# THE WEST SIDE IRRIGATION DISTRICT

## Water Management Plan

**November 2009**

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# Section 1: Description of the District

*District Name:* *The West Side Irrigation District*

Contact Name: Steven A. Kaiser

Title: Water Resource Coordinator

Telephone: (209) 479-2115 E-mail: stevekaisers@aol.com

## A. History

1. *Date district formed:* 10/15/16 *Date of first Reclamation contract*: June 29,1977
*Original size (acres)*: 12,160 *Current year ( 2008)*: 6,082

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

| | *Current Year* |
|---|---|
| *Size (acres)* | 6082 |
| *Population served* | N/A |
| *Irrigated acres* | 5,722 acres |

3. *Water supplies received in current year*

| *Water Source* | *AF* |
|---|---|
| *Federal urban water* | |
| *Federal agricultural water* | 2500 |
| *State water* | |
| *Other Wholesaler (define)* | |
| *Local surface water* | 17000 est. |
| *Upslope drain water* | 2500 est. |
| *District ground water* | |
| *Transferred water* | |
| *Recycled water* | |
| *Other (define) Wheeled Water* | |
| *Total* | 22000 |

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

| | *AF* | *Source* | *Contract #* | *Contract Restrictions* |
|---|---|---|---|---|
| *USBR Urban AF/Y* | | | | |
| *USBR Agriculture AF/Y* | 5,000 | CVP | 7-07-20-W0045 LT-1 | Shortage Provisions and Regulatory Constraints |
| *Other AF/Y* | 82.5cfs | License | 1381 Application301 | Permitted on or about 4/1 to 10/31 every year |
| *Other AF/Y* | | | | |

5. *Anticipated land-use changes*-**None expected. Area may see a small % of urban growth**

6. *Cropping patterns (Agric only)*

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

| *Original Plan* | | *Previous Plan* | | *Current Plan* | |
|---|---|---|---|---|---|
| *Crop Name* | *Acres* | *Crop Name* | *Acres* | *Crop Name* | *Acres* |
| | | Alfalfa | 3,030 | **Alfalfa** | **1,205** |
| | | Beans | 968 | **Beans** | **385** |
| | | Tomatoes | 868 | **Corn** | **575** |
| | | Pasture | 850 | **Oats** | **344** |
| | | Sugar Beets | 561 | **Pasture** | **854** |
| | | Silage | 509 | **Tomatoes** | **437** |
| | | | | **Sudan** | **362** |
| *Other (<5%)* | | *Other (<5%)* | 1,085 | ***Other (<5%)*** | **55** |
| *Total* | | *Total* | 7,871 | ***Total*** | **4,217** |

****2007 crop report attached**

7. *Major irrigation methods (by acreage) (Agric only)*

| *Original Plan* | | *Previous Plan* | | *Current Plan* | |
|---|---|---|---|---|---|
| *Irrigation Method* | *Acres* | *Irrigation Method* | *Acres* | *Irrigation Method* | *Acres* |
| | | Furrow | 4,841 | **Furrow** | **1,100** |
| | | Border | 3,030 | **Border** | **1670** |
| | | Sprinklers | N/A | **Sprinklers** | **1447** |
| | | | | | |
| | | | | | |
| | | | | | |
| *Other* | | *Other* | | ***Other*** | |
| *Total* | | *Total* | 7,871 | ***Total*** | **4,217** |

## B. Location and Facilities: See Appendix A for map

1. *Incoming measurement methods and locations*

| *Incoming Locations* | *Type of Measurement Device* | *Accuracy* |
|---|---|---|
| **Old River Intake** | **Pump Measurement** | **+/- 6%** |
| | | |
| | | |

2. *Current year Agricultural Conveyance System*

| *Miles Unlined - Canal* | *Miles Lined - Canal* | *Miles Piped* | *Miles - Other* |
|---|---|---|---|
| **16** | **3.5** | **39** | **0** |

3 *Current year Urban Distribution System* **– No Urban system in place**

| *Miles AC Pipe* | *Miles Steel Pipe* | *Miles Cast Iron Pipe* | *Miles - Other* |
|---|---|---|---|
| 0 | 0 | 0 | 0 |

4. *Storage facilities:* **District has no surface storage facilities**

5. *Description of the agricultural spill recovery system:* **All of the District's operation spills and irrigation return flow is collected into the Main Drain System that parallels the lower boundary of the District and is transported to the Intake Canal, for system distribution and reuse.**

6. *Agricultural delivery system operation:* **All water orders are in advance, 24 hours, and may be adjusted based on other off or on requests by users**.

7. *Restrictions on water source(s)*

| *Source* | *Restriction* | *Cause of Restriction* | *Effect on Operations* |
|---|---|---|---|
| **CVP** | **U.S.B.R Contract** | **Regulatory constraints** | **Unable to meet demands** |
| **River water** | **Low water & poor quality** | **Fed & State pumping & low tides** | **Unable to meet demands** |
| | | | |
| | | | |

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

**Due to a no growth "measure A" passed by Tracy voters, urban growth is on a slow track for 8 years. District does not expect any affect on operations or management.**

## C. Topography and Soils: Soil map attached

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

**Land within the district is level (0-2%) and does not cause a problem with water management.**

2. *District soil associations (Agric only)*

| *Soil Association* | *Estimated Acres* | *Effect on Water Operations and Management* |
|---|---|---|
| **Capay Clay** | **N/A** | **Moderately well drained** |
| **El Soylo Clay Loam** | **N/A** | **Well Drained** |
| **Stomar Clay Loam** | **N/A** | **Well Drained** |

| | | |
|---|---|---|
| | | |
| | | |
| | | |

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

| *Soil Problem* | *Estimated Acres* | *Effect on Water Operations and Management* |
|---|---|---|
| **Capay Clay** | **N/A** | **Careful water management needed** |
| | | |
| | | |

## D. Climate

1. *General climate of the district service area*

**The climate is cold during winter months and relatively dry during summer. Most of the area precipitation falls during the winter months and high winds can occur during summer**.

| | *Jan* | *Feb* | *Mar* | *Apr* | *May* | *Jun* | *Jul* | *Aug* | *Sep* | *Oct* | *Nov* | *Dec* | *Annual* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Avg Precip.* | 2.5 | 2.1 | 1.6 | .84 | .41 | .11 | .03 | .06 | .25 | .61 | 1.6 | 1.9 | 12.19 |
| *Avg Temp.* | 45 | 51 | 55 | 60 | 66 | 72 | 76 | 76 | 73 | 65 | 54 | 47 | 62 |
| *Max. Temp.* | 54 | 61 | 66 | 72 | 79 | 87 | 92 | 91 | 87 | 78 | 64 | 55 | 74 |
| *Min. Temp* | 38 | 41 | 44 | 47 | 53 | 57 | 60 | 60 | 58 | 52 | 44 | 38 | 49 |
| *ETo* | | | | | | | | | | | | | |

*Weather station ID* **049001 - #161** *Data period: Year* **1955** *to Year* **2007**

*Average wind velocity* **4.6** *Average annual frost-free days:* **305**

2. *Impact of microclimates on water management within the service area:* **No impacts within the area**.

## E. Natural and Cultural Resources

1. *Natural resource areas within the service area*

| *Name* | *Estimated Acres* | *Description* |
|---|---|---|
| **None in service area** | | |
| | | |

2. *Description of district management of these resources in the past or present:* **None required**.

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

| *Name* | *Estimated Acres* | *Description* |
|---|---|---|

| | | |
|---|---|---|
| **None within District area** | | |
| | | |

## F. Operating Rules and Regulations

1. *Operating rules and regulations:* See **Attached Rules & Regs.**

2. *Agricultural water allocation policy:* **See Attached Water Policy**

3. *Official and actual lead times necessary for water orders and shut-off (Agric only)* **: See Attached Water Policy**

4. *Policies regarding surface drainage from farms (Agric only*)**: See Attached Water Policy**

5. *Policies on water transfers by the district and its customers:* **No policies in place at this time**.

## G. Water Measurement, Pricing, and Billing

***Agricultural Customers***

1. *Number of farms* **37**

2. *Number of delivery points (turnouts and connections)* **120**

3. *Number of delivery points serving more than one farm* **0**

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

6. *Delivery point measurement device table (Agric only)*

| *Measurement Type* | *Number* | *Accuracy (+/- percentage)* | *Reading Frequency (Days)* | *Calibration Frequency (Months)* | *Maintenance Frequency (Months)* |
|---|---|---|---|---|---|
| *Orifices* | | | | | |
| *Propeller meter* | | | | | |
| *Weirs* | | | | | |
| *Flumes* | | | | | |
| *Venturi* | | | | | |
| *Metered gates* | **120*** | **<2%** | **Daily when in use** | **Every 12 months** | **As required for repair** |
| *Other (define)* | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| *Total* | 120 | | | | |

***Urban Customers:*** **No Urban customers**

1. *Total number of connections* _____
2. *Total number of metered connections* _____
3. *Total number of connections not billed by quantity* _____
4. *Percentage of water that was measured at delivery point* _____
5. *Percentage of delivered water that was billed by quantity* _____
6. *Measurement device table*

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

***Agriculture Customers***

1. *Current year agriculture water charges - including rate structures and billing frequency*
   **See Attached Water Rate Schedule**
2. *Annual charges collected from customers (current year data)* ***CVP water only***

| *Charges ($ unit)* | *Charge units ($/af), ($/ acre), ($/hcf), ($/customer) etc.* | *Units billed during year (af, acres, hcf, customer) etc.* | *$ collected ($ times units)* |
|---|---|---|---|
| Fixed Charges | | | |
| | **$7.71 / ac ft.** | **CVP self-funding** | |
| | **$8.58 / ac. Ft.** | **CVP Restoration** | |
| | | | |
| | | | |
| Volumetric charges | | | |

| *Charges ($ unit)* | *Charge units ($/af), ($/ acre), ($/hcf), ($/customer) etc.* | *Units billed during year (af, acres, hcf, customer) etc.* | *$ collected ($ times units)* |
|---|---|---|---|
| | **$26.86 /ac ft.** | **2500 ac. Ft..** | **$67,150** |
| | | | |
| | | | |
| | | | |

3. *Water-use data accounting procedures:* **Water Users are mailed a summary of each year's use. Acre foot per acre use is identified for each parcel. Water records are kept at the District office for 5 years.**

## H. Water Shortage Allocation Policies

1. *Current year water shortage policies or shortage response plan - specifying how reduced water supplies are allocated*
   **Attached: District Water Policy**

2. *Current year policies that address wasteful use of water and enforcement methods*
   **Attached: Rules and Regulations. #4, #6, #17**

# Section 2: Inventory of Water Resources

## A. Surface Water Supply

1. *Acre-foot amounts of surface water delivered to the district by each of the district 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:* **No ground water pumped by the District.**

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

| *Name* | *Size (Square Miles)* | *Usable Capacity (AF)* | *Safe Yield (AF/Y)* |
|---|---|---|---|
| **San Joaquin Basin** | **13,500** | **80,000,000** | **UNKNOWN** |
| | | | |

3. *Map of district-operated wells and managed ground water recharge areas:* **No wells or recharge operated by the District.**

4. *Description of conjunctive use of surface and ground water:* **Surface water only**

5. *Ground Water Management Plan:* **None in place at this time**

6. *Ground Water Banking Plan:* **No banking plan in place for District**

## C. Other Water Supplies

1. *"Other" water used as part of the water supply:* **Upslope flows may be utilized if available and transfer water is becoming more a potential as surface supplies are cut back**

## D. Source Water Quality Monitoring Practices

1. *Surface water and/or ground water quality problems, and how the quality problems limit the use of that source or affect customer use decisions:* **District has no water supply quality issues (surface). CVP water is good quality and River water is also of good quality.**

2. *Potable Water Quality (Urban only):* **Not applicable**

3. *Agricultural water quality concerns*: *Yes* _____ *No* _____X_____

4. *Description of the agricultural water quality testing program and the role of each participant, including the district, in the program:* **CVP water is checked for quality standards by the Department of Water Resources. River water is checked by the District on an annual basis. See Attached Water Policy.**

5. *Current water quality monitoring programs for surface water by source (Agric only)*

| *Analyses Performed* | *Frequency Range* | *Concentration Range* | *Average* |
|---|---|---|---|
| **Irr. Water** | **2X/Year** | **500-800** | **700 mg/l** |
| **See attached reports** | | | |
| | | | |
| | | | |

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

| *Analyses Performed* | *Frequency Range* | *Concentration Range* | *Average* |
|---|---|---|---|
| **NONE** | | | |
| | | | |
| | | | |
| | | | |

6. *Current year total dissolve solid range for surface water and ground water (Agric only)*
*Surface water*: **100-400** ***ppm*** *Ground water*: _____ *ppm:* **not sampled**

## 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* | *Basin - acres* | *Furrow - acres* | *Sprinkler - acres* | *Low Volume - acres* | *BORDER methods -ac* |
|---|---|---|---|---|---|---|
| **Alfalfa** | **1687** | | | | | **1687** |
| **Beans** | **465** | | **465** | | | |
| **Corn** | **670** | | **670** | | | |
| **Oats** | **344** | | | | | **344** |
| **Pasture** | **998** | | | **200** | | **798** |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Tomato** | **520** | | **420** | **100** | | |
| **Sudan** | **452** | | | | | **452** |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

*3. Urban use by customer type in current year* ***NONE***

| *Customer Type* | *Number of Connections* | *(AF)* |
|---|---|---|
| *Single-family* | | |
| *Multi-family* | | |
| *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* |
|---|---|---|---|
| NONE | | | |
| | | | |
| | | | |
| | Total | | |
| Total discharged to ocean | and/ or saline sink | | |

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

| *Recharge Area* | *Method of Recharge* | *(AF)* | *Method of Retrieval* |
|---|---|---|---|
| **NONE** | | | |
| | | | |
| | | | |
| | Total | | |

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

| *From Whom* | *To Whom* | *(AF)* | *Use* |
|---|---|---|---|
| **NONE in 2007 or 2008** | | | |

| | | | |
|---|---|---|---|
| | | | |
| | | | |
| | | | |

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

| *From Whom* | *To Whom* | *(AF)* | *Use* |
|---|---|---|---|
| **The West Side ID.** | **City of Tracy** | **632** | **M&I** |
| | | | |
| | | | |
| | | | |

8. *Other uses of water in current year*

| *Other Uses* | *AF* |
|---|---|
| **All use within District is for Ag purposes** | |
| | |
| | |
| | |

## F. Irrigation Drainage from the Service area (Table 7) (Ag 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 Section 3 D.*

1.
2. *Surface/ return flows in current year*

| *Drain Location* | *(AF)* | *Types of Uses* |
|---|---|---|
| **In District** | **40-100 est.** | **Agriculture** |
| | | |
| | | |
| | | |
| | | |
| **Total** | **40-100 est.** | |

2. *Description of the Surface Tailwater quality testing program and the role of each participant in the program*

**Tested by Water Resource Coordinator for the District**

3. *Tailwaterr (surface) Quality Testing Program*

| *Analyses Performed* | *Concentration Range* | *Frequency Range* | *Average* |
|---|---|---|---|
| **Ag suitability** | **800-900 TDS** | **2-3 times per year** | **850** |
| | | | |
| | | | |

| | | | |
|---|---|---|---|
| | | | |

*4. Usage limitation resulting from surface drainage water quality*

| *Constituent* | *Usage Limitation* |
|---|---|
| **TDS** | **Need blending with CVP due to high TDS** |
| | |
| | |
| | |

## G. Water Accounting (Inventory)

*1. Water Supplies Quantified*

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

*2. Water Used Quantified*

*a. Agric. conveyance losses, including seepage, evaporation, and operational spills in canal systems (Agric. Table 4) or*
*b. Consumptive use by riparian vegetation or environmental use (Table 6)*
*c. Applied irrigation water - crop ET, water used for leaching / cultural practices (e.g., frost protection, soil reclamation, etc.) (Table 5)*
*f. Water exchanges and transfers (Table 6)*
*g. Estimated deep percolation within the service area (Agric. Table 6)*
*h. Flows to perched water table or saline sink (Agric. Table 7)*
*i. Irrigation spill or drain water leaving the District (Agric. Table 6)*
*j. Other*

*3. Overall Water Inventory*
*a. Table 6*

# 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 percent:* **All District turnouts are measured.**

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

*Number of measurement devices installed last year:* **6**

*Number of measurement devices installed this year:* **5**

*Number of measurement devices to be installed next year:* **3-5**

| *Types of Measurement Devices Being Installed* | *Accuracy* | *Total Installed During Current Year* |
|---|---|---|
| Canal Gates, metered at end of 20' discharge pipe | **+/-2%** | **0** |
| | | |
| Repaired or replaced gates | | **5** |
| | | |

* Waterman Canal Gates, with Micrometer Totalizer meters are used. Meters are calibrated at the factory, sent back for recalibration when field checks indicate any reading that may not be within 2%

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

*Name:* Steven A. Kaiser *Title:* W. R. C.

