-2526

PROJECT BACKGROUND

In December of 1999, DEID began an extensive project to renovate each of its 625 farm turnouts serving District water users.

It was a big but necessary job. DEID's water distribution system and farm delivery turnouts were designed and constructed nearly a half century ago.

Aging turnouts were causing delivery reliability problems and increased maintenance costs. Even finding repair parts was sometimes a struggle.

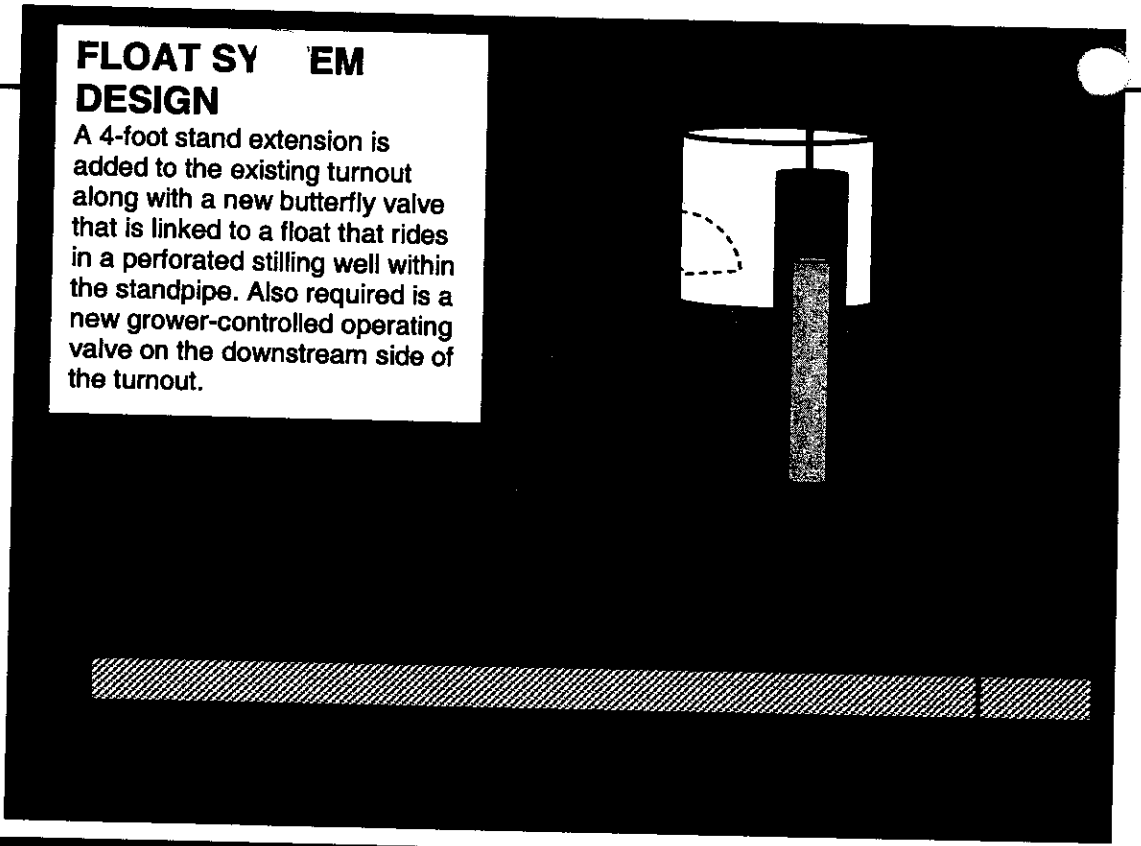
The Renovation Project resulted in installation of a new up-and-over design, with most delivery piping brought above ground. New valves and meters were installed, and all are now a standard size and design. The new turnouts are much more user friendly and accessible.

Another goal of the project was to provide for greater stability in ordered flow rates at each turnout. Installation of a flow-regulating float system can accomplish this.

But only the grower can decide whether installation of a float system is right for them. Take a look at this brief introduction and then give us a call for more information and a demonstration.

FLOAT SY EM DESIGN

A 4-foot stand extension is added to the existing turnout along with a new butterfly valve that is linked to a float that rides in a perforated stilling well within the standpipe. Also required is a new grower-controlled operating valve on the downstream side of the turnout.



WILL YOU BENEFIT FROM A TURNOUT FLOAT SYSTEM?

Take a look at the design for the new flow-regulating float system. It uses an additional butterfly valve that is operated by a float that follows the water level in the delivery stand. The installation of a float system also requires a new operating valve on the downstream side of the turnout that is used by the grower. This can allow the grower to make his or her own water changes (normal water ordering procedures still must be followed).

Fluctuations in flow are due to changing pressures in the District's distribution system. These pressure changes can be caused from varying water levels in the Friant-Kern Canal, District pumps turning on and off, or changes in flow rates in neighboring turnouts. This leads to either rising or falling water levels in the delivery stand. The float system is designed to react to these variations by keeping the water level in the stand at a virtually constant level.

The grower pays only for the cost and installation of the new downstream operating valve. The District funds the cost of the actual float system and its installation.

Summer Quarter 2009 Issue 133

DEID PIPELINE

2009- Water Year Like No Other

Water year predictions are always chancy. Given how the 2009 water year has played out, no one could have come close to predicting the various turns and twists that we have seen.

Critical to Adequate – All in One Year

We began the 2009 water year with a dire set of circumstances: little rainfall, small snowpack, and the threat of having to run water down the San Joaquin River in order to meet the water needs of the Exchange Contractors due to severe restrictions on delta water supplies (the Exchange Contractors normally get their water from the delta via the Delta-Mendota Canal). All that resulted in an initial water supply of 25 percent Class 1. DEID growers were told that they could expect a water supply prorate of 0.7 acre-feet per acre for the 2009 water year.

Then a turn for the better occurred in February and early March with major storms hitting the state and adding to the meager water supplies available at that time. That allowed the declaration to increase to 85 percent Class 1 and a water supply prorate of 2.1 acre-feet per acre by the end of March. Conditions continued to improve so that the prorate was removed on April 23rd.

Rollercoaster Ride Not Over

While DEID growers have seen no change in the water supply available to them since the date that the prorate was removed, the water supply rollercoaster hasn't stopped. In a paradoxical situation, this dry year, the third in a row of below normal precipitation and snow pack, saw a full Millerton Lake continuously at its peak storage capacity with minor spills occurring to the river. No water was lost at these times, as they were incorporated into the minimum daily releases made to the river by the Bureau of Reclamation. That was the situation for most of the month of June.

Continued on Page 2: see 2009 WATER YEAR

WATER BANKING PROJECT MOVES FORWARD

A project to advance an in-district water banking program took a major step forward this summer with the commissioning of a recovery well on the District's existing groundwater recharge site

District forces make the connection from the new Turnipseed Basin recovery well to the District's distribution system.