*Address:* *8034 W. Howard Rd. Stockton Ca. 95206*

*Telephone:* 209-479-2115 *E-mail:* stevekaisers@aol.com

3. *Provide or support the availability of water management services to water users*
   **Mobile Lab available in 2008 thru SLDMWA. District supports this service and reminds growers it is available thru their Water Authority. District supplies 50% of costs for each evaluation.**

   a. ***On-Farm Evaluations:*** **Total for any given irrigation season in unknown, estimate is based on desirable numbers to be 10% of total per year.**

   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* | **4217** | **420** | **420** | **420** | **420** |
| *Number of farms* | **37** | **4** | **4** | **4** | **4** |

2) *Timely field and crop-specific water delivery information to the water user*: **User water use is available upon request from the District, per turnout, per parcel. Year-end summary is mailed each year and all records are available at the District office for farm review. (See Water Orders)**

***b.*** *Real-time and normal irrigation scheduling and crop ET information**:*** **There is a CIMIS station in operation for the area (Patterson -#161). Data available at District or by internet from CIMIS network. See Attached CIMIS report**

***c.*** *Surface water quantity and quality data provided to water users:* **Periodic and random testing done to ensure compliance to District Policy ( Water Quality Element and Sediment Element, See 'Water Quality'**

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

| *Program* | *Co-Funders (If Any)* | *Yearly Targets* |
|---|---|---|
| **Area newsletter** | **SLDMWA** | **All users** |
| **Websites** | **DWR, CIMIS, ITRC** | **All users** |
| **Annual Water Usage worksheet** | | |
| ***samples attached | | |

4. *Pricing structure - based at least in part on quantity delivered*

**See Water Rate Schedule Charges based on quantity delivered**

5. *Evaluate the need for changes in policies of the institutions to which the district is subject* ***At this point in a potential drought and cutbacks due to fish issues, the District is evaluating its concerns with the available water supply. Policies of Reclamation and State regulatory institutions are discussed and evaluated by the Board.***

.

6. *Evaluate and improve efficiencies of district pumps:* **Pumps are maintained for efficiency and operation on an Annual basis. Repairs are performed to maintain peak operation of all pumps.**

## B. Exemptible BMPs for Agricultural Contractors

*(See Attachment B for examples of exemptible conditions)*

1. *Facilitate alternative land use:* **None identified at this time**

| *Drainage Characteristic* | *Acreage* | *Potential Alternate Uses* |
|---|---|---|
| *High water table (<5 feet)* | | |
| *Poor drainage* | | |
| *Ground water Selenium concentration > 50 ppb* | | |
| *Poor productivity* | | |

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* |
|---|---|---|
| **No recycled water available to the District** | | |
| | | |
| | | |
| | | |

3. *Facilitate the financing of capital improvements for on-farm irrigation systems:* **District has had no request for on-farm improvement assistance in the past from its growers. The District does keep on file a list of potential lenders, in the event a request comes in to the District for some assistance. Financial status of the District does not include a large enough reserve to have District funds available for any assistance request, rather the District would help facilitate any such need from outside sources. Local banks and other lenders would be the most logical source of any assistance packages.**

4. *Incentive pricing:* **The District has been in a situation where demand does not exceed supply at this point, which makes incentive pricing not a requirement of the District. As irrigation demand increases and supply is not adequate for that demand, incentive pricing would be implemented by the District. This may include a tier price, where excess use, over and above the consumptive use of the crops, would be charged a higher delivery rate per acre foot. Seasonal adjustments may be necessary when first beginning a tiered water price schedule to adequately determine a fair break in tiered prices, etc.**

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* |
|---|---|---|---|---|
| **Ditches** | **Piped** | **5** | **5af/yr** | **completed** |
| | | | | |
| **Ditches** | **Piped** | **10** | **unknown** | **2008-2012** |

*b) Regulatory reservoirs*

| *Reservoir Name* | *Annual Spill in Section (AF/Y)* | *Estimated Spill Recovery (AF/Y)* | *Accomplished/ Planned Date* |
|---|---|---|---|

| | | | |
|---|---|---|---|
| **NONE in District** | | | |
| | | | |

6. *Increase flexibility in water ordering by, and delivery to, water users:* **Flexibility is controlled by the Ditch tender, and the current daily conditions determine when and if adjustments are capable within the delivery system. District has replaced weir boards within the canal system and long-crested weirs are in the planning stage for the District. Staff has always been instructed to be flexible in meeting all request if possible. ( See Water Orders)**

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

| *Distribution System Lateral* | *Annual Spill (AF/Y)* | *Quantity Recovered and reused (AF/Y)* |
|---|---|---|
| **Tailwater recovery at lower end of system** | **50-100** | **40-80** |
| | | |
| | | |
| | | |
| Total | | |

| *Drainage System Lateral* | *Annual Drainage Outflow (AF/Y)* | *Quantity Recovered and reused (AF/Y)* |
|---|---|---|
| **NONE** | | |
| | | |
| | | |
| | | |
| Total | | |

8. *Optimize conjunctive use of surface and ground water:* **District only delivers surface water, no groundwater sources for conjunctive use. To date, District has not installed any deep wells due to the depth of the water table in the area, plus water quality has kept farm units from installing any wells of their own. Reduction in surface supply would increase the need for transfers** *in* **to the District.**

9. *Automate canal structures:* **District has completed installations of Variable Frequency Drives on existing canal structures to automate pumping operations.**

10. *Facilitate or promote water customer pump testing and evaluation:* **With no groundwater being pumped in the District, this has not been implemented.**

## C. Provide a 3-Year Budget for Implementing BMPs

1. *Amount actually spent during current year.* ***2008***

| *BMP #* | *BMP Name* | *Actual Expenditure (not including staff time)* | *Staff Hours* |
|---|---|---|---|
| *A1* | *Measurement DITCHTENDERS* | $18,000 | 0 |
| *2* | *Conservation staff M6R* | $43,000 | 0 |
| *3* | *On-farm evaluations / water delivery info* | $0 | 0 |
| | *Irrigation Scheduling MOBILE LAB* | $3,000 | 0 |
| | *Water quality* | $20,000 | 0 |
| | *Agricultural Education Program* | $0 | 0 |
| *4* | *Quantity pricing* | $0 | 0 |
| *5* | *Policy changes* | $0 | 0 |
| *6* | *Contractor's pumps* | $1,500 | 0 |
| | | | |
| *B1* | *Alternative land use* | $0 | 0 |
| *2* | *Urban recycled water use* | $0 | 0 |
| *3* | *Financing of on-farm improvements* | $0 | 0 |
| *4* | *Incentive pricing* | $0 | 0 |
| *5* | *Line or pipe canals/install reservoirs* | $0 | 0 |
| *6* | *Increase delivery flexibility* | $5000 | 0 |
| *7* | *District spill/tailwater recovery systems* | $5000 | 0 |
| *8* | *Optimize conjunctive use* | $0 | 0 |
| *9* | *Automate canal structures* | $0 | 0 |
| *10* | *Customer pump testing* | $0 | 0 |
| | *Total* | $95,500.00 | 0 |

2. *Projected budget summary for the next year. 2009 (+ 5%)*

| *BMP #* | *BMP Name* | *Budgeted Expenditure (not including staff time)* | *Staff Hours* |
|---|---|---|---|
| *A1* | *Measurement* | $18900 | 0 |
| *2* | *Conservation staff* | $45150 | 0 |
| *3* | *On-farm evaluations / water delivery info* | $0 | 0 |
| | *Irrigation Scheduling* | $3150 | 0 |
| | *Water quality* | $21000 | 0 |
| | *Agricultural Education Program* | $0 | 0 |
| *4* | *Quantity pricing* | $0 | 0 |
| *5* | *Policy changes* | $0 | 0 |
| *6* | *Contractor's pumps* | $1575 | 0 |
| | | | |
| *B1* | *Alternative land use* | $0 | 0 |
| *2* | *Urban recycled water use* | $0 | 0 |
| *3* | *Financing of on-farm improvements* | $0 | 0 |
| *4* | *Incentive pricing* | $0 | 0 |
| *5* | *Line or pipe canals/install reservoirs* | $0 | 0 |
| *6* | *Increase delivery flexibility* | $5250 | 0 |
| *7* | *District spill/tailwater recovery systems* | $5250 | 0 |
| *8* | *Optimize conjunctive use* | $0 | 0 |

| | | | |
|---|---|---|---|
| *9* | *Automate canal structures* | $0 | 0 |
| *10* | *Customer pump testing* | $0 | 0 |
| | *Total* | $100,275 | |

3. *Projected budget summary for 3rd year. 2010 ( +5%)*

| *BMP #* | *BMP Name* | *Budgeted Expenditure (not including staff time)* | *Staff Hours* |
|---|---|---|---|
| *A1* | *Measurement* | $19800 | 0 |
| *2* | *Conservation staff* | $47407 | 0 |
| *3* | *On-farm evaluations / water delivery info* | $0 | 0 |
| | *Irrigation Scheduling* | $3300 | 0 |
| | *Water quality* | $22000 | 0 |
| | *Agricultural Education Program* | $0 | 0 |
| *4* | *Quantity pricing* | $0 | 0 |
| *5* | *Policy changes* | $0 | 0 |
| *6* | *Contractor's pumps* | $1650 | 0 |
| | | | |
| *B1* | *Alternative land use* | $0 | 0 |
| *2* | *Urban recycled water use* | $0 | 0 |
| *3* | *Financing of on-farm improvements* | $0 | 0 |
| *4* | *Incentive pricing* | $0 | 0 |
| *5* | *Line or pipe canals/install reservoirs* | $0 | 0 |
| *6* | *Increase delivery flexibility* | $5600 | 0 |
| *7* | *District spill/tailwater recovery systems* | $5600 | 0 |
| *8* | *Optimize conjunctive use* | $0 | 0 |
| *9* | *Automate canal structures* | $0 | 0 |
| *10* | *Customer pump testing* | $0 | 0 |
| | *Total* | $105,357 | 0 |

## D. Drainage Problem Area Programs

(for districts located in the drainage problem area, as defined in Attachment A)

*The following programs have been incorporated in the district water conservation programs to improve conditions in the drainage problem areas.* *SEE SECTION 10*

| *Activity* | *Program Description* | *Budget* | *Results* |
|---|---|---|---|
| *Source Control* | | | |
| *Land Retirement* | | | |
| *Drainage Water Treatment* | | | |
| *Drainage Water Reuse* | | | |
| *Shallow Groundwater Pumping* | | | |
| *Evaporation Ponds* | | | |

*The following programs were not been implemented because:*

## E. District Quantifiable Objectives (QOs)

(QOs for each district are identified in the QO Agency document in the Planner, Chapter 10)

*Discussion of District participation in the QOs that apply to the District (see*

| *Name of QO* | *Related BMP* | *Interest in Outside Funding* | *Agency Role* |
|---|---|---|---|
| | | | |
| | | | |
| | | | |

# Section 4: Best Management Practices for Urban Contractors

*1. Water Survey Programs for Single-Family and Multi-Family Residential Customers*
Program description –

*Enter the number of surveys conducted in passed years and the projected number for future years.*

| *Residential type* | *yr target* | *2003* | *2004* | *2005* | *2006* | *2007* | *2008* | *2009* |
|---|---|---|---|---|---|---|---|---|
| SF accts - | | | | | | | | |
| MF units - | | | | | | | | |

*2. Residential Plumbing Retrofit*
Program description –

*Enter the number of showerheads distributed in the past and the projected number for future years*

| *Residential type* | *yr target* | *2003* | *2004* | *2005* | *2006* | *2007* | *2008* | *2009* |
|---|---|---|---|---|---|---|---|---|
| SF accts - | | | | | | | | |
| MF units - | | | | | | | | |

*3. System Water Audits, Leak Detection, and Repair*
Program description –

*Enter the AF of water purchased and lost in the past and the projected amount in future years*

| | *2003* | *2004* | *2005* | *2006* | *2007* | *2008* | *2009* |
|---|---|---|---|---|---|---|---|
| *Total Water AF* | | | | | | | |
| *Unaccounted for AF* | | | | | | | |
| *% UAW* | | | | | | | |

*4. Metering with Commodity Rates for all New Connections and Retrofit of Existing Connections* ***(NOT EXEMPTIBLE)***
Program description –

*Number of unmetered connections* _____
*Number of connections not billed by quantity* _____

*5. Large Landscape Conservation Programs and Incentives*
Program description –

*Enter the number of landscape budgets/audits in passed years & the projected number for future years*

| *irrigation type* | *yr target* | *2003* | *2004* | *2005* | *2006* | *2007* | *2008* | *2009* |
|---|---|---|---|---|---|---|---|---|
| Dedicated meters - | | | | | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Mixed use meters - | | | | | | | | |

*6. High-Efficiency Washing Machine Rebate Programs*
Program description –

*Enter the number of rebates paid in passed years & the projected number for future years*

| *$ rebate* | *2003* | *2004* | *2005* | *2006* | *2007* | *2008* | *2009* |
|---|---|---|---|---|---|---|---|
| $ | | | | | | | |

*7. Public Information Programs (Attach samples)*
Program description –

*8. School Education Programs (Attach samples)*
Program description –

*9. Conservation Programs for CII Accounts*
Program description –

*Enter the number of surveys conducted in passed years & the projected number for future years*

| *Customer type* | *yr target* | *2003* | *2004* | *2005* | *2006* | *2007* | *2008* | *2009* |
|---|---|---|---|---|---|---|---|---|
| Comm accts - | | | | | | | | |
| Indust. accts - | | | | | | | | |
| Instit. accts - | | | | | | | | |

*10. Wholesale Agency Assistance Programs*
Program description –

*11. Conservation Pricing*
Program description –

*12. Conservation Coordinator*

*Name:* _____ Title: _____

*Address:* _____

*Telephone:* _____ *E-mail:* _____

*13. Water Waste Prohibition*

Program description –

*14. Residential ULFT Replacement Programs*
Program description –

*Enter the number of toilets replaced in passed years and the projected number for future years.*

| *Residential type* | *yr target* | *2003* | *2004* | *2005* | *2006* | *2007* | *2008* | *2009* |
|---|---|---|---|---|---|---|---|---|
| *SF accts -* | | | | | | | | |
| *MF units -* | | | | | | | | |

## Provide a 3-Year Budget for Expenditures and Staff Effort for BMPs

***Actual Current Year Expenditures***

| *Year* _____ | | *Actual Expenditures* | |
|---|---|---|---|
| *BMP #* | *BMP Name* | *(not including staff hours)* | *Staff Hours* |
| *1* | *Residential Water Audits* | $0 | 0 |
| *2* | *Residential Retrofit* | $0 | 0 |
| *3* | *System Water Audit and Leak Detection* | *Not WC budget* | |
| *4* | *Metering w/Commodity Rates* | $0 | 0 |
| *5* | *Landscape Water Audits* | $0 | 0 |
| *6* | *Washing Machine Rebates* | $0 | 0 |
| *7* | *Public Information* | $0 | 0 |
| *8* | *School Education Program* | $0 | 0 |
| *9* | *CII Conservation Programs* | $0 | 0 |
| *10* | *Wholesale Agency Programs* | $0 | 0 |
| *11* | *Conservation Pricing* | $0 | 0 |
| *12* | *Conservation Coordinator* | $0 | 0 |
| *13* | *Water Waste Prohibition* | $0 | 0 |
| *14* | *ULFT Program* | $0 | 0 |
| | *Total* | $0 | 0 |

***Projected Budget for Next Year***

| Year _____ | | Actual Expenditures | |
|---|---|---|---|
| BMP # | BMP Name | (not including staff hours) | Staff Hours |
| *1* | *Residential Water Audits* | $0 | 0 |
| *2* | *Residential Retrofit* | $0 | 0 |
| *3* | *System Water Audit and Leak Detection* | *Not WC budget* | |
| *4* | *Metering w/Commodity Rates* | $0 | 0 |
| *5* | *Landscape Water Audits* | $0 | 0 |
| *6* | *Washing Machine Rebates* | $0 | 0 |
| *7* | *Public Information* | $0 | 0 |
| *8* | *School Education Program* | $0 | 0 |
| *9* | *CII Conservation Programs* | $0 | 0 |

| | | | |
|---|---|---|---|
| *10* | *Wholesale Agency Programs* | $0 | 0 |
| *11* | *Conservation Pricing* | $0 | 0 |
| *12* | *Conservation Coordinator* | $0 | 0 |
| *13* | *Water Waste Prohibition* | $0 | 0 |
| *14* | *ULFT Program* | $0 | 0 |
| | *Total* | $0 | 0 |

***Projected Budget for 3rd Year***

Year _____

| BMP # | BMP Name | Actual Expenditures (not including staff hours) | Staff Hours |
|---|---|---|---|
| *1* | *Residential Water Audits* | $0 | 0 |
| *2* | *Residential Retrofit* | $0 | 0 |
| *3* | *System Water Audit and Leak Detection* | *Not WC budget* | |
| *4* | *Metering w/Commodity Rates* | $0 | 0 |
| *5* | *Landscape Water Audits* | $0 | 0 |
| *6* | *Washing Machine Rebates* | $0 | 0 |
| *7* | *Public Information* | $0 | 0 |
| *8* | *School Education Program* | $0 | 0 |
| *9* | *CII Conservation Programs* | $0 | 0 |
| *10* | *Wholesale Agency Programs* | $0 | 0 |
| *11* | *Conservation Pricing* | $0 | 0 |
| *12* | *Conservation Coordinator* | $0 | 0 |
| *13* | *Water Waste Prohibition* | $0 | 0 |
| *14* | *ULFT Program* | $0 | 0 |
| | *Total* | $0 | 0 |

# Attachment A

*Information Required of Contractors Located in a Drainage Problem Area*

Contractor's 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), are listed, by sub-area, below. If future editions of the drainage report revise the boundaries of a drainage problem area or other factors used to determine which districts are in a drainage problem area, Reclamation will revise Attachment A to conform with the current drainage report.

1. Reclamation districts in the **Grasslands subarea**: Broadview Water District, Central California Irrigation District, Del Puerto Water District, Firebaugh Canal Water District, Mercy Springs Water District, Pacheco Water District, Panoche Water District, San Luis Canal Company, and San Luis Water District.

2. Reclamation districts in the **Westlands subarea**: James Irrigation District, Tranquillity Irrigation District, and Westlands Water District.

3. Reclamation districts in the **Tulare subarea**: Alpaugh Irrigation District, Atwell Island Water District, Lower Tule River Irrigation District, and Pixley Irrigation District.

4. Reclamation districts in the **Kern subarea**: Alpaugh Irrigation District.

Contractors listed above shall describe which recommendations prescribed in A Management Plan for Agricultural Subsurface Drainage and Related Problems on the Westside San Joaquin Valley (September 1990) have been incorporated in their water conservation programs to improve conditions in drainage problem areas. These recommendations include:

1. Source Control
2. Land Retirement
3. Drainage Water Treatment
4. Drainage Water Reuse
5. Shallow Ground water Pumping
6. Evaporation Ponds

Provide a description and level of expenditure for each activity designed to address the recommendations of the San Joaquin Valley Drainage Program. Identify how implementation of the recommendations has or will substantially reduce deep percolation on drainage problem lands. Describe which recommendations have not been implemented and why.

# **Attachment B**

*Agricultural Exemptible BMPs*

To establish that a BMP is not applicable to the district, the Plan should explain the reasons why the BMP does not apply to the district. This justification must be consistent with Section 1 of the Criteria entitled, "Describe the District." Examples of N/A for each exemptible BMP are listed below. This list is not all-inclusive.

*Section 3. B. Exemptible BMPs for Agricultural Contractors*

1. Facilitate Alternative Land Use - *N/A could include: Districts without irrigable lands that have exceptionally high water duties or whose irrigation does not contribute to significant problems.*

2. Facilitate use of available recycled water that otherwise would not be used beneficially, meets all health and safety criteria, and does not cause harm to crops or soils - *N/A could include: Completely piped systems that do not have delivery constraints.*

3. Facilitate the financing of capital improvements for on-farm irrigation systems - *None identified.*

4. Incentive pricing - *District that receives only class 2 water.*

5. a) Line or pipe ditches and canals - *N/A could include: Completely piped systems, unlined systems or sections or systems that are used as part of a planned conjunctive use program.*

   b) Regulatory reservoirs - *N/A could include: Completely piped systems that do not have delivery constraints.*

6. Increase flexibility in water ordering by, and delivery to, the water users within operational limits - *None identified.*

7. Construct and operate district spill and tailwater recovery systems - *N/A could include: Completely piped systems that do not have delivery constraints.*

8. Optimize conjunctive use of surface and ground water - *N/A could include: Districts that do not overlie a useable ground water basin and neither the district or its customers pump or use ground water.*

9. Automate canal structures - *N/A could include: Completely piped systems that do not have delivery constraints.*

# **Attachment C**

Quantifiable Objectives

*Assess Quantifiable Objectives(QOs)*. CALFED is developing QOs that provide incentives for participation in implementing Water Management activities by water users including Contractors. These activities may or may not directly benefit the water user/Contractor. If there are CALFED QOs that apply to the geographic location of your district lands, identify the QOs that apply to the district and comment on potential for Contractor participation. Reclamation's Area Office and Regional Office will have the latest copy of QOs listed by Contractor. Evaluate and comment on any BMP or practice that is complementary, or could be complementary to the QOs in the District.

# **Attachment D**

*Crop List*

barley
corn - field
oats
rice
sorghum
wheat
other cereals

alfalfa
clover
irrigated pasture
other hay
silage
other forage

cotton
hops
safflower
sugar beats
soybeans
other field crops

asparagus
beans
broccoli

cabbage
carrots
cauliflower
celery
corn
cucumbers
garlic
greens
lettuce
melons
onions
peas
peppers
potatoes
squash
tomatoes
other vegetables

Sudan grass
Bermuda grass
other grasses

apples
apricots
avocados

berries (all kinds)
cherries
grapefruit
lemon / limes
oranges / tangerines
dates
grapes
olives
peaches
pears
prunes / plums
strawberries
other fruits

almonds
pecans
pistachios
walnuts
other nut trees

ornamental nursery
joboba
other

*Irrigation Methods List*

Level basin
Furrow
Sprinkler
Low Volume
Multiple (combination of two methods)

APPENDIX "K"

# THE WEST SIDE IRRIGATION DISTRICT DRAINAGE POLICY

## SEDIMENT REDUCTION ELEMENT

The West Side Irrigation District (hereinafter called District) has been providing drainage services to both the lands inside the District as well as lands outside and upslope of the District boundaries. Drainage has been provided under unwritten, or outdated policies that have been in effect for many years. The drainage water is reused and has proven to be a good water conservation practice, beneficial to the District and Landowner or Lessee alike (landowners/water user or Drainers are used in this Element). This service, however, has caused considerable problems to the District because of the Total Suspended Solids (TSS) in the water being discharged into District facilities.

The drainage water (tailwater) from the lands outside and upslope of the District is being discharged into the District's Upper Main Canal (UMC), which conveys irrigation water to the lands within the District that is served by that facility. The lands that are served by the UMC discharge their drain water (tailwater) into the Lower Main Canal (LMC). The lands served by the LMC discharge their drain water into the District's drainage system. The drainage system was constructed as a multi-purpose system that receives both tailwater and sub-surface drainage. Sub-surface, or tile drain water does not contain sediment and will not be addressed in this Element.

The lands outside the District, in most cases, have steeper slopes than the lands inside the District and have caused the most problem. Erosion of the top soil, which is induced by irrigation water and carried by the tailwater to poorly maintained, inadequate or nonexistent sediment basins, is discharged into the District's facilities. Some of the soil settles in the canals immediately and some sediment remains in suspension and is deposited downstream. Siltation can also be seen in the water user's head ditches, which causes problems for them, but to a much lesser extent. The sediment in the canals has to be removed annually by the District. In some areas it needs to be removed more frequently or the flows in the facility would be seriously restricted. The District spends thousands of dollars per year removing this silt. A larger problem is the disposal of the soil after it has been removed from the canals and placed on the District's canal or ditch banks. The canal banks are getting to the point that the removal of additional sediment cannot be accomplished by the use of conventional equipment.

Best Management Practices (BMPs) reduce off-farm sediment by two physical processes:

1) Reducing erosion or trapping sediment after erosion takes place. Irrigation water management is the first step in not only keeping sediment on the field, but it also conserves water. Combined with other BMPs, such as tailwater tarps, off-farm sediment can be reduced considerably. Proper water management can reduce the size of the sediment basin needed, reducing the cost of installation and maintenance for the basin. Many studies made in western Stanislaus County have shown that sediment basins can reduce sediment loads up to 95% when properly sized and maintained. It is important to remember that the success of each practice or combination of practices depends on the proper use management techniques. For instance, a sprinkler system operated with proper management can have a sediment rate of almost zero, while an improperly managed sprinkler system can cause almost as much erosion as a furrow system. Many other BMPs included in those studies have also shown good results. Attached is a Table entitled SEDIMENT REDUCTION PRACTICES DESCRIPTION.

2) In 1993 and 1994 the University of California, Riverside conducted a number of studies using polyacrylamide (PAM) polymers. The study is entitled "CROWS LANDING 319 DEMONSTRATION PROJECT: Evaluation of Best Management Practices In Controlling the Off-Site Movement of Pesticides and Sediment". The study was conducted under a State Water Resources Control Board Grant Agreement, and the results were published in a report dated June 30, 1995. Additional demonstrations have been conducted by

numerous landowners/water users during 1995 and 1996 and have also shown very good results.

PAM has been registered in California by the Department of Food and Agriculture as a soil amendment, although there are still questions concerning the long-term effects on aquatic organisms. PAM is becoming more popular among water users because it prevents furrow erosion almost entirely, and is being used widely.

The West Stanislaus Hydrologic Unit Area (HUA), the entity implementing the West Stanislaus Sediment Reduction Plan, at the end of fiscal year '95 completed their 5th year of encouraging the use of Best Management Practices. The growers were asked to implement BMPs on a voluntary basis that would meet the HUA objective of 300 mg/l. At the end of the 5th year, 66% of the growers in the area had implemented BMPs that reduced the sedimentation leaving the farms at or below the objective. The remaining 34% have implemented some BMPs, but have not met the 300 mg/l objective.

The implementation of any water management practice, or system, changes the way a landowner/water user must operate, and the cost of doing business may change. Successful implementation will incorporate the new practice, or system, into the water user's way of doing things.

LANDOWNER/WATER USERS OUTSIDE THE DISTRICT

A Drainer outside The West Side Irrigation District (District) boundaries must enter into an agreement with the District for the continued discharge of drainage water into the District's system, and must agree to implement Best Management Practices adequate for the reduction of sediment to meet the TSS standards of 300 mg/l set by the Board of Directors. BMPs must be implemented by the Drainer no later than April 15, 1997.

BEST MANAGEMENT PRACTICES (BMPs) FOR LANDS OUTSIDE DISTRICT

The agreement with the District obligates the Drainer to utilize or install and correctly maintain specific BMPs to control soil erosion (sediment) from entering the District's UMC. The District makes no claims to the effectiveness of the practice or combination of practices to meet the standards established by the District. Some of these practices include:

Overall irrigation water management.
Polyacrylamide (PAM) polymer(s)
Use of tailwater ditch tarps when the flow parallels the furrow direction.
Use of adequately sized sediment basin(s).
Crop rotation
Minimum tillage/cultivating operations
Land leveling
Installation of a vegetative filter strips.

There may be other BMPs for soil erosion control not listed above. Drainers should consult their farm advisor for the best practice(s) to meet the District's tailwater discharge requirement.

The District will:

Do periodic monitoring of TSS to determine if the standards are being met.
If the standards are not being met, notify the Drainer of the violation and any needed modification(s) required to meet the District's standards shall be made immediately.
If the Drainer fails or refuses to make the necessary modifications within 72 hours of notification, order the Drainer to stop the discharge of drainage water in the District's facility.

LANDOWNER/WATER USERS INSIDE THE DISTRICT

In order for Drainers inside the District to continue receiving irrigation service they must implement Best

Management Practices sufficient to meet the Sediment Reduction Standards of 300 mg/l.

BEST MANAGEMENT PRACTICES (BMPs) FOR LANDS INSIDE THE DISTRICT

As a condition of the receipt of irrigation water, each Drainer will be required to utilize, or install and correctly maintain specific BMPs to control soil erosion (sediment) from entering the District's LMC, and/or the District's drainage system. For some of the established BMPs see list above or the attached table. The District is committed to working with Drainers in the implementation of appropriate on-farm sediment reduction practices. Meeting the standards set by the District Board of Directors will, in any case, be the sole responsibility of the Drainer.

The District will:

Do periodic monitoring of TSS to determine if the standards are being met.
If the standards are not being met, notify the Drainer of the violation and any needed modification(s) required to meet the District's standards shall be made immediately.
If the Drainer fails or refuses to make the necessary modification(s) within 72 hours of notification, curtail the deliveries of water to the land(s) in violation of the standards.

The Board of Directors has determined that human or animal sewage or similar wastes will not be allowed, under any circumstances, to be discharged into District facilities.

The Board has also determined that drain water from crops irrigated with reclaimed water or any water of questionable quality will not be permitted under this policy. If this issue is ever presented to the District it will address this issue under a separate drainage policy element.

There are a number of agencies that provide services to help growers to develop BMPs to accomplish the requirements set by the District. The Natural Resources Conservation Service (NRCS), formerly known as the Soil Conservation Service (SCS), can provide planning, engineering, and other technical services. The University of California Cooperative Extension Service can also provide technical services, although their services have been reduced because of budget cut backs. There are agricultural farm service companies in this area that can provide some of these services. PACOAST, INC., for example, is an agricultural farm service supplier that is offering polymers to their growers and there are probably more that provide advice on BMPs.

The Board of Directors has determined that these practices will be beneficial to both the District and the landowner/water users and has adopted these practices as the District's Drainage Policy - Sediment Reduction Element. The Sediment Reduction Element will take effect immediately. All Drainers, landowners/water users need to take appropriate action to comply.

ADOPTED BY THE BOARD OF DIRECTORS OF THE WEST SIDE IRRIGATION DISTRICT ON February 19, 1997.