Recharge Moves to Banking

Located at Avenue 32 and Road 176, the 80-acre recharge basin has been in use since 1993 at times when surplus water was available to the District. Since 1993, water recharged by the District amounts to over 29,000 acre-feet, including 1,400 acre-feet recharged earlier this year.

Prior to the installation of the District's first recovery well, recharging was the only option at the site. As directed by the District Board of Directors and in consultation with a Groundwater Advisory Committee consisting of additional DEID landowners, the District has opted to take the next step in managing the area's groundwater supply.

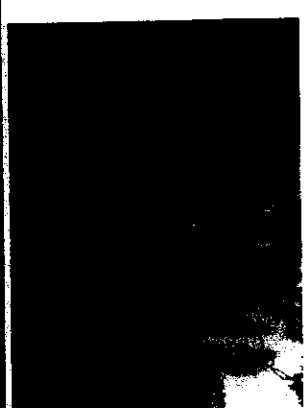
The District is conducting a pilot project, which includes the recovery well, to determine the actual feasibility of managing a large-scale banking operation within DEID. Included in the evaluation is extensive groundwater level monitoring and the gathering of water quality data.

Recovery Well Goes Online

Pumping from the new well commenced on July 1st and will be limited to 1,000 acre-feet while important data is gathered on the project.

Future plans for the banking efforts include installing additional recovery capacity, and expansion of the site to allow greater recharge opportunities.

2009 WATER SUPPLY: Continued from page 1



Additionally, Class 2 water was made available during most of May and sporadically during the first two weeks in June to manage the water that was coming into the reservoir in order to avoid further spills down the river. Those operations resulted in a temporary decrease in the remaining Class 1 supply to 77 percent, which has since recovered to a 90 percent Class 1 declaration.

2009 Precipitation Data -inches			
	2009	Average	% of Avg.
Huntington Lake	36.84	42.73	86%
Bass Lake	29.02	40.62	71%
Friant Dam	11.25	14.33	79%

Water Supplies Remain Sufficient

Despite the below normal water supply, DEID growers will have adequate water for the remainder of the 2009 water year. And with the talk of an "El Nino" brewing in the Pacific Ocean, maybe 2010 will be a different story.

California's Delta Defined

Much has been said about the Sacramento-San Francisco Delta region over the past decades and more recently due to the severe restrictions on exports of water out of the delta. Those restrictions have had a dramatic effect on the ag producers, farm workers and the communities that they support. In light of this, we thought that a primer on the delta may be helpful for readers of the *DEID Pipeline.*

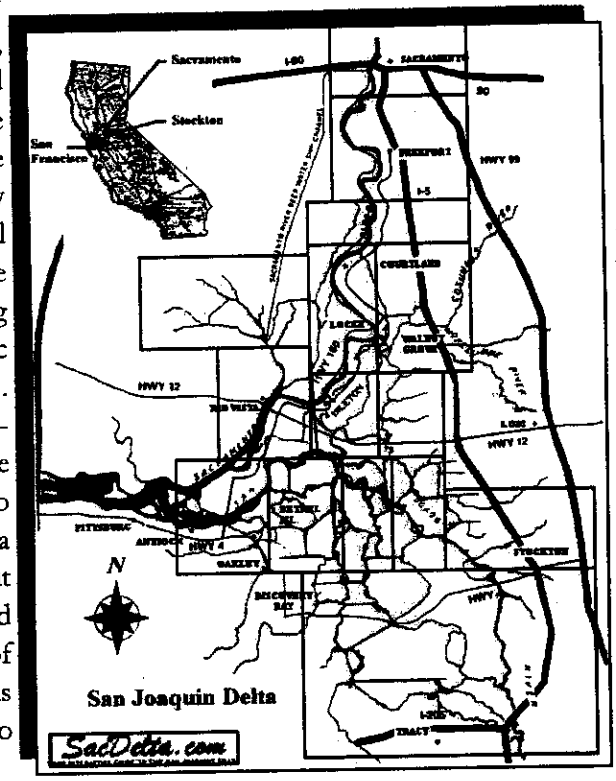
Facts and Figures

The delta is a region located approximately 50 miles east of San Francisco where the Sacramento River (from the north) and the San Joaquin River (from the south) meet.

The delta is comprised of 700 miles of waterways and 1,100 miles of levees that protect 520,000 acres of farmland. It is also home to aqueducts that transport water to parts of the San Francisco Bay area and two of California's biggest water projects, the State Water Project and the federal Central Valley Project. Both projects have pumping facilities that pump fresh water from the delta into major aqueducts for delivery to central and southern California communities, industrial water users, and farmland.

Delta Islands

Within the delta is a myriad of natural and man-made channels and sloughs that create a system of isolated lowland islands and wetlands. The islands are not really islands at all, but are called such because they are surrounded by water on all sides. Most are farmed, having rich organic peat soils. About two-thirds of the islands are also below sea level, the result of accelerated oxidation of the peat soils due to farming.



The delta is also home to recreational boating, recreational and commercial fishing, and deepwater transportation of cargo. It also provides habitat for numerous fish and wildlife, with nearly one-half of the state's migrating waterfowl and shorebirds passing through the delta annually.

Our thanks to the Family Water Alliance "Fish Forum newsletter, which contributed much to this article

Two Gates Project Proposed for Delta

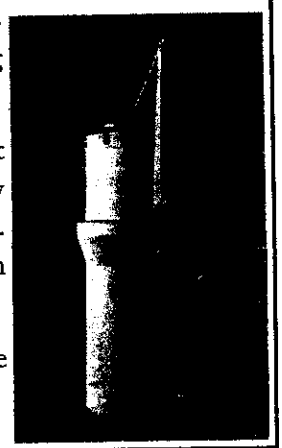
The two gates project consists of two temporary removable gates that would be strategically placed within the delta and closed to keep delta smelt away from the State and Federal water project pumps located in the south end of the delta. The project has

Continued on page 4: see TWO GATES

DELANO-
EARLIMART
IRRIGATION DISTRICT

70 Percent of Turnouts Now Have Floats

District growers with pressure compensating float systems now far out number those without floats. At the end of June, 305 turnouts out of 432 operating turnouts had float systems installed. Another 54 turnouts have applied for float systems that will be installed following the 2009 irrigation season.



Installation of the water, energy, and labor-saving float systems was accelerated by two grants that were received by DEID; a $300,000 matching grant provided by the U.S. Bureau of Reclamation, and a smaller $32,000 grant from Southern California Edison Company.

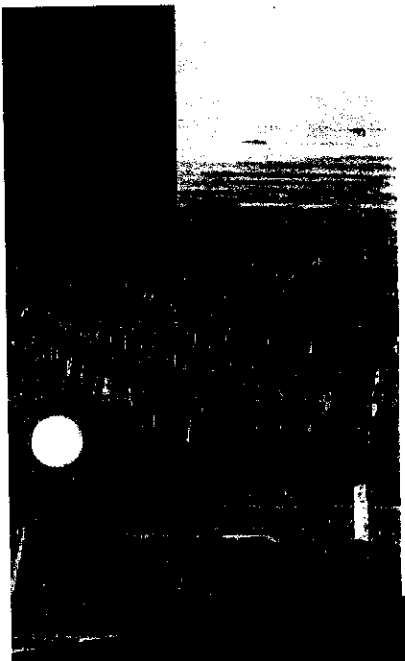
For more information on floats, contact the District office or visit our website.