**TABLE**

**SEDIMENT REDUCTION PRACTICES DESCRIPTION**

| Conservation Practice | Process | Effect |
|---|---|---|
| Tailwater Tarps (410-Grade Stabilization Structure) | Decrease Slope | Reduces ditch erosion, traps sediment |
| Land Leveling (464-Irrigation Land Leveling) | Decrease Slope | Reduces water velocity and |

| | | |
|---|---|---|
| | | decreases erosion |
| Cutback Stream (449-Irrigation Water Management) | Reduce Runoff | Reduce water flow when water reaches end of furrow |
| Surge Irrigation (449-Irrigation Water Management) | Reduce Runoff | Easier water management, decreases erosion |
| Sprinkler Germination (442-Irrigation System-Sprinkler) | Reduce Water | Easier water management, decreases erosion |
| Drip Irrigation (441-Irrigation System-Trickle) | Reduce Water | Easier water management decreases erosion |
| Shorten Run (449-Irrigation Water Management) | Reduce Stream Size | Less water needed to reach end of furrow, less erosion |
| Gated Pipe (430-Irrigation Water Conveyance) | Reduce Runoff | Easier water management, decreases erosion |
| Sprinkler Irrigation (442-Irrigation System-Sprinkler) | Reduce Runoff | Easier water management decreases erosion |
| Filter Strip (393-Filter Strip) | Decrease Water Velocity | Prevents furrow end erosion |
| Cover Crop (340-Cover Crop) | Decrease Water Velocity | Vegetation holds soil together, less erosion |
| Grassed Waterway (412-Grassed Waterway) | Decrease Water Velocity | Vegetation holds soil together, less erosion |
| Conservation Tillage (329-Conservation Tillage) | Decrease Water Velocity | Vegetation holds soil together, less erosion |
| One Less Cultivation (328-Conservation Cropping) | Binds Soil | Soil not broken up by cultivation, less erosion |
| Sediment Basin (350-Sediment Basin) | Decrease Water Velocity | Traps sediment |

APPENDIX "H"

DISTRICT AGRICULTURAL WATER ORDER FORM

# THE WEST SIDE IRRIGATION DISTRICT NO. 0346

| | | |
|---|---|---|
| Application For: | Date | Head |
| Location | Acres | Crop |
| Ready When | Outlet No. | |
| CVP Eligible? Yes | LMC | Phone Number |

| Remarks | Date | On | Off | Hours | Head (Inches) | Second Feet | Acre Feet Per Hr. | Total Acre Feet |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | 0.0000 | 0.00 |
| | | | | | | | 0.0000 | 0.00 |
| | | | | | | | 0.0000 | 0.00 |
| | | | | | | | 0.0000 | 0.00 |
| | | | | | | | 0.0000 | 0.00 |
| | | | | | | | 0.0000 | 0.00 |
| | | | | | | | 0.0000 | 0.00 |
| | | | | | | | 0.0000 | 0.00 |
| | | | | | | | 0.0000 | 0.00 |
| | | | | | | | 0.0000 | 0.00 |
| | | | | | | | 0.0000 | 0.00 |
| | | | | | | | 0.0000 | 0.00 |
| | | | | | | | 0.0000 | 0.00 |
| | | | | | | | 0.0000 | 0.00 |
| | | | | | | | 0.0000 | 0.00 |
| | | | | | | | 0.0000 | 0.00 |
| | | | | | | | 0.0000 | 0.00 |
| | | | | | | | 0.0000 | 0.00 |
| | | | | | | | 0.0000 | 0.00 |
| | | | | | | | 0.0000 | 0.00 |
| | | | | | | | 0.0000 | 0.00 |
| | | | | | | | 0.0000 | 0.00 |
| | | | | | | | 0.0000 | 0.00 |
| | | | | | | | | |
| | | | | TOTAL ACRE FEET | | | | 0.00 |
| | | | | | | | | |
| | | | | acre feet @ $25/acre foot | | | | $0.00 |
| | | | | | | | | |

**APPENDIX "D"**

**DISTRICT SAMPLE BILL**

# THE WEST SIDE IRRIGATION DISTRICT

NO. 4352

| Application For: | Date | Head |
|---|---|---|
| Alvarez Farms, Inc. | 6/7/2007 | 10 ft. |
| **Location** | **Acres** | **Crop** |
| Home Place | 130 | tomatoes |
| **Ready When** | **Outlet No.** | **Crop No.** |
| Thursday | 6 | T |

CVP Eligible? Yes

UMC

Phone Number

S/Alv4352

| Remarks | Date | On | Off | Hours | Head (Inches) | Second Feet | Acre Feet Per Hr. | Total Acre Feet |
|---|---|---|---|---|---|---|---|---|
| Gate #1, 3-1/2 on 24 | 6/14 | 7 a.m. | | 17 | 7-1/2 | 3.03 | 0.2525 | 4.29 |
| | 6/15 | | 3:30 p.m. | 15.5 | 7-1/2 | 3.03 | 0.2525 | 3.91 |
| 5-1/2 on 24 | 6/15 | 3:30 p.m. | | 8.5 | 7 | 4.44 | 0.3700 | 3.15 |
| | 6/16 | | | 24 | 7 | 4.44 | 0.3700 | 8.88 |
| | 6/17 | | | 24 | 7 | 4.44 | 0.3700 | 8.88 |
| | 6/18 | | | 24 | 7 | 4.44 | 0.3700 | 8.88 |
| | 6/19 | | 7 a.m. | 7 | 7 | 4.44 | 0.3700 | 2.59 |
| 3-1/2 on 24 | 6/19 | 7 a.m. | | 17 | 9 | 3.32 | 0.2767 | 4.70 |
| | 6/20 | | 6:30 a.m. | 6.5 | 9 | 3.32 | 0.2767 | 1.80 |
| | | | | | | | | |
| | | | | | | | | |
| Gate #2, 3-1/2 on 24 | 6/14 | 7 a.m. | | 17 | 22 | 5.21 | 0.4342 | 7.38 |
| | 6/15 | | | 24 | 22 | 5.21 | 0.4342 | 10.42 |
| | 6/16 | | | 24 | 22 | 5.21 | 0.4342 | 10.42 |
| | 6/17 | | 7 a.m. | 7 | 22 | 5.21 | 0.4342 | 3.04 |
| 2-1/2 on 24 | 6/17 | 7 a.m. | 4 p.m. | 9 | 31 | 4.51 | 0.3758 | 3.38 |
| 2 on 24 | 6/17 | 4 p.m. | | 8 | 31 | 3.44 | 0.2867 | 2.29 |
| | 6/18 | | | 24 | 31 | 3.44 | 0.2867 | 6.88 |
| | 6/19 | | 7 a.m. | 7 | 31 | 3.44 | 0.2867 | 2.01 |
| 1-1/2 on 24 | 6/19 | 7 a.m. | | 17 | 28 | 2.44 | 0.2033 | 3.46 |
| | 6/20 | | 6:30 a.m. | 6.5 | 28 | 2.44 | 0.2033 | 1.32 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | TOTAL ACRE FEET | | | | 97.68 |
| | | | | | | | | |
| | | | 97.68 | acre feet @ $14/acre foot | | | | $1,367.52 |
| | | | | | | | | |

O = oats; C = corn; A = alfalfa

| Name | Location | Doc. # | CVP Eligible | Outlet No | Crop No | No. of Acres | Total Acre Feet |
|---|---|---|---|---|---|---|---|
| Ornellas Dairy | Atwal - Grant Line | No 9805 | Yes | 9 | O | 83 | 84.72 |
| | | | Total Water for Atwal-Grant Line Oats | | | | 84.72 |
| | | | Water per Acre | | | | 1.02 |
| Ornellas Dairy | Atwal - Grant Line | No. 9883 | Yes | 9 | C | 83 | 96.03 |
| Ornellas Dairy | Atwal - Grant Line | No. 9918 | Yes | 9 | C | 83 | 48.08 |
| Ornellas Dairy | Atwal - Grant Line | No. 9923 | Yes | 9 | C | 83 | 26.7 |
| Ornellas Dairy | Atwal - Grant Line | No. 9963 | Yes | 9 | C | 83 | 77.57 |
| Ornellas Dairy | Atwal - Grant Line | No. 0008 | Yes | 9 | C | 83 | 64.81 |
| Ornellas Dairy | Atwal - Grant Line | No. 0058 | Yes | 9 | C | 83 | 64.96 |
| Ornellas Dairy | Atwal - Grant Line | No. 0063 | Yes | 9 | C | 83 | 42.16 |
| | | | Total Water for Atwal-Grant Line Corn | | | | 420.31 |
| | | | Water per Acre | | | | 5.06 |
| Ornellas Dairy | Atwal - Von Sosten | No. 4586 | Yes | 10 | O | 80 | 83.90 |
| | | | Total Water for Atwal-Von Sosten Oats | | | | 83.90 |
| | | | Water per Acre | | | | 1.05 |
| Ornellas Dairy | Atwal - Von Sosten | No. 4647 | Yes | 10 | C | 80 | 91.46 |
| Ornellas Dairy | Atwal - Von Sosten | No. 4685 | Yes | 10 | C | 80 | 66.31 |
| Ornellas Dairy | Atwal - Von Sosten | No. 4714 | Yes | 10 | C | 80 | 93.35 |
| Ornellas Dairy | Atwal - Von Sosten | No. 4760 | Yes | 10 | C | 80 | 96.07 |
| Ornellas Dairy | Atwal - Von Sosten | No. 4804 | Yes | 10 | C | 80 | 68.23 |
| Ornellas Dairy | Atwal - Von Sosten | No. 4824 | Yes | 10 | C | 80 | 61 |
| | | | Total Water for Atwal-Von Sosten Corn | | | | 476.42 |
| | | | Water per Acre | | | | 5.96 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Greg Pombo | SP Freeway | No. 4666 | No | 97 | T | 60 | 120.63 |
| Greg Pombo | SP Freeway | No. 4738 | NO | 97 | T | 60 | 66.46 |
| Greg Pombo | SP Freeway | No. 4776 | No | 97 | T | 60 | 63.31 |
| Greg Pombo | SP Freeway | No. 4819 | No | 97 | T | 60 | 65.59 |
| Greg Pombo | SP Freeway | No. 4843 | No | 97 | T | 60 | 50.29 |
| | | | Total Water for SP Freeway | | | | 366.28 |
| | | | Water per Acre | | | | 6.10 |
| Greg Pombo | Young | No. 9825 | No | 91 | P | 13 | 10.11 |
| Greg Pombo | Young | No. 9868 | No | 91 | P | 13 | 5.37 |
| Greg Pombo | Young | No. 9947 | NO | 91 | P | 13 | 10.14 |
| Greg Pombo | Young | No. 0017 | No | 91 | P | 13 | 2.67 |
| Greg Pombo | Young | No. 0106 | No | 91 | P | 13 | 4.49 |
| Greg Pombo | Young | No. 0142 | No | 91 | P | 13 | 8.73 |
| Greg Pombo | Young | No. 0163 | No | 91 | P | 13 | 6.28 |
| Greg Pombo | Young | No. 0184 | No | 91 | P | 13 | 7.15 |
| | | | Total Water for Young | | | | 54.94 |
| | | | Water per Acre | | | | 4.23 |
| Greg Pombo | Zambetti | No. 4627 | No | 96 | A | 110 | 70.98 |
| Greg Pombo | Zambetti | No. 4684 | No | 96 | A | 110 | 52.88 |
| Greg Pombo | Zambetti | No. 4705 | No | 96 | A | 110 | 49.41 |
| Greg Pombo | Zambetti | No. 4752 | No | 96 | A | 110 | 54.67 |
| Greg Pombo | Zambetti | No. 4776a | No | 96 | A | 110 | 54.63 |
| Greg Pombo | Zambetti | No. 4858 | No | 96 | A | 110 | 54.88 |
| Greg Pombo | Zambetti | No. 4875 | No | 96 | A | 110 | 47.29 |
| Greg Pombo | Zambetti | No. 4906 | No | 96 | A | 110 | 52.34 |
| | | | Total Water for Zambetti | | | | 437.08 |
| | | | Water per Acre | | | | 3.97 |

A = alfalfa; T = tomatoes; P = pasture

| Name | Location | Doc. # | CVP Eligible | Outlet No | Crop No | No. of Acres | Total Acre Feet |
|---|---|---|---|---|---|---|---|
| Greg Pombo | Damon's Place | No. 9852 | Yes | 60 | A | 135 | 89.81 |
| Greg Pombo | Damon's Place | No. 9917 | Yes | 60 | A | 135 | 74.64 |
| Greg Pombo | Damon's Place | No. 9941 | Yes | 60 | A | 135 | 66.62 |
| Greg Pombo | Damon's Place | No. 0007 | Yes | 60 | A | 135 | 65.31 |
| Greg Pombo | Damon's Place | No. 0041 | Yes | 60 | A | 135 | 42.75 |
| Greg Pombo | Damon's Place | No. 0091 | Yes | 60 | A | 135 | 72.83 |
| Greg Pombo | Damon's Place | No. 0156 | Yes | 60 | A | 135 | 57.79 |
| Greg Pombo | Damon's Place | No. 0128 | Yes | 60 | A | 135 | 48.29 |
| | | | Total Water for Damon's | | | | 518.04 |
| | | | Water per Acre | | | | 3.84 |
| Greg Pombo | Shop | No. 9853 | No | 90 | A | 126 | 99.44 |
| Greg Pombo | Shop | No. 9902 | No | 90 | A | 126 | 75.98 |
| Greg Pombo | Shop | No. 9924 | No | 90 | A | 126 | 62.07 |
| Greg Pombo | Shop | No. 9991 | NO | 90 | A | 126 | 73.46 |
| Greg Pombo | Shop | No. 0018 | No | 90 | A | 126 | 2.54 |
| Greg Pombo | Shop | No. 0067 | No | 90 | A | 126 | 62.21 |
| Greg Pombo | Shop | No. 0109 | No | 90 | A | 126 | 56.36 |
| Greg Pombo | Shop | No. 0126 | No | 90 | A | 126 | 0.8 |
| Greg Pombo | Shop | No. 0150 | No | 90 | A | 126 | 61.62 |
| Greg Pombo | Shop | No. 0029 | No | 90 | A | 126 | 66.98 |
| | | | Total Water for Shop | | | | 561.46 |
| | | | Water per Acre | | | | 4.46 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Ornellas Dairy | Fagundes | No. 9898 | Yes | 29 | C | 25 | 29.5 |
| Ornellas Dairy | Fagundes | No. 9940 | Yes | 29 | C | 25 | 19.61 |
| Ornellas Dairy | Fagundes | No. 9987 | Yes | 29 | C | 25 | 29.01 |
| Ornellas Dairy | Fagundes | No. 0021 | Yes | 29 | C | 25 | 36.11 |
| Ornellas Dairy | Fagundes | No. 0050 | Yes | 29 | C | 25 | 24.29 |
| Ornellas Dairy | Fagundes | No. 0094 | Yes | 29 | C | 25 | 31.61 |
| | | | Total Water for Fagundes | | | | 170.13 |
| | | | Water per Acre | | | | 6.81 |
| Ornellas Dairy | Lammers Rd. | No. 4600 | Yes | 54a | A | 75 | 29.65 |
| Ornellas Dairy | Lammers Rd. | No. 4611 | Yes | 54a | A | 75 | 27.39 |
| Ornellas Dairy | Lammers Rd. | No. 4648a | Yes | 54a | A | 75 | 39.24 |
| Ornellas Dairy | Lammers Rd. | No. 4683 | Yes | 54a | A | 75 | 36.08 |
| Ornellas Dairy | Lammers Rd. | No. 4732a | Yes | 54a | A | 75 | 46.38 |
| Ornellas Dairy | Lammers Rd. | No. 4770a | Yes | 54a | A | 75 | 35.7 |
| Ornellas Dairy | Lammers Rd. | No. 4825 | Yes | 54a | A | 75 | 36.18 |
| Ornellas Dairy | Lammers Rd. | No. 4864 | Yes | 54a | A | 75 | 33.29 |
| Ornellas Dairy | Lammers Rd. | No. 4887 | Yes | 54a | A | 75 | 33.8 |
| Ornellas Dairy | Lammers Rd. | No. 4924 | Yes | 54a | A | 75 | 36.18 |
| | | | Total Water for Lammers Alfalfa | | | | 353.89 |
| | | | Water per Acre | | | | 4.72 |
| Ornellas Dairy | Lammers Rd. | No. 4648 | Yes | 54b | C | 35 | 94.93 |
| Ornellas Dairy | Lammers Rd. | No. 4695 | Yes | 54b | C | 35 | 34.86 |
| Ornellas Dairy | Lammers Rd. | No. 4732 | Yes | 54b | C | 35 | 50.74 |
| Ornellas Dairy | Lammers Rd. | No. 4770 | Yes | 54b | C | 35 | 44.48 |
| Ornellas Dairy | Lammers Rd. | No. 4809 | Yes | 54b | C | 35 | 36.24 |
| Ornellas Dairy | Lammers Rd. | No. 4879 | Yes | 54b | C | 35 | 37.57 |
| | | | Total Water for Lammers Corn | | | | 298.82 |
| | | | Water per Acre | | | | 8.54 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Ornellas Dairy | Reeves Rd. | No. 9806 | Yes | 85 | O | 38 | 72.32 |
| | | | Total Water for Reeves Oats | | | | 72.32 |
| | | | Water per Acre | | | | 1.90 |
| Ornellas Dairy | Reeves Rd. | No. 9897 | Yes | 85 | C | 38 | 44.67 |
| Ornellas Dairy | Reeves Rd. | No. 9939 | Yes | 85 | C | 38 | 37.83 |
| Ornellas Dairy | Reeves Rd. | No. 9988 | Yes | 85 | C | 38 | 46.04 |
| Ornellas Dairy | Reeves Rd. | No. 0022 | Yes | 85 | C | 38 | 41.57 |
| Ornellas Dairy | Reeves Rd. | No. 0051 | Yes | 85 | C | 38 | 36.72 |
| Ornellas Dairy | Reeves Rd. | No. 0095 | Yes | 85 | C | 38 | 40.85 |
| | | | Total Water for Reeves Rd. | | | | 247.68 |
| | | | Water per Acre | | | | 6.52 |
| Ornellas Dairy | Teixeira - Costa Dairy | No. 9965 | Yes | 24d | C | 91 | 86.98 |
| Ornellas Dairy | Teixeira - Costa Dairy | No. 0047 | Yes | 24d | C | 91 | 72.84 |
| Ornellas Dairy | Teixeira - Costa Dairy | No. 0110 | Yes | 24d | C | 91 | 76.93 |
| Ornellas Dairy | Teixeira - Costa Dairy | No. 9922 | Yes | 24d | C | 91 | 123.57 |
| Ornellas Dairy | Teixeira - Costa Dairy | No. 0009 | Yes | 24a | C | 91 | 79.52 |
| Ornellas Dairy | Teixeira - Costa Dairy | No. 0069 | Yes | 24d | C | 91 | 96.25 |
| | | | Total Water for Teixeira | | | | 536.09 |
| | | | Water per Acre | | | | 5.89 |

APPENDIX "G"

NOTICE OF DISTRICT EDUCATIONAL PROGRAMS AND SERVICES AVAILABLE TO CUSTOMERS


# THE WEST SIDE IRRIGATION DISTRICT

1320 N. Tracy Blvd., Tracy, CA 95376
P.O. Box 177, Tracy, CA 95378-0177
(209) 835-0503
Fax: (209) 835-2702
e-mail: wsid@comcast.net


*Memorandum*

Barbara Kleinert
Secretary, Treasurer

November 28, 2007

TO: 2007 Water Users

FROM: Barb Kleinert

RE: Annual Water Usage

Please find enclosed a recap of your 2007 irrigations. We are hoping that this information helps you to be successful in your water conservation efforts.

Wishing you all a wonderful and joyous Christmas season. Sample reports following:

ORNELLAS DAIRY:

| Name | Location | Doc. # | Outlet No | Crop No | No. of Acres | Total Acre Feet |
|---|---|---|---|---|---|---|
| Ornellas Dairy | Atwal - Grant Line | No. 9479 | 9 | corn | 83 | 95.28 |
| Ornellas Dairy | Atwal - Grant Line | No. 9516 | 9 | corn | 83 | 70.65 |
| Ornellas Dairy | Atwal - Grant Line | No. 9567 | 9 | corn | 83 | 80.43 |
| Ornellas Dairy | Atwal - Grant Line | No. 9595 | 9 | corn | 83 | 58.99 |
| Ornellas Dairy | Atwal - Grant Line | No. 9636 | 9 | corn | 83 | 66.34 |
| Ornellas Dairy | Atwal - Grant Line | No. 9661 | 9 | corn | 83 | 62.42 |
| Ornellas Dairy | Atwal - Grant Line | No. 9688 | 9 | corn | 83 | 71.11 |
| | | Total Water for Atwal-Grant Line Corn | | | | 505.22 |
| | | Water Per Acre | | | | 6.09 |
| Ornellas Dairy | Atwal - Von Sosten | No. 4272 | 10 | corn | 80 | 119.74 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Ornellas Dairy | Atwal - Von Sosten | No. 4293 | 10 | corn | 80 | 73.52 |
| Ornellas Dairy | Atwal - Von Sosten | No. 4340 | 10 | corn | 80 | 79.5 |
| Ornellas Dairy | Atwal - Von Sosten | No. 4369 | 10 | corn | 80 | 62.53 |
| Ornellas Dairy | Atwal - Von Sosten | No. 4420 | 10 | corn | 80 | 71.81 |
| Ornellas Dairy | Atwal - Von Sosten | No. 4441 | 10 | corn | 80 | 61.73 |
| | | Total Water for Atwal-Von Sosten Corn | | | | 468.83 |
| | | Water Per Acre | | | | 5.86 |
| Ornellas Dairy | Lammers Rd. | No. 4245 | 54 | alfalfa | 75 | 47.23 |
| Ornellas Dairy | Lammers Rd. | No. 4273 | 54 | alfalfa | 75 | 35.49 |
| Ornellas Dairy | Lammers Rd. | No. 4303 | 54 | alfalfa | 75 | 38.13 |
| Ornellas Dairy | Lammers Rd. | No. 4330 | 54 | alfalfa | 75 | 40.19 |
| Ornellas Dairy | Lammers Rd. | No. 4356 | 54 | alfalfa | 75 | 36.43 |
| Ornellas Dairy | Lammers Rd. | No. 4410 | 54 | alfalfa | 75 | 50 |
| Ornellas Dairy | Lammers Rd. | No. 4442 | 54 | alfalfa | 75 | 34.67 |
| Ornellas Dairy | Lammers Rd. | No. 4496 | 54 | alfalfa | 75 | 38.51 |
| Ornellas Dairy | Lammers Rd. | No. 4508 | 54 | alfalfa | 75 | 30.9 |
| Ornellas Dairy | Lammers Rd. | No. 4554 | 54 | alfalfa | 75 | 33.67 |
| | | Total Water for Lammers Rd. Alfalfa | | | | 385.22 |
| | | Water Per Acre | | | | 5.14 |
| Ornellas Dairy | Reeves Rd. | No. 9455 | 85 | corn | 38 | 49.15 |
| Ornellas Dairy | Reeves Rd. | No. 9490 | 85 | corn | 38 | 30.92 |
| Ornellas Dairy | Reeves Rd. | No. 9542 | 85 | corn | 38 | 31.74 |
| Ornellas Dairy | Reeves Rd. | No. 9571 | 85 | corn | 38 | 30.13 |
| Ornellas Dairy | Reeves Rd. | No. 9605 | 85 | corn | 38 | 27.64 |
| Ornellas Dairy | Reeves Rd. | No. 9637 | 85 | corn | 38 | 24.07 |
| | | Total Water for Reeves Rd. Corn | | | | 193.65 |
| | | Water Per Acre | | | | 5.1 |
| Ornellas Dairy | Teixeira - Costa Dairy | No. 9484 | 24b | corn | 40 | 10.27 |
| Ornellas Dairy | Teixeira - Costa Dairy | No. 9509 | 24b | corn | 40 | 34.15 |
| Ornellas Dairy | Teixeira - Costa Dairy | No. 9550 | 24b | corn | 40 | 36.55 |
| Ornellas Dairy | Teixeira - Costa Dairy | No. 9589 | 24b | corn | 40 | 26.71 |
| Ornellas Dairy | Teixeira - Costa Dairy | No. 9618 | 24b | corn | 40 | 35.65 |
| Ornellas Dairy | Teixeira - Costa Dairy | No. 9655 | 24b | corn | 40 | 39.09 |
| Ornellas Dairy | Teixeira - Costa Dairy | No. 9681 | 24b | corn | 40 | 29.46 |
| Ornellas Dairy | Teixeira - Costa Dairy | No. 9697 | 24b | corn | 40 | 19.61 |
| | | Total Water for Teixeira Corn | | | | 231.49 |
| | | Water Per Acre | | | | 5.79 |

## MIKE MATTOS:

| Name | Location | Doc. # | Outlet No | Crop No | No. of Acres | Total Acre Feet |
|---|---|---|---|---|---|---|
| Mike Mattos | Oliveira | No. 9403 | 52 | rye grass | 160 | 135.5 |
| Mike Mattos | Oliveira | No. 9477 | 52 | rye grass | 160 | 128.28 |
| Mike Mattos | Oliveira | No. 9507 | 52 | rye grass | 160 | 107.15 |
| Mike Mattos | Oliveira | No. 9553 | 52 | rye grass | 160 | 156.39 |
| Mike Mattos | Oliveira | No. 9587 | 52 | rye grass | 160 | 122.49 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Mike Mattos | Oliveira | No. 9638 | 52 | rye grass | 160 | 122.76 |
| Mike Mattos | Oliveira | No. 9680 | 52 | rye grass | 160 | 98.49 |
| Mike Mattos | Oliveira | No. 9728 | 52 | rye grass | 160 | 136.45 |
| Mike Mattos | Oliveira | No. 9764 | 52 | rye grass | 160 | 79.57 |
| | | Total Water for Oliveira Rye Grass | | | | 1087.08 |
| | | Water Per Acre | | | | 6.79 |
| Mike Mattos | Pombo-Lammers | No. 4233 | 70 | oats | 150 | 79.26 |
| Mike Mattos | Pombo-Lammers | No. 4249 | 70 | oats | 150 | 59.35 |
| | | Total Water for Pombo-Lammers Oats | | | | 138.61 |
| | | Water Per Acre | | | | 0.92 |
| Mike Mattos | Pombo-Lammers | No. 4288 | 70 | alfalfa | 150 | 70.1 |
| Mike Mattos | Pombo-Lammers | No. 4311 | 70 | alfalfa | 150 | 63.39 |
| Mike Mattos | Pombo-Lammers | No. 4326 | 70 | alfalfa | 150 | 35.07 |
| Mike Mattos | Pombo-Lammers | No. 4347 | 70 | alfalfa | 150 | 32.83 |
| Mike Mattos | Pombo-Lammers | No. 4365 | 70 | alfalfa | 150 | 77.16 |
| Mike Mattos | Pombo-Lammers | No. 4403 | 70 | alfalfa | 150 | 37.68 |
| Mike Mattos | Pombo-Lammers | No. 4436 | 70 | alfalfa | 150 | 82.58 |
| Mike Mattos | Pombo-Lammers | No. 4466 | 70 | alfalfa | 150 | 31.08 |
| Mike Mattos | Pombo-Lammers | No. 4495 | 70 | alfalfa | 150 | 46.25 |
| Mike Mattos | Pombo-Lammers | No. 4502 | 70 | alfalfa | 150 | 80.93 |
| Mike Mattos | Pombo-Lammers | No. 4533 | 70 | alfalfa | 150 | 38.03 |
| Mike Mattos | Pombo-Lammers | No. 4551 | 70 | alfalfa | 150 | 45.90 |
| Mike Mattos | Pombo-Lammers | No. 4560 | 70 | alfalfa | 150 | 35.12 |
| Mike Mattos | Pombo-Lammers | No. 4567 | 70 | alfalfa | 150 | 33.86 |
| Mike Mattos | Pombo-Lammers | No. 4573 | 70 | alfalfa | 150 | 26.20 |
| | | Total Water for Pombo-Lammers Alfalfa | | | | 736.18 |
| | | Water Per Acre | | | | 4.91 |
| Mike Mattos | O'Connor | No. 4457 | 83 | alfalfa | 60 | 26.71 |
| Mike Mattos | O'Connor | No. 4234 | 83 | alfalfa | 60 | 31.66 |
| Mike Mattos | O'Connor | No. 4287 | 83 | alfalfa | 60 | 24.73 |
| Mike Mattos | O'Connor | No. 4312 | 83 | alfalfa | 60 | 32.78 |
| Mike Mattos | O'Connor | No. 4342 | 83 | alfalfa | 60 | 27.52 |
| Mike Mattos | O'Connor | No. 4366 | 83 | alfalfa | 60 | 40.01 |
| Mike Mattos | O'Connor | No. 4424 | 83 | alfalfa | 60 | 25.78 |
| Mike Mattos | O'Connor | No. 4471 | 83 | alfalfa | 60 | 10.73 |
| Mike Mattos | O'Connor | No. 4501 | 83 | alfalfa | 60 | 30.32 |
| Mike Mattos | O'Connor | No. 4536 | 83 | alfalfa | 60 | 25.37 |
| Mike Mattos | O'Connor | No. 4564 | 83 | alfalfa | 60 | 23.51 |
| Mike Mattos | O'Connor | No. 4574 | 83 | alfalfa | 60 | 20.21 |
| Mike Mattos | O'Connor | No. 4250 | 83 | alfalfa | 60 | 23.56 |
| | | Total Water for O'Connor Alfalfa | | | | 342.89 |
| | | Water Per Acre | | | | 5.71 |

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## Mobile Labs

CIMIS helps irrigators develop water budgets to determine when to irrigate and how much water to apply. In order to have an efficient irrigation schedule the grower or landscape manager must know the performance of the irrigation system.

Successful irrigation scheduling depends on the performance of an irrigation system. In particular, it depends on distribution uniformity (The uniformity with which water is applied across the field) and therefore, the efficiency of the irrigation system. The farmer or manager must therefore know the performance of his/her irrigation system.

Mobile laboratories measure water applications rates and system distribution uniformity and give recommendations for irrigation system improvement if necessary. Mobile Laboratory services are provided by a variety of public agencies. Similar services are also provided by some consultants.

DWR is attempting to expand the mobile lab service to small farms and landscape water users. Increasing uniformity, decreasing over-application of water, and reducing runoff saves water to help sustain California's agricultural predominance. Education is the key to the management of water resources and Mobile Labs can help in that education.

Improving the performance of your irrigation system has several benefits:

- Increased application efficiency
- Increased yields
- Increased profits
- Improved water quality
- Decreased amount of water applied
- Decreased energy usage
- Decreased nutrient leaching
- Decreased tail water runoff

For more information about mobile laboratories, click here.


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## Eco/Mobile Irrigation Lab Evaluations

**Mobile Labs evaluate several types of irrigation systems:**

- Flood/Furrow - Advance and recession times, infiltration uniformity, runoff potential and pump effici
  - Furrow
  - Border Strip
  - Level Basin
  - Diked Furrow
  - Cycle Surge
- Sprinklers - Field pressure uniformity, catch can evaluation for uniformity, energy input, runoff poter and pump efficiency.
  - Portable Move
  - Wheel Line
  - Solid Set
  - Center Pivots
  - Lateral Move
  - LEPA
- Micro/drip - Emitter uniformity, system maintenance evaluation, energy input, and pump efficiency.
  - Drip Line
  - Drip Tape
  - Micro Spray
  - Micro Spinner
- Pump Plant Efficiency
  - Energy input
  - Pumping depth, gallons per minute, discharge pressure.

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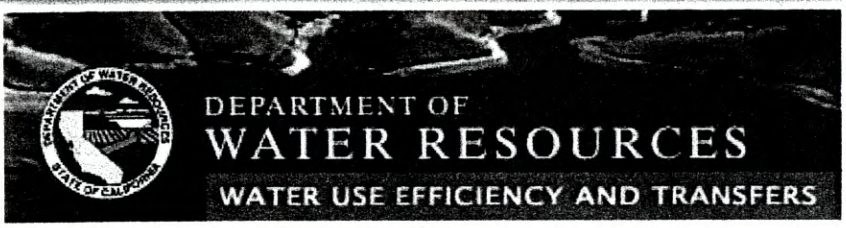




Eco/Mobile Irrigation System Evaluation

## Sprinkler Evaluation:

The Mobile Labs perform field evaluation of the sprinkler systems during a normal application of water. The will need a few moments of the irrigator's time for an interview to learn about management decisions and irrigation scheduling.