TWO GATES: Continued from page 3

caught the attention of many due to its ability to make a quick impact on easing delta pumping restrictions while protecting the smelt population and other aquatic species. Cost of the project is estimated at $29 million and can be built in compliance with existing biological opinions covering the target area.

The U.S. Bureau of Reclamation and the State Department of Water Resources are co-leads on the project. Necessary environmental documents are currently being prepared with a planned installation date of December of 2009.

DELANO – EARLIMART IRRIGATION DISTRICT



Water Users Guide to Web-based Water Ordering and Accessing Account Data

www.deid.org

With an approved online account and internet access you can;

Place a water order:

- Turn water on;
- Make water flow changes;
- Order water off or cancel a previous order;
- Check the status of your orders, those that are pending, and which have been approved;
- Quickly see the status of all your turnouts.
- Know the date of your turnout's last meter reading.

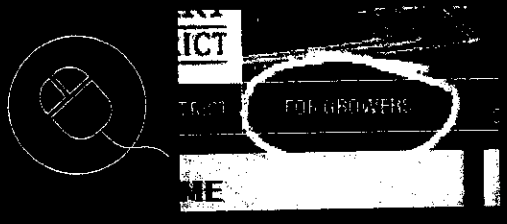
View account information:

- Know your base water supply allocation;
- See any transfers in or out of your water account;
- Know the total amount of water available to you for the water year;
- Always be aware of the amount of water that you have used per turnout for the year-to-date;
- See your remaining available water supply for the water year;

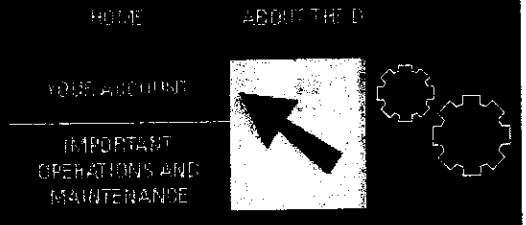
Log on to our website at www.deid.org and then follow the instructions inside this guide.

Activating Your Online Account

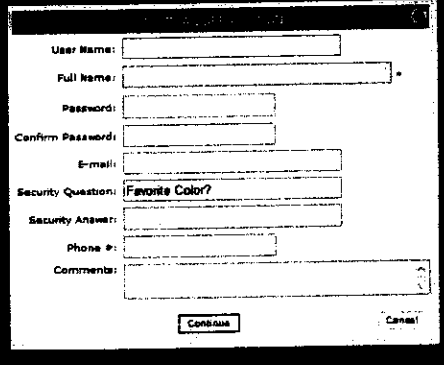
Step-1
Begin by visiting us at www.deid.org
Click on the "For Growers" link



Step-2
Now click on either the "Your Account" link on the left hand side of the page, or the "apply for an account here" link in the middle of the page.



Step-3
You will now be prompted to APPLY FOR AN ACCOUNT or LOG IN. If you're applying for a new account fill in the required fields. Verify your information and click continue.



Account Verification and Approval

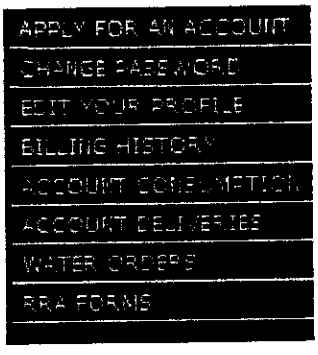
Once you submit your request for a new account, DEID staff will automatically receive your application.

The District will then verify the new application with the grower to insure privacy.

On approval you will be notified via e-mail by the Districts automated system.

Once your account has been approved you may log in using the username and password you provided to the District's website.

When logged in to your account, you will now have access to all of our online features which include changing your password, editing your profile, viewing your billing history, account consumption records, account deliveries, water orders, and RRA Forms. **See Example Below**



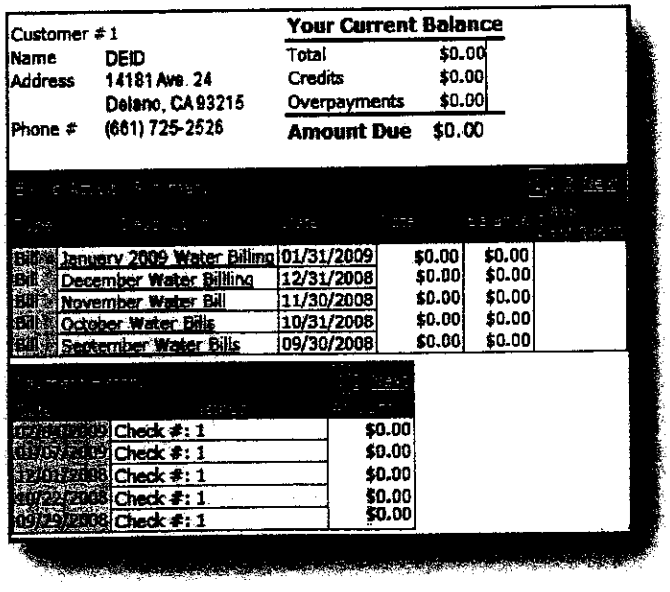
If you need to change your password follow the on screen instructions. If you wish to update your profile or feel you made an error you can edit your profile under the link provided.

Billing History

DEID now allows you to view your past statements anytime you like. You can click on the actual bill under "description" and it will automatically download your bill in PDF format. Print, Save, and keep them for your records, it is all up to you!

You may also keep track of your current balance, any credits you may have or overpayments and also view the check numbers you used to pay your past bills.

Billing History Example is Shown Below



Customer # 1
Name DEID
Address 14181 Ave. 24
Delano, CA 93215
Phone # (661) 725-2526

Your Current Balance

Total	$0.00
Credits	$0.00
Overpayments	$0.00
Amount Due	$0.00

Bill	January 2009 Water Billing	01/31/2009	$0.00	$0.00
Bill	December Water Billing	12/31/2008	$0.00	$0.00
Bill	November Water Bill	11/30/2008	$0.00	$0.00
Bill	October Water Bills	10/31/2008	$0.00	$0.00
Bill	September Water Bills	09/30/2008	$0.00	$0.00

	Check #: 1	$0.00
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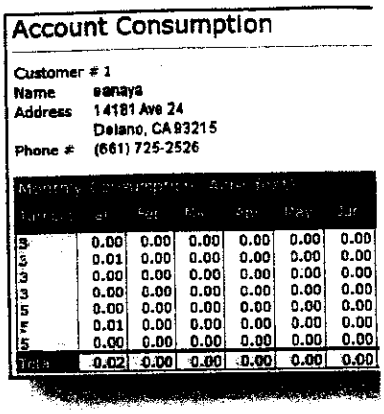


Account Consumption

Customer # 1
Name eanaya
Address 14181 Ave 24
Delano, CA 93215
Phone # (661) 725-2526

3	0.00	0.00	0.00	0.00	0.00	0.00
3	0.01	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00
5	0.01	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.02	0.00	0.00	0.00	0.00	0.00

Account Consumption

When you click on the "Account Consumption" link you can view your current water status up to the last field reading.

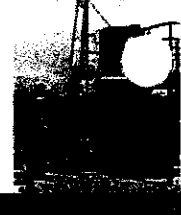
Your account information will be displayed on the top left portion of this page and to the right of that, you will be able to view your;

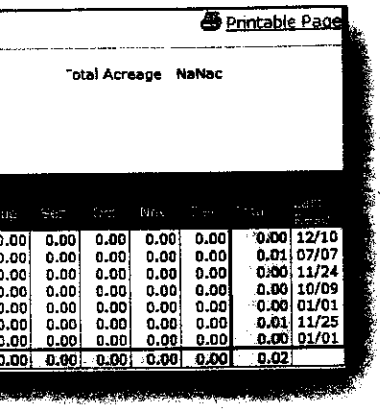
Base Allocation – Your acreage multiplied by the current water supply prorate.

Allocation Adjustments – Any water adjustments made on this account.

Total Water Available – Total water available after adjustments.

Delivered Quantity – Water you have used to-date.





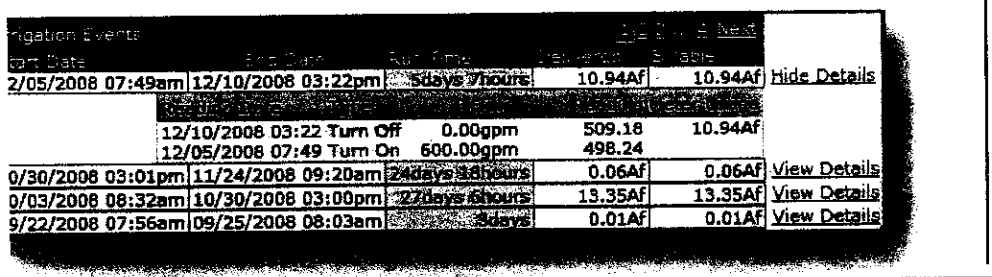
Account Deliveries

Navigate to the Account Deliveries page and you will have access to view your turnout(s) Irrigation Events in great detail.

View the start and end dates we have on file for your turnout and any historical run times.

Check the actual field meter readings taken by our staff. The system calculates the difference in readings to show you the actual billable water usage for that rig[illegible] session.

Account Deliveries Example Below



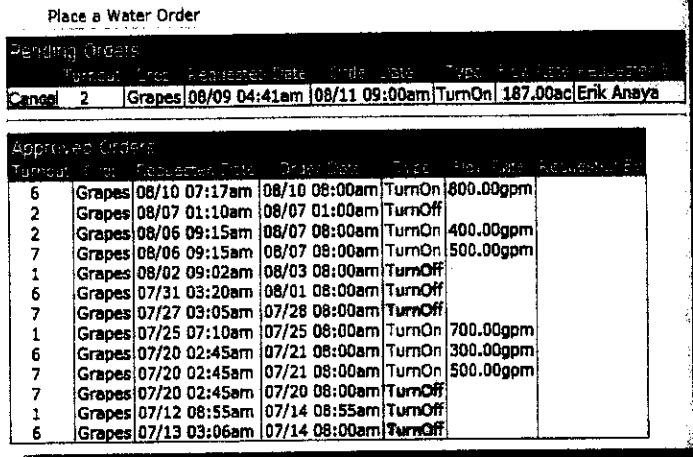
Water Orders

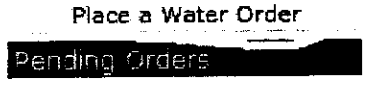
Accessing the Water Orders interface will let you view the following information:

Pending Orders: A list of orders that have been placed but not yet approved by District staff. From here you can cancel any pending water order listed by clicking on the *Cancel* link located on the left side of the turnout number.

Approved Orders: History and status of recent water orders submitted and approved by District Staff.

You can place a new water order, by clicking on the "Place a Water Order" link on the top left corner of this page, see example below.





Tip: Click on the help icon for assistance with the current page you are in.

Water Ordering:

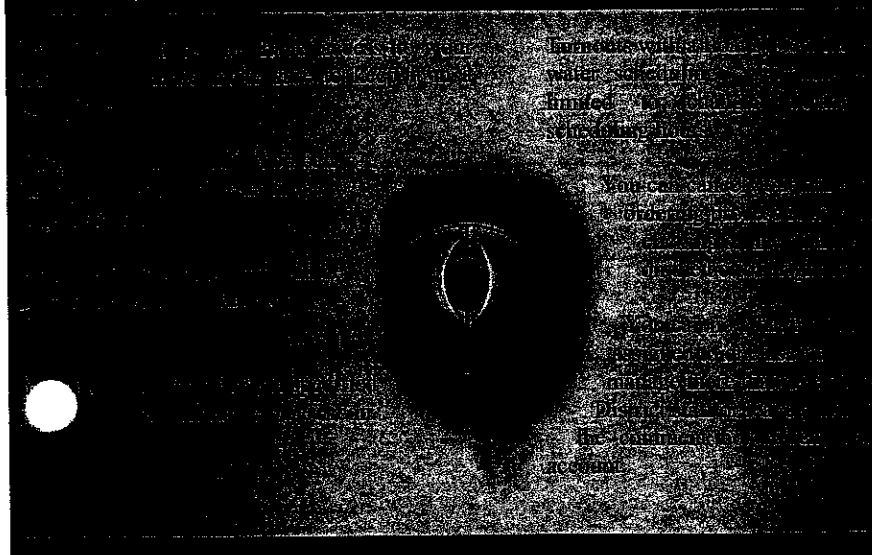
Please have your water orders in by 9:00 am on the day prior to when you want to start, stop, or change flows.

Water orders placed after 9:00 am will be accepted if possible.

Orders after 12:00 noon will not be accepted for the following day and will be eligible for the next day.

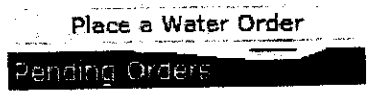
Water orders for Saturday or Sunday must be placed no later than 12:00 noon on Friday.