The highly trained team of technicians will inspect the equipment and make notes of the system equipment any oblivious maintenance issues, such as mismatched heads/nozzles general installation of pump station, filters, valves and main line. They will make general notes on the classification of soil type and topography the field.

The lab technician will lay out catch cans to measure the irrigation application amounts at various points in field. After an irrigation set, the catchments will be collected, measured and recorded, and distribution unifo calculated.

***Irrigation Distribution Uniformity:*** defined as the application in the lowest one-quarter of the field divided the average application across the field.

The general performance will determine the amount of water applied during the normal irrigation.

***Distribution Uniformity:***

$$DU = \frac{\textit{Average Lowest Quarter Catchments}}{\textit{Average Catchment}}$$

## Drip:

The Mobile Lab comes out to perform field evaluation of the drip/micro systems during a normal application water. The lab will need a few moments of the irrigator's time for an interview to learn about management decisions and irrigation scheduling.

The highly trained team of technicians will inspect the equipment and make notes of the system equipment any oblivious maintenance issues, such as mismatched drip emitters/nozzle jets, general installation of pun station, filters, valves and main line. They will make general notes on the classification of soil type and topography of the field.

The lab will measure and carefully record emitter emission at a multitude of locations in the field. These measurements are used to calculate the emission uniformity of the field.

***Irrigation Emission Uniformity:*** defined as the application in the lowest quarter of the field divided by the average application across the field.

The general performance will determine the amount of water applied during the normal irrigation.

The EU evaluation will help make irrigation decisions based on the lowest water application area.

Drip systems apply water to a smaller area than, say, sprinkler or flood irrigation. When the amount of water applied is calculated based on the same assumptions as sprinklers or flood irrigation (tree or row spacing), a greater amount of water may penetrate below the root zone. The wetted perimeter needs to be considered to avoid water loss beyond the root zone.

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# Station Detail Report

The **Station Detail Report** provides detailed information on CIMIS stations including the region in which they ar located, nearby city, installation dates, termination dates (if inactive), geographic locations (latitude and longitude), elevations above see level, zip codes, surface types (grass or alfalfa), station site descriptions, and photographs of the stations.

## Patterson #161

San Joaquin Valley Region Stanislaus County San Joaquin District Nearby city is Patterson

- Activated On August 23, 1999
- Station is Active
- ETo Reported
- Reference Surface is Grass
- Datalogger is CR10

Station Picture Unavailable

Station 161
North | **South** | East | West |

## Geographic Information

| | |
|---|---|
| Elevation (ft): | 183 |
| Latitude: | 37°26'24"N / 37.44 |
| Longitude: | 121°08'20"W / -121.14 |

## Associated Zip Codes

95363, 95313, 95387

## Station Siting Description

DATE: 11-18-02

STATION#:161
STATION NAME: Patterson
ETO ZONE: 14
PREVAILING WINDS: WNW
LOCAL CHARACTER: Agricultural and increasingly residential. Agricultural activities include almonds, truck crops, and other fruit and nut crops.

DESCRIPTION OF STATION SITE:
Located on a turf farm. The turf is well maintained and sprinkler irrigated.

NORTH:
350+ ft: Turf

EAST:
350+ ft: Turf

SOUTH:
350+ ft: Turf --- unpaved access road runs south from the station

WEST:
350+ ft: Turf --- unpaved access road runs west from the station.

COMMENTS:
The station data will be significantly affected when turf is harvested from the vicinity of the station. This will continue until the turf has returned to 100% cover. There is not at any one time more than 1/3 of the surroundin turf harvested. The turf is replaced with in weeks.


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# Daily Report

Rendered in English Units.
December 8, 2008 - December 14, 2008
Printed on December 15, 2008

## Modesto - San Joaquin Valley - Station 71

| Date | CIMIS ETo (in) | Precip (in) | Sol Rad (Ly/day) | Avg Vap (mBars) | Max Air Temp (°F) | Min Air Temp (°F) | Avg Air Temp (°F) | Max Rel Hum (%) | Min Rel Hum (%) | Avg Rel Hum (%) | Dew Pt (°F) | Avg wSpd (MPH) | Wnd Run (miles) | Avg Soil Temp (°F) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12/08/2008 | 0.00 | 0.00 | 33 | 7.4 | 43.9 | 28.7 | 37.9 | 97 | 89 | 96 | 36.9 | 3.2 | 76.6 | 53.0 |
| 12/09/2008 | 0.04 | 0.01 | 192 | 7.5 | 53.4 | 29.0 | 40.3 | 97 | 65 | 88 | 37.2 | 2.6 | 63.8 | 51.9 |
| 12/10/2008 | 0.04 | 0.00 | 200 | 7.2 | 63.9 | 27.4 | 40.9 | 97 | 42 | 82 | 35.9 | 1.8 | 43.0 | 51.1 |
| 12/11/2008 | 0.02 | 0.01 | 149 | 7.4 | 54.1 | 30.2 | 39.2 | 96 | 65 | 91 | 36.7 | 2.5 | 61.2 | 50.6 |
| 12/12/2008 | 0.04 | 0.01 | 166 | 8.7 | 60.5 | 31.8 | 45.2 | 97 | 52 | 84 | 40.8 | 3.7 | 90.0 | 50.7 |
| 12/13/2008 | 0.08 | 0.00 | 188 | 6.5 | 55.0 | 28.9 | 45.5 | 91 | 38 | 63 | 33.5 | 8.5 | 204.0 | 51.4 |
| 12/14/2008 | 0.02 | 0.12 | 96 | 6.7 | 48.0 | 26.8 | 38.5 | 94 | 65 | 85 | 34.4 | 7.9 | 189.5 | 49.9 |
| Tots/Avgs | 0.24 | 0.15 | 146 | 7.3 | 54.1 | 29.0 | 41.1 | 96 | 59 | 84 | 36.5 | 4.3 | 104.0 | 51.2 |

## Patterson - San Joaquin Valley - Station 161

| Date | CIMIS ETo (in) | Precip (in) | Sol Rad (Ly/day) | Avg Vap (mBars) | Max Air Temp (°F) | Min Air Temp (°F) | Avg Air Temp (°F) | Max Rel Hum (%) | Min Rel Hum (%) | Avg Rel Hum (%) | Dew Pt (°F) | Avg wSpd (MPH) | Wnd Run (miles) | Avg Soil Temp (°F) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12/08/2008 | 0.01 | 0.00 | 55 | 7.4 | 45.5 | 33.0 | 38.9 | 95 | 85 | 92 | 36.8 | 4.8 | 116.2 | 51.4 |
| 12/09/2008 | 0.03 | 0.00 | 148 | 7.1 | 51.2 | 30.7 | 41.1 | 94 | 62 | 81 | 35.6 | 4.3 | 104.4 | 50.0 |
| 12/10/2008 | 0.04 | 0.00 | 183 | 6.9 | 60.1 | 31.2 | 43.3 | 92 | 47 | 73 | 35.1 | 3.2 | 76.6 | 49.3 |
| 12/11/2008 | 0.03 | 0.00 | 163 | 6.7 | 52.5 | 29.8 | 40.0 | 95 | 65 | 80 | 34.3 | 4.0 | 95.4 | 49.1 |
| 12/12/2008 | 0.04 | 0.00 | 157 | 8.0 | 62.2 | 33.1 | 44.8 | 94 | 46 | 80 | 38.9 | 5.3 | 128.4 | 49.2 |
| 12/13/2008 | 0.09 | 0.00 | 178 | 5.3 | 55.7 | 33.0 | 46.3 | 89 | 29 | 50 | 28.5 | 7.0 | 169.2 | 49.8 |
| 12/14/2008 | 0.03 | 0.23 | 74 | 6.3 | 47.5 | 27.2 | 39.4 | 90 | 58 | 77 | 32.8 | 7.7 | 186.9 | 48.1 |
| Tots/Avgs | 0.27 | 0.23 | 137 | 6.8 | 53.5 | 31.1 | 42.0 | 93 | 56 | 76 | 34.6 | 5.2 | 125.3 | 49.6 |

## Denair - San Joaquin Valley - Station 168

| Date | CIMIS ETo (in) | Precip (in) | Sol Rad (Ly/day) | Avg Vap (mBars) | Max Air Temp (°F) | Min Air Temp (°F) | Avg Air Temp (°F) | Max Rel Hum (%) | Min Rel Hum (%) | Avg Rel Hum (%) | Dew Pt (°F) | Avg wSpd (MPH) | Wnd Run (miles) | Avg Soil Temp (°F) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12/08/2008 | 0.00 R | 0.01 | 44 | 6.4 | 40.5 | 28.2 | 35.2 | 93 | 86 | 92 | 33.2 | 1.4 | 34.5 | 51.5 |
| 12/09/2008 | 0.03 R | 0.00 | 163 | 6.4 | 52.0 | 26.6 | 37.0 | 94 | 60 | 86 | 33.1 | 1.0 | 24.6 | 50.8 |
| 12/10/2008 | 0.03 | 0.00 | 165 | 5.9 | 55.2 | 24.8 | 35.2 | 94 | 55 | 85 | 31.1 | 1.4 | 33.2 | 49.7 |
| 12/11/2008 | 0.02 R | 0.01 | 124 | 6.6 | 50.0 | 29.9 | 36.8 | 93 | 70 | 89 | 33.9 | 1.0 I | 24.1 I | 49.2 |
| 12/12/2008 | 0.02 R | 0.01 | 147 | 7.1 | 55.6 | 28.4 | 40.2 | 93 | 59 | 84 | 35.8 | 1.0 I | 24.1 I | 49.4 |
| 12/13/2008 | 0.03 R | 0.00 | 157 | 5.6 | 51.1 | 27.3 | 42.6 | 88 | 35 | 60 | 29.6 | 1.0 I | 24.1 I | 50.1 |
| 12/14/2008 | 0.02 R | 0.12 | 117 | 5.6 | 47.8 | 25.8 | 37.3 | 90 | 51 | 74 | 29.9 | 1.0 I | 24.1 I | 48.8 |
| Tots/Avgs | 0.15 | 0.15 | 131 | 6.2 | 50.3 | 27.3 | 37.8 | 92 | 59 | 81 | 32.4 | 1.1 | 27.0 | 49.9 |

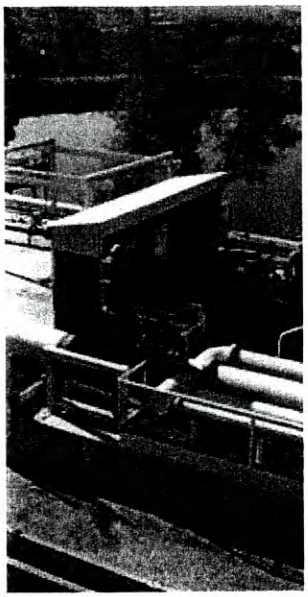
## Oakdale - San Joaquin Valley - Station 194

| Date | CIMIS ETo (in) | Precip (in) | Sol Rad (Ly/day) | Avg Vap (mBars) | Max Air Temp (°F) | Min Air Temp (°F) | Avg Air Temp (°F) | Max Rel Hum (%) | Min Rel Hum (%) | Avg Rel Hum (%) | Dew Pt (°F) | Avg wSpd (MPH) | Wnd Run (miles) | Avg Soil Temp (°F) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12/08/2008 | 0.00 | 0.01 | 46 | 8.0 | 43.8 | 33.4 | 39.2 | 100 | 95 | 99 | 38.9 | 4.2 | 102.5 | 52.3 |
| 12/09/2008 | 0.04 | 0.00 | 212 | 8.3 | 55.8 | 33.2 | 42.5 | 99 | 65 | 90 | 39.7 | 2.7 | 65.6 | 51.5 |
| 12/10/2008 | 0.04 | 0.01 | 207 | 7.7 | 59.5 | 29.8 | 41.7 | 99 | 54 | 86 | 37.8 | 2.7 | 66.0 | 50.8 |
| 12/11/2008 | 0.02 | 0.00 | 132 | 8.4 | 52.4 | 32.0 | 41.1 | 99 | 82 | 96 | 40.1 | 3.2 | 77.7 | 50.5 |
| 12/12/2008 | 0.03 | 0.01 | 181 | 8.9 | 58.2 | 32.7 | 43.3 | 100 | 69 | 93 | 41.4 | 3.9 | 94.9 | 50.3 |
| 12/13/2008 | 0.06 | 0.01 | 185 | 7.0 | 54.0 | 31.1 | 45.0 | 95 | 41 | 69 | 35.3 | 7.1 | 172.2 | 50.5 |
| 12/14/2008 | 0.03 | 0.14 | 118 | 6.7 | 48.1 | 27.4 | 39.4 | 95 | 60 | 82 | 34.4 | 8.8 | 213.3 | 49.3 |
| Tots/Avgs | 0.22 | 0.18 | 154 | 7.9 | 53.1 | 31.4 | 41.7 | 98 | 67 | 88 | 38.2 | 4.7 | 113.2 | 50.7 |

| Flag Legend | | |
|---|---|---|
| A - Historical Average | I - Ignore | R - Far out of normal range |
| C or N - Not Collected | M - Missing Data | S - Not in service |
| H - Hourly Missing or Flagged Data | Q - Related Sensor Missing | Y - Moderately out of range |
| Conversion Factors | | |
| Ly/day/2.065=W/sq.m | inches * 25.4 = mm | (F-32) * 5/9 = c |
| mph * 0.447 = m/s | mBars * 0.1 = kPa | -- |

## :: About ITRC ::

ITRC is a center of excellence housed within the BioResource and Agricultural Engineering (BRAE) Department Polytechnic State University (Cal Poly) in San Luis Obispo. The linkage to the BRAE Department is unique amc centers - ITRC's organization was specifically developed as such to ensure long-term positive benefits to Cal Pc academic irrigation teaching program - which provides long-term benefits to California and the nation.



Cal Poly has a long tradition of providing pragmatic irrigation training and technical expertise to industry, farmers, irrigation districts, and state/federal agencies. ITRC was officially formed in 1989, and continues to be self-supporting through contracts. Its work is approximately 65% direct technical assistance, 15% training, and 20% research (both applied government-funded, and industry). Focus areas include:

- Irrigation projects (irrigation district modernization, water balances, river basin return flow issues, SCADA, canal automation, pump automation, flow measurement, energy consumption, and efficiency);
- Farm irrigation (drip, surface, and sprinkler irrigation; drainage; salinity; energy consumption; irrigation evaluations; evapotranspiration; pumps);
- Landscape (primarily development of urban water conservation programs).

ITRC's modern engineering offices, in addition to providing professional resources for ITRC staff, also house two training rooms and office space for both graduate and undergraduate students. Outdoors is the unique Water Resources Facility to demonstrate pumps, pump testing, flow measurement, SCADA, and canal automation. Additionally, the outdoor Irrigation Practices Field contains a complete assortment of on-farm and landscape irrigation systems and equipment.

The center is run by Dr. Charles Burt (Chairman and Founder) and Dr. Stuart Styles (Director) - both recognizec internationally as irrigation experts - with an excellent professional staff of 13 persons. Additionally, 15-25 stude at any one time to provide support. ITRC utilizes specialists from within and outside the university to provide ad expertise. As an example, ITRC has worked for several years with an international team to develop sophisticate automation algorithms.

ITRC is active throughout the western U.S. and the world in irrigation research, technical assistance, and environmental/energy assessments. For example:

- ITRC has numerous active irrigation district modernization projects throughout California, as well as in W northern Oregon, Colorado, Arizona, Idaho, and Oklahoma. Most involve some aspect of energy consen environmental improvement while simultaneously modernizing irrigation districts.
- The World Bank, FAO/UN, UNDP, and others fund ITRC to provide expertise on irrigation modernization Philippines, Vietnam, Kyrgyzstan, Azerbaijan, India, Pakistan, Mexico, and many other countries.
- Manufacturers hire ITRC for a wide variety of projects ranging from testing of polymers in irrigation on fie determining friction on large diameter pipes, to examining the performance of new sprinklers and drip tap

field and laboratory conditions.