Security and Convenience is our Goal

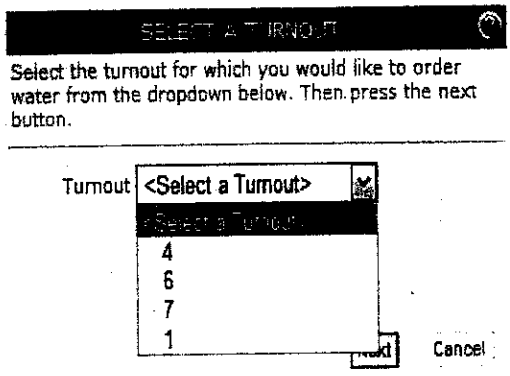


Placing a Water Order
Has never been easier

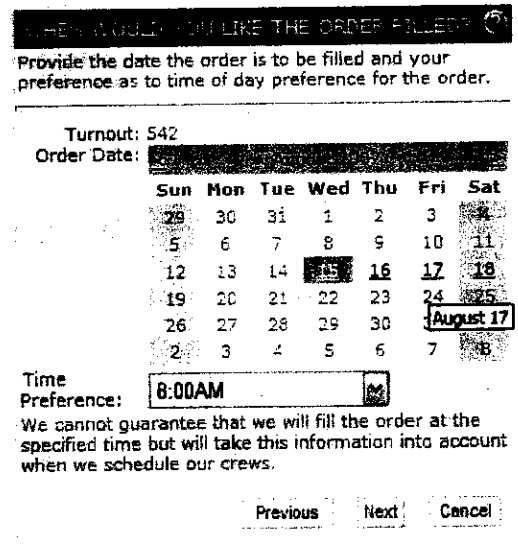
Now that you have clicked on the "Place a Water Order" link, you are ready to let us know what your water order needs are.



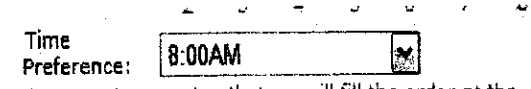
Step-1 This will be the first screen that you see. Select a turnout from the drop down menu bar.



Step-2 Once you have selected the turnout, you will be asked to select the effective date of your order from the calendar screen.



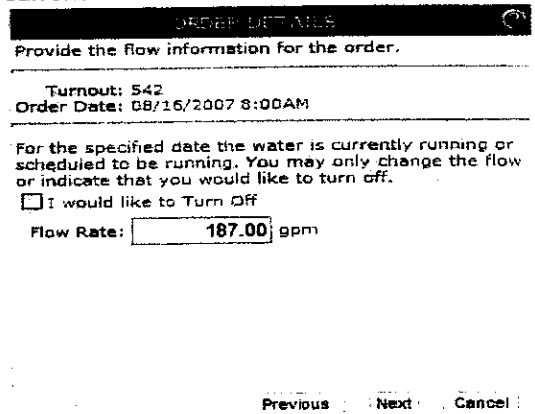
Step-3 Your page will automatically refresh once you have chosen a date. That will allow you to select a specific time from the drop down menu on this page.



Step-4 The next screen is the Order Details screen. From here you can specify a flow rate for a new water order, a change in flow rate for an existing order, or tell us that you are ready for a turnout to be shut off.

New Water Orders: Input the amount of water you want turned on, now click next.

Changing flows for a turnout already running: You can input the new flow rate being requested and then click next. The system automatically knows you have a current flow.

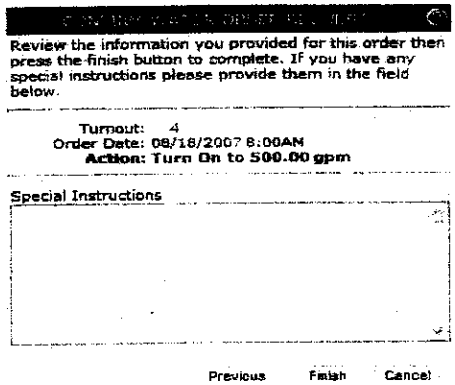


Confirming Your Water Order

Finalize your order by confirming your request in this screen. If everything is accurate click **"finish"**.

This screen also contains a *Special Instructions* box where you can make any special requests related to your order. You can also tell us about any problem that you may have with your turnout (leaks, broken pipeline etc.).

When your order is approved you will receive a confirmation email. If there is a problem the District will contact you.



Section 5: District Water Inventory Tables

Supplemental Tables

Table 1

Surface Water Supply

2008 Month	Federal Ag Water (acre-feet)	Federal non-Ag Water. (acre-feet)	State Water (acre-feet)	Local Water (acre-feet)	Other Water (acre-feet)	Upslope Drain Water (acre-feet)	Total (acre-feet)
Method							
January	0	0	0	0	0	0	0
February	1317	13	0	0	0	0	1,330
March	5984	1	0	0	0	0	5,985
April	9439	11	0	0	0	0	9,450
May	11334	78	0	0	0	0	11,412
June	19286	12	0	0	0	0	19,298
July	21919	10	0	0	0	0	21,929
August	17392	120	0	0	0	0	17,512
September	11265	10	0	0	0	0	11,275
October	8629	9	0	0	0	0	8,638
November	2808	55	0	0	0	0	2,863
December	789	0	0	0	0	0	789
TOTAL	110,162	319	0	0	0	0	110,481

Table 2

Ground Water Supply

2008 Month	District Groundwate (acre-feet)	Private Groundwate *(acre-feet)
Method		
January	0	0
February	0	0
March	0	4,150
April	0	21,024
May	0	26,859
June	0	23,195
July	0	9,481
August	0	4,773
September	0	0
October	0	0
November	0	0
December	0	0
TOTAL	0	89,482

*normally estimated

Table 3

Total Water Supply

2008 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	1,330	0	0	1,330
March	5,985	0	0	5,985
April	9,450	0	0	9,450
May	11,412	0	0	11,412
June	19,298	0	0	19,298
July	21,929	0	0	21,929
August	17,512	0	0	17,512
September	11,275	0	0	11,275
October	8,638	0	0	8,638
November	2,863	0	0	2,863
December	789	0	0	789
TOTAL	110,481	0	0	110,481

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

Table 4

Distribution System

2008 Canal, Pipeline, Lateral, Reservoir	Length (feet)	Width (feet)	Surface Area (square feet)	Precipitatio (acre-feet)	Evaporation (acre-feet)	Spillage (acre-feet)	Seepage (acre-feet)	Total (acre-feet)
D-11 reservoir	75	200	15,000	0	2	0	0	(2)
D-17 reservoir	56	279	15,624	0	2	0	0	(2)
D-12 reservoir	130	385	50,050	1	7	0	0	(6)
D-14 reservoir	95	385	36,575	0	5	0	0	(4)
Terminal reservoir	114	105	11,970	0	2	0	0	(1)
	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			129,219	2	17	0	0	(16)

Table 5

Crop Water Needs

2008 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	725	3.99	0.20	0.00	0.04	3,007
Citrus	1,966	2.89	0.10	0.00	0.04	5,794
Grapes w/cover cro	29,426	2.33	0.10	0.72	0.04	91,427
Tree Fruit w/cover crop	1,504	3.55	0.20	0.72	0.04	6,658
Field/Row Crops	1,444	1.65	0.10	0.00	0.04	2,465
Nut Crops w/cover	14,084	2.70	0.10	0.72	0.04	48,970
	0	0.00	0.00	0.00	0.00	0
	0	0.00	0.00	0.00	0.00	0
	0	0.00	0.00	0.00	0.00	0
	0	0.00	0.00	0.00	0.00	0
	0	0.00	0.00	0.00	0.00	0
	0	0.00	0.00	0.00	0.00	0
	0	0.00	0.00	0.00	0.00	0
	0	0.00	0.00	0.00	0.00	0
	0	0.00	0.00	0.00	0.00	0
	0	0.00	0.00	0.00	0.00	0
	0	0.00	0.00	0.00	0.00	0
	0	0.00	0.00	0.00	0.00	0
	0	0.00	0.00	0.00	0.00	0
	0	0.00	0.00	0.00	0.00	0
	0	0.00	0.00	0.00	0.00	0
	0	0.00	0.00	0.00	0.00	0
	0	0.00	0.00	0.00	0.00	0
Crop Acres	49,149					158,320

Total Irrig. Acres 49,149 (If this number is larger than your known total, it may be due to double cropping)

Table 6

2008 District Water Inventory

Water Supply	Table 3		110,481
Riparian ET	(Distribution and Drain)	minus	0
Groundwater recharge	intentional - ponds, injection	minus	0
Seepage	Table 4	minus	0
Evaporation - Precipitation	Table 4	minus	16
Spillage	Table 4	minus	0
Transfers/exchanges/trades/wheel	(into or out of the district)	plus/minus	(250)
Non-Agri deliveries	delivered to non-ag customers	minus	319
Water Available for sale to agricultural customers			109,896
Compare the above line with the next line to help find data gaps			
2005 Actual Agricultural Water Sales	From District Sales Records		110,465
Private Groundwater	**Table 2**	**plus**	**89,482**
Crop Water Needs	Table 5	minus	158,320
Drainwater outflow	(tail and tile not recycled)	minus	0
Percolation from Agricultural Land	(calculated)		41,627

Table 7

Influence on Groundwater and Saline Sink

2008

Agric Land Deep Perc + Seepage + Recharge - Groundwater Pumping = District Influence	0
Estimated actual change in ground water storage, including natural recharge)	0
Irrigated Acres (from Table 5)	49,149
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 (acre-feet)	Other Water (acre-feet)	Upslope Drain Water (acre-feet)	Total (acre-feet)
1999	128,267	123	0	9,500	0	0	137,890
2000	130,582	191	0	5,065	0	0	135,838
2001	110,432	108	0	5,043	0	0	115,583
2002	123,333	213	0	4,130	0	0	127,676
2003	108,459	125	0	5,165	6,684	0	120,433
2004	121,229	152	0	6,837	0	0	128,218
2005	100,355	239	0	2,904	15,318	0	118,816
2006	109,274	198	0	0	8,998	0	118,470
2007	69,512	265	0	0	1,858	0	71,635
2008	110,162	319	0	0	0	0	110,481
Total	1,111,605	1,933	0	38,644	32,858	0	1,185,040
Average	111,161	193	0	3,864	3,286	0	118,504

TABLE 2A

Calculation of Private Groundwater Pumped-2008

Month	Crop Demand(1) (acre-feet)	Irrigation Efficiency (2) (percent)	Total Water Requirement (acre-feet)	Quantity Available(3) (acre-feet)	Quantity Pumped(4) (acre-feet)	Deep Percolation(5) (acre-feet)
January	188	85%	221	221	0	0
February	274	85%	322	1,652	0	995
March	8,615	85%	10,135	5,985	4,150	0
April	25,903	85%	30,474	9,450	21,024	0
May	32,686	85%	38,455	11,596	26,859	0
June	36,119	85%	42,493	19,298	23,195	0
July	26,699	85%	31,410	21,929	9,481	0
August	18,942	85%	22,285	17,512	4,773	0
September	8,143	85%	9,580	11,275	0	1,685
October	1,244	85%	1,463	9,457	0	7,166
November	259	85%	305	3,168	0	2,503
December	224	85%	263	1,052	0	526
TOTAL	159,294		187,405	112,595	89,481	12,875

(1) Percentage distribution from Table 5B below
(2) Estimated District average for all crops, soil types, and irrigation methods
(3) Surface supplies (table 1) + effective precipitation available (table 5A) to meet crop demand
(4) estimate (total water requirement minus quantity available)
(5) available surface supply (table 1) in excess of total water requirement

Table 4A

Calculation of Precipitation/Evaporation/Seepage

2008 Precipitation Worksheet					2008 Evaporation Worksheet					Seepage		
	inches precip	ft precip	acres	AF/Year		inches evap	ft evap	acres	AF/YEAR	acres	AFY	AF/ac seepage
Jan	2.17	0.18	0.34	0.18	Jan	2.17	0.18	0.34	1.99	0.34	0.00	0.00
Feb	1.76	0.15	0.36	0.18	Feb	2.8	0.23	0.36	2.07	0.36	0.00	0.00
Mar	0.00	0.00	1.15	0.59	Mar	4.8	0.40	1.15	6.64	1.15	0.00	0.00
Apr	0.00	0.00	0.84	0.43	Apr	5.31	0.44	0.84	4.85	0.84	0.00	0.00
May	0.09	0.01	0.27	0.14	May	10.52	0.88	0.27	1.59	0.27	0.00	0.00
Jun	0.00	0.00	0.00	0.00	Jun	9.2	0.77	0.00	0.00	0.00	0.00	0.00
Jul	0.00	0.00	0.00	0.00	Jul	9.04	0.75	0.00	0.00	0.00	0.00	0.00
Aug	0.00	0.00	0.00	0.00	Aug	10.42	0.87	0.00	0.00	0.00	0.00	0.00
Sept	0.00	0.00	0.00	0.00	Sept	5.84	0.49	0.00	0.00	0.00	0.00	0.00
Oct	0.40	0.03	0.00	0.00	Oct	5.5	0.46	0.00	0.00	0.00	0.00	0.00
Nov	0.91	0.08	0.00	0.00	Nov	2.28	0.19	0.00	0.00	0.00	0.00	0.00
Dec	0.81	0.07			Dec	1.48	0.12			2.97	0.00	0.00
TOTAL	6.14	0.51			TOTAL	69.36	5.78			5.93	0.00	

TABLE 5A

Effective Precipitation Calculation-2008

	Measured amt. (inches)	50% of total (feet)	Potential Supply from Eff.Precip.(af)	Crop Demand (af)	Water Supply from Eff.Precip.(af)
January	2.17	0.09	4444	221	221
February	1.76	0.07	3604	322	322
March	0	0.00	0	10,135	0
April	0	0.00	0	30,474	0
May	0.09	0.00	184	38,455	184
June	0	0.00	0	42,493	0
July	0	0.00	0	31,410	0
August	0	0.00	0	22,285	0
September	0	0.00	0	9,580	0
October	0.4	0.02	819	1,463	819
November	0.91	0.04	1864	305	305
December	0.81	0.03	1659	263	263
TOTAL	6.14	0.26	12574	187,405	2114

precip.@DEID office assumed from Table 5B

2008 irrigated acreage = 49149

average effective precipitation (AF/Ac) = 0.043

TABLE 5B (page 1 of 5)