- ITRC has been a major innovator in water-related peak load reduction and electrical energy conservation California Energy Commission, utilities, and others.
- ITRC actively participates in various water-related technical sessions and workshops of professional orga such as the US Committee on Irrigation and Drainage, and the American Society of Civil Engineers.



For questions regarding this web page, please contact the webmaster
Last Update: 11/06/2008

Map of San Luis Obispo
Map of ITRC (in Building 08)
Directions to ITRC

**California Polytechnic State University**
San Luis Obispo, CA 93407-0730
Phone: 805.756.2434 Fax: 805.756.2433

CAL POLY Irrigation Training and Research Center

ITR
moving wa



## :: Online Reports ::

ITRC has provided selected reports written by our staff for use online. Below, the report titles and other informati been provided. The hyperlink will take you to a download link or a table of contents. The table of contents lets yc individual chapters for reading and printing. A step-by-step process to view the reports has been provided below

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3. Look below and find the report that you would like to read.
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*Reports listed in alphabetical order*

### A

Actuators for Sluice Gates - ***Alternatives to Commercially Available Products***
ITRC Report No. R 00-006
Gate actuators provide a method of raising and lowering canal gates using electric motors instead of human pov has investigated four alternatives to commercially available actuators designed specifically for the operation of c
*Canal gate actuator, sluice gate actuator, screw jack . . .*
Sponsors: USBR, Mid-Pacific Region and USBR, Yuma Area Office

Adjustable Magnetic Coupler
ITRC Report No. R 01-005
Efficiency in terms of power consumption is vital and continues to be increasingly important. The use of adjustab pumps can reduce energy consumption and improve controllability of pressure or flows. One such technology, th MagnaDrive coupler, has been developed for service in a variety of applications.
Sponsor: California Energy Commission

### B

**Basic Design of Replogle Flumes**
ITRC Report No. R 02-010
To facilitate accurate flow measurement, this paper describes specific design and construction considerations a Replogle flumes in irrigation applications. A design example is provided to illustrate these concepts.
Sponsor: U.S. Bureau of Reclamation, Mid-Pacific Region

**Benchmarking of Flexibility and Needs 2000**
*Survey of Irrigation Districts*
ITRC Report No. R 00-005
ITRC interviewed irrigation district personnel from 60 agricultural district representing approximately 91% of the acreage within the U.S. Department of the Interior Bureau of Reclamation's (USBR) Mid-Pacific Region. The pu Survey was to: identify the extent of flexibility of water delivery presently offered by irrigation and water districts identify educational programs in which districts currently participate or have accomplished; and identify improve can be made in regards to technology and water conservation and what types of assistance districts will require to make those improvements.
Sponsor: USBR, Mid-Pacific Region

**Benchmarking of Flexibility and Needs 2002**
*Survey of Non-Federal Irrigation Districts*
ITRC Report No. R 02-007
ITRC interviewed irrigation district personnel from 17 agricultural districts throughout California. Data were analy determine the degree of water delivery flexibility provided to farmers and the extent of existing and planned distr modernization. This report did not include irrigation districts with long-term federal contracts.
Sponsor: California Department of Water Resources

**Bottom Mounted Doppler Flow Meter for Canals**
ITRC Report No. R 01-004
Doppler technology, similar to that used by meteorologist to track weather patterns, has been developed and ex the need for advanced water flow measurement technology that is relatively easy to use, applicable to various h conditions, and very accurate. This report discusses the operation of doppler units, provides a comparison of th benefits, cost, and use.
Sponsors: U.S. Bureau of Reclamation and California Energy Commission

**Buried Drip Irrigation on Pistachios Study - Munger-Poonian Land and Farming Co.**
ITRC Report No. R 96-003
A multi-year study and technical support were conducted on commercial fields of pistachios, apples, table grape grapes, and blueberries in central California. The learning curve required by growers, and energy and irrigation was documented.

## C

**California Agricultural Water Electrical Energy Requirements - Final Report**
ITRC Report No. R 03-006
ITRC conducted an analysis of the energy used to supply water to California's agriculture and examined potenti trends in the agriculture water community to predict future energy requirements.

**California Crop and Soil Evapotranspiration**
ITRC Report No. R 03-001
The goal of this publication is to provide water users, consultants, water agency personnel, and others througho with information that will: (a) help individual water users with irrigation scheduling and system design and (b) hel water agency personnel with water balances and future planning.
(Formerly posted as: Crop and Soil Evapotranspiration for California - ITRC Report No. R 02-005)

**Canal Flow Rate Measurement Guidelines - ITRC 2005: Hydroacoustic Meters**
ITRC Report No. R 05-002

Hydroacoustic flow meters provide remote velocity sampling and integrated flow measurement based on the phy principle called the Doppler shift.

CEC Agricultural Peak Load Reduction Program - Final Report
ITRC Report No. R 05-003
The Agricultural Peak Load Reduction Program (APLRP) was developed by the California Energy Commission ( June 2001, under the authority of Section 5(b) of California Senate Bill 5x. This legislation arose from the blackc brownouts that hit the state of California during the 2000-2001 winter, caused by a severe imbalance in electricit The primary goal of SB 5x was to reduce peak period electric demand throughout California. As a result of this p water agencies throughout California exceeded expectations in regard to curtailing peak load and were able to c lower-than-expected funding.
Sponsor: California Energy Commission

Chemigation and Fertigation Basics for California
ITRC Report No. R 03-011
This article answers basic questions about chemigation and fertigation, including definitions, safety concerns, ge and hints for fertigation systems.
Sponsor: California Department of Pesticide Regulation (CDPR)

ITRC Report No. R 08-001
Conversion to Groundwater Pumping with Drip/Micro Irrigation
Twenty-one irrigation districts in the Central Valley reported "conversion acres". Conversion acres are those on farmers used only groundwater for drip/micro irrigation although surface irrigation water was available. The dom that influences the conversion was the lack of flexible water delivery service to fields. The extra energy required groundwater pumping on the 73,000 conversion acres is estimated at 76,000,000 kW-hr/yr.
Sponsor: California Energy Commission

## D

Delano-Earlimart Irrigation District: Variable Frequency Drive Study
ITRC Report No. R 95-001
This study examined the pump station operation at Delano-Earlimart Irrigation District after the installation of a v frequency drive (VFD) control. A detailed evaluation was made in order to develop specific recommendations o operation and use of VFDs.

District Application of Hand Held Data Recorder Technology
ITRC Report No. R 99-005
A hand held data recorder (HHDR) enables a district to collect field data in a quick and virtually error-free manne gathered with HHDRs depend on each district's needs: meter readings-totalizer, meter flow rates, crop type and tracking, crop growth stage, meter status, maintenance codes for meter repairs, maintenance codes for meter a use type, pump runtimes, weather data, and power meter readings.
Sponsor: USBR, Mid-Pacific Region

Doppler Flow Meters for Turnouts
ITRC Report No. R 02-004
Irrigation districts, farmers and other agricultural and environmental water users need reliable and low-cost flow integrated dataloggers to measure water velocity and depth with a high level of precision. The Irrigation Training Research Center has undertaken a performance review of advanced electronic flow measurement technologies applications. Examples are the Unidata STARFLOW and the MACE AgriFlo Ultrasonic Doppler Meters.
Sponsors: U.S. Bureau of Reclamation and California Energy Commission

Drip/Micro Irrigation Survey for Delano-Earlimart Irrigation District
ITRC Report No. R 98-002
DEID obtained a grant from USBR Mid-Pacific region to examine perceptions of its farmers regarding future con

drip and micro-irrigation. DEID then contracted with the Irrigation Training and Research Center (ITRC) at Cal P
Obispo to conduct and analyze a survey of DEID farmers with the objectives of answering several questions. Th
presents the pertinent data and results from the survey.

## E

**Electric Motor Efficiency under Variable Frequencies and Loads**
ITRC Report No. R 06-004
The primary research objective of this study was to determine motor efficiencies under varying speeds (induced
controller) and loads. A broader objective was to provide sufficient information to designers and economists so
could estimate total pumping plant power usage with a VFD-controlled installation. Motors were tested with VFD
across-the-line.

**Estimating the Payback for an Electrical VFD (Variable Frequency Drive) Application in a Pumping Plant Presently Spills Excess Pumpage**
ITRC Report No. R 94-002
This report includes equations and tips for pump selection criteria and estimating the annual KW-HR savings for
installation, including the maximum potential savings and the approximate amount of KW-HR that would have be
consumed if one pump had been converted to VFD.

**Evaluation and Modification of a Float Valve for the Delano-Earlimart Irrigation District (DEID)**
ITRC Report No. R 01-011
This report discusses the evaluation and modification of a float valve for the Delano Earlimart Irrigation District (
float valve is one part of the system that DEID uses to meet growers' water needs. The float valve assembly inc
frame, float, guide for the float, linkage, and a butterfly valve. Preliminary tests showed that waterhammer was
DEID and posed a potential problem. After working with DEID and making two modifications to the float valve, f
indicate that corrections made to the assembly improved the operation and aids in the prevention of waterhamm

**Evaluation of Anti-fouling Paints**
ITRC Report No. R 00-004
Algae and other growth on Replogle flumes, often used as flow measurement devices in irrigation canals, can e
accuracy of measurements in those canals. Research was conducted to find a product that would prevent build
flumes. Hard Anti-fouling paint, designed to be applied to concrete rather than fiberglass, wood, steel or iron, wa
paint used in this study.
*Replogle flume, Hard Anti-fouling paint, flow measurement, irrigation canals, cuprous oxide*
Sponsor: USBR, Yuma Area Office

**Evaporation from Irrigated Agricultural Land in California**
ITRC Report No. R 02-001
The intent of this research was to consolidate existing information on evaporation through literature reviews and
and to compute evaporation amounts for representative conditions in California and use those amounts to extra
information for the complete irrigated agricultural area of California. This research was to address the question
approximate magnitude of evaporation - a key piece of knowledge when defining the level of resources that sho
committed to solving any problem.

## F

**Flap Gate**
ITRC Report No. R 07-003
ITRC began to investigate early designs of Flap Gates in 1992. Originating in Holland in the 1940s, the Flap Ga
inexpensive hydraulic gate for automatic upstream water level control. This report includes information on desig
Microsoft Excel files available for download), installation, maintenance, water conservation and efficiency, cost,
benefits.
Sponsor: California Energy Commission

## G

Government Highline Canal - A Win-Win Solution
ITRC Report No. R 03-009
ITRC performed canal modernization on the Government Highline Canal in the form of automated canal structur storage, and new operational procedures that could significantly reduce operational spill. *Updated July 2006*
Sponsor: U.S. Bureau of Reclamation, Upper Colorado Region, Western Colorado Area Office

## H

Hand Held Data Recorder (HHDR)
ITRC Report No. R 99-004
An HHDR is used to collect data from the field and to download that data to a database to generate reports for r irrigation districts.
Sponsor: USBR, Mid-Pacific Region

## I

Infrared Inspection
ITRC Report No. R 02-003
Infrared thermography is the use of infrared radiation to qualitatively and quantitatively express heat signatures differences. Infrared inspection can help identify weak connections in an electrical box, uneven heating of pump overheating of bearings, and many other possibly devastating problems well before any failure occurs. The use thermography as a preventative tool can increase system reliability and efficiency.

Irrigation Consumer Bill of Rights
ITRC Report No. R 01-007
Cal Poly ITRC, together with various irrigation industry leaders and the Irrigation Dealers Association of Californ assistance from the California Energy Commission and Pacific Gas & Electric Co., developed the Irrigation Con: Rights™ (ICBR™) in 1994.

ITRC Report No. R 08-001
Conversion to Groundwater Pumping with Drip/Micro Irrigation
Twenty-one irrigation districts in the Central Valley reported "conversion acres". Conversion acres are those on farmers used only groundwater for drip/micro irrigation although surface irrigation water was available. The don that influences the conversion was the lack of flexible water delivery service to fields. The extra energy requirec groundwater pumping on the 73,000 conversion acres is estimated at 76,000,000 kW-hr/yr.
Sponsor: California Energy Commission

Irrigation District Energy Survey
ITRC Report No. R 08-002
The purpose of the survey was to establish a benchmark for the present status of the pumping systems used by water districts in California and to determine the districts' needs. The needs discussed involve technical assista grant and low-interest loan funding, and district-related policy issues. Thirty agricultural water districts were sele survey. These districts were selected based on energy use per acre of irrigated area, size, geographic location, distribution infrastructure.
Sponsor: California Energy Commission

Irrigation District Observations on Large Diameter, Low Pressure Pipeline Materials
ITRC Report No. R 04-003
ITRC conducted a brainstorming session with representatives from irrigation districts and engineering firms to di replacement options for cast-in-place pipelines.
Sponsor: California Energy Commission

ITRC SCADA Integrators List
ITRC Report No. R 00-003

(Updated in June 2002). ITRC has compiled this list of "integrator" companies for Supervisory Control and Data (SCADA) systems. The list comes from ITRC's direct involvement with some of them on projects, as well as fror recommendations given by other organizations.

ITRC Weir Stick
ITRC Report No. R 03-008
ITRC developed a new weir rule for open-channel flow rate measurement.
Sponsor: U.S. Bureau of Reclamation, Mid-Pacific Region

## L

Load Monitoring System
ITRC Report No. R 01-002
Arvin-Edison Water Storage District received a loan - from the CEC's loan program for the development of new conservation technology - in 1995 to develop a program with variable frequency drives. This report discusses th the "Load Monitoring System", cost, the need for such a system, initial start-up challenges, configuration options benefits.
Sponsor: California Energy Commission

Lookout vs. Intellution Comparison
ITRC Report No. R 01-006
A systematic evaluation was performed on two Human Machine Interface software packages (Lookout from Nat Instruments and iFIX from Intellution). This was accomplished with a simulated, automated water level control s a Control Microsystems SCADAPack PLC. Through the evaluation, Lookout clearly outperformed iFIX in nearly categories.

## M

Managing District Data Needs - Narrowing in on a Moving Target
ITRC Report No. R 99-003
Ditchriders in San Luis Water District, Panoche Water District, Delano-Earlimart Irrigation District, Westside Wat glide-Kanawha Water District, and Central California Irrigation district use or are beginning to use hand held dat (HHDR) to gather field information.
Sponsor: USBR, Mid-Pacific Region

Modern Water Control and Management Practices in Irrigation: Impact on Performance
ITRC Report No. R 98-001
This research addressed the basic questions of what levels of water delivery service are presently provided by i projects having some aspect of modernization; what hardware and software features impact those levels of serv modern water control and management practices in irrigation make a positive difference in performance; and wh lessons can be learned and applied. The full published report is also available from the Food and Agriculture O the United Nations, FAO Water Report 19, ISBN 92-5-104282-9, publications-sales@fao.org

## N

Non-Standard Structure Flow Measurement Evaluation Using the Flow Rate Indexing Procedure - QIP
ITRC Report No. R 06-003
This report details the proper installation and calibration techniques for hydroacoustic meters. The calibration pr developed as part of this study is called the *Flow Rate Indexing Procedure (QIP).* The QIP can be competed by professional technician with a boat-mounted Acoustic Doppler Profiler (ADP) or a standard current meter. Once been used to properly calibrate a hydroacoustic flow meter, the device can then measure and record the flow ra volume in a channel to within +/- 6% of actual values.