Et for Crops in DEID - 2008

ET for crops in DEID-inches per acre

	Alfalfa			Citrus (1)		
	in./ac.	acres	**ac.ft.**	in./ac.	acres	**ac.ft.**
Jan	0.99	725	**59.81**	0.78	1966	**127.79**
Feb	1.44	725	**87.00**	1.14	1966	**186.77**
Mar	3.16	725	**190.92**	2.33	1966	**381.73**
Apr	4.58	725	**276.71**	3.37	1966	**552.12**
May	6.33	725	**382.44**	4.67	1966	**765.10**
Jun	7.3	725	**441.04**	4.99	1966	**817.53**
Jul	7.57	725	**457.35**	5.18	1966	**848.66**
Aug	6.41	725	**387.27**	4.39	1966	**719.23**
Sep	4.77	725	**288.19**	3.26	1966	**534.10**
Oct	3.2	725	**193.33**	2.36	1966	**386.65**
Nov	1.44	725	**87.00**	1.05	1966	**172.03**
Dec	0.69	725	**41.69**	1.11	1966	**181.86**
total-inches	47.88			34.63		
total-feet	3.99		**2892.75**	2.89		**5673.55**
Leaching Factor			145			196.6
Total			3037.75			5870.15

(1) 0.3 ac.in. addded in Dec use for frost protection

TABLE 5B (page 2 of 5)

	Grapes w/ Cover Crop				
	Crop	Cover***	Total-in./ac.	acres	**ac.ft.**
Jan				29,426	**0.00**
Feb				29,426	**0.00**
Mar	0.7	1.29	1.99	29,426	**4879.81**
Apr	3.18	3.19	6.37	29,426	**15620.30**
May	5.64	2.09	7.73	29,426	**18955.25**
Jun	6.5	2.1	8.6	29,426	**21088.63**
Jul	6.09	0	6.09	29,426	**14933.70**
Aug	4.2	0	4.2	29,426	**10299.10**
Sep	1.59	0	1.59	29,426	**3898.95**
Oct		0	0	29,426	**0.00**
Nov				29,426	**0.00**
Dec				29,426	**0.00**
total-inches	27.9	8.67	36.57		
total-feet	2.33	0.72	3.05		**89675.74**
Leaching Factor					2942.6
Total					92618.34

TABLE 5B (page 3 of 5)

	Tree fruit with cover crop				
	in./ac.	over**	Total-in./ac.	acres	**ac.ft.**
Jan			0	1,504	**0.00**
Feb			0	1,504	**0.00**
Mar	1.9	1.29	3.19	1,504	**238.13**
Apr	1.9	3.19	5.09	1,504	**238.13**
May	5.43	2.09	7.52	1,504	**680.56**
Jun	6.87	2.1	8.97	1,504	**861.04**
Jul	9.41	0	9.41	1,504	**1179.39**
Aug	7.88	0	7.88	1,504	**987.63**
Sep	5.61	0	5.61	1,504	**703.12**
Oct	3.55	0	3.55	1,504	**444.93**
Nov		0	0	1,504	**0.00**
Dec		0	0	1,504	**0.00**
total-inches	42.55	8.67	51.22		
total-feet	3.55	0.72	4.27		**5332.93**
Leaching Factor					300.8
Total					5633.73

TABLE 5B (page 4 of 5)

	Field/Row Crops			Almonds/ Other Nuts with Cover Crop (6)				
	in./ac.	acres	**ac.ft.**	Crop (5)	Cover	Total-in./ac.	acres	ac.ft.
Jan		1,444	**0.00**				14,084	**0.00**
Feb		1,444	**0.00**				14,084	**0.00**
Mar	2	1,444	**240.67**	0.81	1.29	2.10	14,084	**2464.70**
Apr	4.93	1,444	**593.24**	3.69	3.19	6.88	14,084	**8074.83**
May	7.82	1,444	**941.01**	6.55	2.09	8.64	14,084	**10140.48**
Jun	5.01	1,444	**602.87**	7.55	2.1	9.65	14,084	**11325.88**
Jul		1,444	**0.00**	7.07	0	7.07	14,084	**8297.82**
Aug		1,444	**0.00**	4.88	0	4.88	14,084	**5727.49**
Sep		1,444	**0.00**	1.85	0	1.85	14,084	**2171.28**
Oct		1,444	**0.00**	0.00	0	0.00	14,084	**0.00**
Nov		1,444	**0.00**				14,084	**0.00**
Dec		1,444	**0.00**				14,084	**0.00**
total-inches	19.76			32.4	8.67	41.07		
total-feet	1.65		**2377.79**	2.70	0.72	3.42		**48202.49**
Leaching Factor			144.4					1408.4
Total			2522.19					49610.89

(5) Used total of 2.7 af/ac w/same monthly use curve as grapes

TABLE 5B (page 5 of 5)

	total	Leaching Factor (7)		Total Irrig. Demand		Assumed	**Total Wtr.**
	ac.ft	distribution	ac.ft.	ac.ft.	percent	Irrig. Eff.	**Requirement**
Jan	188			**188**	**0.12%**	85%	**221**
Feb	274			**274**	**0.17%**	85%	**322**
Mar	8396	4.26%	219	**8615**	**5.41%**	85%	**10135**
Apr	25355	10.65%	547	**25903**	**16.26%**	85%	**30474**
May	31865	15.99%	822	**32686**	**20.52%**	85%	**38455**
Jun	35137	19.11%	982	**36119**	**22.67%**	85%	**42493**
Jul	25717	19.11%	982	**26699**	**16.76%**	85%	**31410**
Aug	18121	15.99%	822	**18942**	**11.89%**	85%	**22285**
Sep	7596	10.65%	547	**8143**	**5.11%**	85%	**9580**
Oct	1025	4.26%	219	**1244**	**0.78%**	85%	**1463**
Nov	259			**259**	**0.16%**	85%	**305**
Dec	224			**224**	**0.14%**	85%	**263**
total-inches							
total-feet	154155	100%	5139	**159294**	**100.00%**		**187405**

5137.8

159,293

(7) Assumed leaching Factor distribution

Total Acres 49149

DELANO-EARLIMART IRRIGATION DISTRICT

14181 AVENUE 24
DELANO, CALIFORNIA 93215
Phone (661) 725 - 2526

Water Usage Statement For
SEPTEMBER 2009

Due By - October 25TH 2009

[redacted]

ACCT # 7
BILL # 15599
BILL DATE 10/1/2009

Account Balance	
Previous Balance	$0.00
Overpayments/Credits	$0.00
Charges	$17,046.63
Total Due	**$17,046.63**

Water Usage	
Billing Period (September)	9/1/2009 To 9/30/2009
Billed Usage	323.82 Af

Turnout #	Usage Acre-Feet	Billing Rate Water	Water Charge	Billing Rate Lift	Lift Charge	Total Charge
104	0.12 Af	$49.50	$5.94	$7.85	$0.94	$6.88
107	86.28 Af	$49.50	$4,270.87	$7.85	$677.30	$4,948.17
116	43.22 Af	$49.50	$2,139.39	$7.85	$339.28	$2,478.67
133	0.21 Af	$49.50	$10.40	$0.00	$0.00	$10.40
134	85.00 Af	$49.50	$4,207.50	$0.00	$0.00	$4,207.50
184	82.95 Af	$49.50	$4,106.03	$0.00	$0.00	$4,106.03
218	26.04 Af	$49.50	$1,288.98	$0.00	$0.00	$1,288.98

Total Balance Forward	$.00
Current Month Charges	$17,046.63
TOTAL DUE (Including Previous)	$17,046.63

Payment due upon receipt and is delinquent if not received IN THE OFFICE by 3 30 P M on the 25th of the month If the 25th falls on a Saturday, Sunday or a holiday, payment is due by 3 30 P M on the next working day DELINQUENT ACCOUNTS WILL BE ASSESSED A 10% PENALTY AND WATER SERVICE WILL BE TERMINATED
Accounts delinquent after 30 days are assessed a finance charge equal to 1 1/2 percent per month on the unpaid balance

$17,046.63

Detach Here and return with payment

Due Date - October 25TH 2009

[redacted]

ACCT # 7
BILL # 15599

Amount Enclosed _____

Monthly Water Usage

October 2009

#7

[redacted]

Turnout	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Total
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
102	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
103	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104	42.87	70.43	118.16	116.82	104.99	96.74	0.12	0.09	0.00	0.00	0.00	0.00	550.22
107	0.00	0.00	96.40	118.17	76.70	147.65	86.28	0.00	0.00	0.00	0.00	0.00	525.20
116	0.00	0.00	92.52	100.52	109.64	69.51	43.22	99.41	0.00	0.00	0.00	0.00	514.82
119	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
133	0.10	0.14	44.35	35.24	0.00	67.42	0.21	0.10	0.00	0.00	0.00	0.00	147.56
134	0.00	0.00	64.34	153.25	158.14	73.40	85.00	20.00	0.00	0.00	0.00	0.00	554.13
184	0.00	14.38	88.86	107.43	74.34	52.83	82.95	12.35	0.00	0.00	0.00	0.00	433.14
218	12.98	17.57	17.45	31.46	18.19	19.25	26.04	0.00	0.00	0.00	0.00	0.00	142.94
Total	55.95	102.52	522.09	662.89	542.00	526.80	323.82	131.95	0.00	0.00	0.00	0.00	2,868.02

Total Irrigated Acres	1,702.26	**Acres**	**Total Water Available**	5,106.78	**AF**			
Allocation	3	**AF/Acre**	**Total Water Delivered**	5,728.28	**AF**	**Water Per Acre**	3.37	**AF/Acre**
Total Base Allocation	5,106.78	**AF**	**Remaining Water**	-621.50	**AF**	**Water Per Acre**	-0.37	**AF/Acre**
Allocation Adjustments	0.00	**AF**						

DELANO-EARLIMART IRRIGATION DISTRICT

14181 AVENUE 24
DELANO, CALIFORNIA 93215
Phone (661) 725 - 2526

Water Usage Statement For
AUGUST 2009

Due By - September 25TH 2009

[redacted]

ACCT # 238
BILL # 15488
BILL DATE 9/1/2009

Account Balance	
Previous Balance	$0.00
Overpayments/Credits	$0.00
Charges	$34.80
Total Due	**$34.80**

Water Usage	
Billing Period (August)	8/1/2009 To 8/31/2009
Billed Usage	0.51 Af

Turnout #	Usage Acre-Feet	Billing Rate Water	Water Charge	Billing Rate Lift	Lift Charge	Total Charge
806B-MI	0.51 Af	$48.00	$24.24	$14.65	$7.40	$31.64

PENALTY / INTEREST CHARGES $3.16

Total Balance Forward	$.00
Current Month Charges	$34.80
TOTAL DUE (Including Previous)	$34.80

Payment due upon receipt and is delinquent if not received IN THE OFFICE by 3 30 P M on the 25th of the month If the 25th falls on a Saturday, Sunday or a holiday, payment is due by 3 30 P M on the next working day DELINQUENT ACCOUNTS WILL BE ASSESSED A 10% PENALTY AND WATER SERVICE WILL BE TERMINATED
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$34.80

Detach Here and return with payment
Due Date - September 25TH 2009

[redacted]

ACCT # 238
BILL # 15488

Amount Enclosed _____

Monthly Water Usage

October 2009

#238

[redacted]

Turnout	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Total
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
806B-MI	0.00	0.00	0.00	0.00	0.00	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.51
Total	0.00	0.00	0.00	0.00	0.00	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.51

Total Irrigated Acres	1.00 Acres	**Total Water Available**	3.00 AF			
Allocation	3 AF/Acre	**Total Water Delivered**	0.51 AF	**Water Per Acre**	0.51	AF/Acre
Total Base Allocation	3.00 AF	**Remaining Water**	2.50 AF	**Water Per Acre**	2.50	AF/Acre
Allocation Adjustments	0.00 AF					

RESOLUTION 11-01
of the
DELANO-EARLIMART IRRIGATION DISTRICT

ADOPTION OF DISTRICT WATER MANAGEMENT PLAN

WHEREAS, the Delano-Earlimart Irrigation District has prepared a Water Management Plan pursuant to guidelines of the United States Department of the Interior, Bureau of Reclamation and the District Board of Directors has reviewed said Plan on this date; and,

WHEREAS, the Bureau, in accordance with approved and current guidelines, requires the District and other contractors to re-evaluate, update, and resubmit water management plans every five years; and,

WHEREAS, District staff have prepared a "Water Management Plan-2008 Criteria" in accordance with the Bureau's current criteria.

NOW, THEREFORE, BE IT RESOLVED that the District Board of Directors hereby approves the "Water Management Plan-2008 Criteria" and directs that a copy of same, together with this resolution be forwarded to the USBR.

ADOPTED: January 13, 2011 upon motion of Director Canata, seconded by Director Caratan and passed by the following vote:

AYES: **5**
NOES: **0**
ABSENT: **0**
ABSTAIN: **0**

CERTIFICATE OF SECRETARY

I do hereby certify that I am the Secretary of the Delano-Earlimart Irrigation District, an irrigation district organized and existing under the laws of the State of California, and that the foregoing Resolution was duly adopted by the Board of Directors of said District at a meeting thereof duly and regularly held at the office of the said District at 14181 Avenue 24, Delano, California on the 13th day of January, 2011, at which meeting a quorum of said Board of Directors was at all times present and acting, and that said Resolution has not been rescinded or amended in whole or any part thereof, and remains in force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and the Seal of the Delano-Earlimart Irrigation District this 13th day of January, 2011.

Dale R. Brogan, Secretary
Delano-Earlimart Irrigation District