## P

Power Quality - Measurement and Conditioning Related to Variable Frequency Drives in Irrigation Distri
ITRC Report No. R 04-002

ITRC completed a study to examine the quality of electric power that supplies motors for irrigation pumps.
Sponsor: California Energy Commission

Proceso de Evaluación Rápido (RAP) y Comparación con el Patrón de Referencia (Benchmarking)
ITRC Report No. R 01-009
Este documento explica el proceso del diagnóstico rápido para proyectos de riego (sistemas de canales). El prc desarrolado por Drs. Charles Burt y Stuart Styles por parte del Banco Mundial y el FAO. El documento explica u en EXCEL. Tambien hay dos spreadsheets de EXCEL abajo - uno blanco, y otro para un ejemplo del proceso c rápido.

- Proceso de Evaluación Rápido (RAP) y Comparación con el Patrón de Referencia (Benchmarking)
- RAP en Español -Blanco.xls (EXCEL Document)
- RAP en Español -Ejemplo.xls (EXCEL Document)

Pumped Storage: Simple Changes - Big Savings
ITRC Report No. R 01-001
Several California irrigation districts achieved savings on electrical energy charges by implementing various typ storage systems. Pumped storage uses some type of reservoir to store pumped water at a higher elevation thar water supply. During times of peak statewide electricity demand, pumping is reduced while water is withdrawn fı reservoir which acts as a buffer.
Sponsor: California Energy Commission

## R

Rapid Appraisal Process and Benchmarking
ITRC Report No. R 01-008
The Rapid Appraisal Process (RAP) was documented by Charles Burt and Stuart Styles in the Food and Agricu publication Water Reports 19 - Modern Water Control and Management Practices in Irrigation. ITRC Report R 0 provides an update of the spreadsheets used to record field data. The spreadsheets now automatically compute internal and external indices and summarize them. The recent IPTRID benchmarking indicators are also compu all three of the documents below are provided and must be downloaded for a complete set.

- Rapid Appraisal Process and Benchmarking.doc (PDF Document)
- Rapid Appraisal Process (RAP) and Benchmarking BLANK.xls (EXCEL Document)
- Rapid Appraisal Process (RAP) and Benchmarking EXAMPLE.xls (EXCEL Document)

Reclamation Leaching for Salinity Buildup Under Drip/Micro Irrigation of Trees
ITRC Report No. R 03-003
ITRC conducted a reclamation leaching experiment in a pistachio orchard to quantify the leaching water require salts from the effective root zone of trees. This experiment tested a new reclamation leaching technique - multip low-flow drip tape were used to apply water to the area of salinity accumulation along a tree row.

Remote Monitoring and Control - System Set-Up
ITRC Report No. R 01-010
This SCADA report presents a basic step-by-step outline for setting up and configuring a system for the remote and control of equipment. For demonstration purposes, it refers specifically to a system set up by ITRC for testir sensors.

Row Crop Drip Irrigation on Bell Peppers Study - Underwood Ranches
ITRC Report No. R 96-002
A 3-year study was completed on a commercial field of approx. 50 acres. Design and management support we and improvements were documented in both irrigation efficiency and energy efficiency.

Row Crop Drip Irrigation on Peppers Study - High Rise Farms
ITRC Report No. R 96-001
A 3-year study was completed on a commercial field of approx. 50 acres. Design and management support we
and improvements were documented in both irrigation efficiency and energy efficiency.

## S

Salinity Patterns on Row Crops under Subsurface Drip Irrigation (SDI) on the Westside of the San Joaqu
California
ITRC Report No. R 03-004
The objectives of this study were to identify if there was detrimental salinity buildup in the uppers layers of soil c
usage of SDI on row crops, identify the extent of any detrimental salinity buildup, and identify successful and/or
practices used by farmers who use SDI.

SCADA System Cost and Feature Comparison
ITRC Report No. R 00-002
Supervisory Control and Data Acquisition (SCADA). Range of options - from simple water level alarm to fully au
control capability.
*This report is no longer available for download. The information is distributed through ITRC SCADA workshops*

Side Mounted Doppler Flow Meter for Canals
ITRC Report No. R 02-002
The Irrigation Training and Research Center has undertaken a performance review of advanced electronic flow
technologies in irrigation applications.
Sponsors: U.S. Bureau of Reclamation and California Energy Commission

Simple, Portable Water Level Monitoring Package
ITRC Report No. R 99-001
Supplemental report to "Water Level Sensor and Datalogger Testing and Demonstration"
Covers the details necessary to to put together a simple, portable water level monitoring package.
Sponsor: USBR, Mid-Pacific Region

Soil Salinity Accumulation in Orchards with Drip and Micro-spray Irrigation in Arid Areas of California
ITRC Report No. R 03-005
A soil slinity accumulation study was conducted to examine the long-term impact of drip and micro irrigation on s
up in orchards, focusing on the salinity concentration pattern across a soil profile. The study assessed the curre
salinity accumulation in orchards irrigated with drip/micro systems and provided information to support recomme
the most effective and efficient leaching techniques.

Status and Needs Assessment: Survey of Irrigation Districts - USBR Mid-Pacific Region
ITRC Report No. R 96-004
ITRC gathered data from 61 agricultural districts in the U.S. Department of the Interior Bureau of Reclamation's
Pacific Region by interviewing irrigation district personnel and studying their Water Conservation Plans. These
comprise about 90% of the irrigated acreage in the Mid-Pacific Region. Data were analyzed to determine gener
demographic information, the degree of water delivery flexibility provided to farmers, and the extent of existing a
district modernization.

## T

Telog PR-31 Water Level Tracker
ITRC Report No. R 03-007
ITRC conducted a performance review of advanced electronic water level measurement technologies in irrigatio
applications. An example is the Telog PR-31 Level Tracker.
Sponsor: U.S. Bureau of Reclamation, Mid-Pacific Region

Tuning Algorithms for Automated Canal Control
ITRC Report No. R 05-005
Canal automation refers to a closed-loop control in which a gate or pump changes its position or running speed i to a measured water level, flow rate, or pressure because that level, rate, or pressure is different than the intend value. This report provides a clarification of theoretical principles behind canal automation, as well as what ITRC through trial and error as we work to fine-tune the process.
**Sponsor:** CSU/ARI

## U

Underground Pipe Locating Demonstration at Arvin-Edison Water Storage District
ITRC Report No. R 03-010
ITRC arranged an underground pipe locating demonstration/presentation at the district in August 2003.
Sponsor: U.S. Bureau of Reclamation, Mid-Pacific Region

## V

Variable Frequency Drives - Planning your system
ITRC Report No. R 02-009
Many irrigation districts are installing Variable Frequency Drives (VFDs) to increase their level of service to their and/or to reduce their energy consumption. This brochure is intended to help irrigation districts properly evaluat of VFD they need and how to install it.

Variable Frequency Drives and SCADA - Are they worthwhile investments?
ITRC Report No. R 02-006
Managers and personnel from five California irrigation districts were interviewed to determine if installing variabl drives (VFD) and supervisory control and data acquisition (SCADA) systems were worthwhile investments.

VFD (Variable Frequency Drive) Specifications for Irrigation District Applications
ITRC Report No. R 04-004
This information was compiled by ITRC under the Public Interest Energy Research (PIER) End Use Agricultural Program, administered by the California Energy Commission, and includes specifications for standards, warrant submittals, VFD size, and other technical details to aid districts in the selection and implementation of VFD syste
*Replaces ITRC Report No. R 03-002*

Volumetric Water Pricing
ITRC Report No. R 06-002
This report discusses volumetric pricing for irrigation water, separated into the following sections: 1) The justifica paying volumetrically, 2) The challenge of charging volumetrically, 3) Characteristics of volumetric charges and i factors, 4) Examples of irrigation projects with volumetric charges, and 5) A summary of necessary conditions fo billing.

## W

Water Level Sensor and Datalogger Testing and Demonstration
ITRC Report No. R 99-002
Electronic water level sensing equipment is becoming increasingly important for the implementation of water cor programs in irrigation districts. A need has risen for information on costs, advantages/disadvantages, required s equipment, and required maintenance for the various options. ITRC conducted a yearlong study on water level s dataloggers and produced this report.
Sponsor: USBR, Mid-Pacific Region

Well Efficiency Class - Technical Memorandum
ITRC Report No. R 04-001
ITRC conducted a well efficiency demonstration at Southern California Edison AgTAC building in Tulare, Califor

November 2003.
Sponsor: Southern California Edison AgTAC



**California Polytechnic State University**
San Luis Obispo, CA 93407-0730
Phone: 805.756.2434 Fax: 805.756.2433

# APPENDIX "C"

# THE WEST SIDE IRRIGATION DISTRICT
# WATER POLICY

The West Side Irrigation District has been operating under policies that have been developed over the last few years due to the drought conditions that have existed in California. The Board of Directors have determined that these policies have been a great benefit to both the District and the water users, and decided to continue these practices that have been implemented and have adopted them as Water Policy.

Each year the District will determine the amount of water that will be available from the Central Valley Project (CVP) and try to estimate the amount that can be diverted from San Joaquin (Old River) River. The primary source for irrigation purposes shall be water diverted from Old River. If demand exceeds the maximum amount of water available from Old River, then the supply shall be supplemented with water from the CVP. CVP water will be commingled with river water in such a way as to conform to all eligibility criteria required by the Bureau of Reclamation and also in a effort to spread the use of CVP supply over the entire season. When demand exceeds both sources of water, then this Water Policy will take effect.

**Periods of Shortages**

During periods of shortage the following rules will be followed:

1. "Period of Shortage" means any period when the demand for water exceeds available supply.

2. During periods of shortages, a waiting list shall be established for the Upper Main Canal (UMC) and the Lower Main Canal (LMC). The following provisions shall apply to the waiting list:

    a. When ordering water, each water user will state when he desires and is able to receive water.
    b. If two water users request water to be delivered the same day and time, the application will be honored in order received.
    c. If the requested delivery date and time arrives and water is not available due to a period of shortage, then the water users name will be placed on a waiting list. Names will not be placed on the waiting list at the time of application, but at the time of the requested delivery when it is determined that there is a shortage.
    d. The District will deliver water in the order established by the waiting list.
    e. If a certain water user is not available or not able to take delivery of water when it is his turn, then his name will be placed at the bottom of the list and the next water user will be notified.
    f. If, at any time, the Board of Directors determine that the crop of a certain water user will be irreversibly harmed, due to no fault of the water user, by the length of the waiting list, the Board has the authority to alter the waiting list, taking into consideration the other crops waiting for water, to benefit that crop which would be irreversibly harmed. All efforts would be made to peaceably arrive at this action and this action would be considered only under extraordinary circumstances.

3. If it is determined that water rationing is necessary, delivery of such water shall be made in accordance with item number 17 of the Rules and Regulations – Attached hereto as Exhibit "A".

4. During the regular irrigation season, water starts will be made between the hours of 6 a.m. and 4 p.m. During a period of shortage, every effort will be made to start water between the hours of 4 p. m. to 6 a.m. in order to utilize all hours of operation when water might become available.

5. The District shall monitor deliveries of surplus water to lands outside District boundaries. If it is determined that a period of shortage will occur, then surplus water users will be giver a 24 hour notice that water deliveries will be discontinued, in accordance with the " Agreement for Purchase of Surplus Irrigation Water".

6. Careful water management by the water user will be closely monitored. If, it is determined that a water user has excess drainage, the District will not hesitate to use its authority to cut off water which is not being put to beneficial use.

**Rules and Regulations**

The District has adopted a set of **Rules and Regulations Governing the Distribution of Water.** These rules and regulations shall apply to this Water Policy and are attached hereto and marked Exhibit A and are incorporated herein.

***Well Water Policy***

Water users may transport well water through District Facilities only under an agreement approved by the Board of Directors of the District. Each and every agreement will be considered individually with such factors as water quality, compatibility with other District uses, and benefit to the District being taken into consideration. Delivery of well water shall be scheduled in the same manner as water from District sources.

***Reclamation Reform Act***

1. Since the District has a contract with the United States of America, Bureau of Reclamation, it must comply with Reclamation Law. The Reclamation Reform Act of 1982 (RRA) mandated that the Bureau of Reclamation develop Rules and Regulations to implement the RRA. One of the provisions set forth in the Rules and Regulations is that no Central Valley Project water can be delivered to water users in this District until certification or reporting forms have been filed with the District verifying the water user's compliance with RRA. Although the CVP water is a supplemental supply it is co-mingled with the District's river source and the District has adopted the policy that no water will be delivered from **any** source until the appropriate form(s) have been submitted to the District

2. If at any time, the District finds that it can delivery **only** CVP water, this water will be delivered only to those lands that are eligible. Under these circumstances, full-cost charges may apply to some water users. The District will make these deliveries only under extraordinary circumstances.

**Irrigation Water Outside Normal Irrigation Season**

1. The District may, at its discretion, deliver water to lands requiring irrigation service during winter months.

2. Since the District does not normally deliver water during winter months, when its pumping plant and distribution systems are ordinarily shut down for repairs and maintenance, and since there are legal restrictions on the District's ability to deliver water during this period, the District reserves the right to discontinue deliveries at any time it determines that such refusal is necessary.

3. The Board of Directors shall set a water toll rate for water delivered outside the normal irrigation season.

4. Water users will be subject to a reduction in operating schedule by the District during the winter months and shall irrigate accordingly.

**Payment of Fees and Tolls**

1. The District annually adopts a schedule of fees and tolls. Water will be delivered only to those lands which have satisfied all financial requirements. The following fees must be paid each year prior to the first irrigation:

   a. Stand-By Charge
   b. In-Lieu Stand-By Charge
   c. Water User Security Deposit
   d. Yearly Water Charge for Small Parcels

In addition, each monthly water balance must be paid on or before the 15th of the month following the month of delivery. Water Delivery shall be discontinued to any water user with a past due balance until payment is made.

2. All drainage fees for approved land outside District boundaries that drain into District facilities are due annually. All fees must be paid, in full, before any drainage water will be accepted by the District. The District may, at its discretion, remove the drainage pipe(s) of any drainage discharge who does not pay their annual drainage fee.

Exhibit "A"
(to Appendix C – Water Policy)

**THE WEST SIDE IRRIGATION DISTRICT**
**RULES AND REGULATIONS GOVERNING THE**
**DISTRIBUTION OF WATER**

1. Application for water must be made in writing at the District office together with a deposit according to the ruling made by the Board of Directors. The application for water must be made four days before the time of requested delivery.

2. Before water is turned into a private ditch, the same shall be in satisfactory condition to receive and control the water.

3. When the number of acres applied for have been irrigated, the water will be shut off.

4. Each irrigator shall so control the water when applying same to his land, so as not to permit it to get into the drainage or other ditches of the District.

5. From the time that water is delivered to the water user until the completion of the irrigation, the water user or his employee must constantly attend and control the water continuously day and night, if necessary, to prevent excess run-off of drain water or damage to adjacent lands.

6. Any water user running water on roads, into drainage ditches or lands previously irrigated, either carelessly or on account of defective ditches, or who shall flood certain portions of land to an inappropriate depth or use an unreasonable amount of water in order to properly irrigate other portions or whose land has been improperly checked for the beneficial use of water, will be refused the use of water until such conditions are remedied.

7. When water is turned on the land, the water shall be used day and night until irrigation is completed.

8. Any person who uses water without authority is subject to criminal prosecution.

9. The District employees shall have free access at all times to land irrigated from the distribution system, for the purpose of examining the canals and ditches and measuring the flow of water therein.

10. No trees or vines shall be planted on the right of way of any District canal.

11. No fences or other obstruction of roads, ditches or structures shall be placed across, or upon, or along any canal bank or right of way belonging to the District, without permission of the Board of Directors. Whenever such permission is given, it shall be with the understanding that such obstruction must be removed whenever requested by the Board of Directors.

12. No rubbish, garbage, refuse or any other material of any kind shall be placed on District right of way, or allowed to be dumped into any ditch or canal of the District, and the ditch tenders are hereby instructed to enforce this rule.

13. No person other than a District employee, shall be permitted to place a weir board in any check gates or to remove any board from any gate or any ditch belonging to the District, nor to change any setting in screw gates as used for service points from laterals and canals.

14. The roads along any canal or right of way are for the sole use of the employees of the District in the discharge of their duties and any interference therewith is forbidden.

15. The use of ditch banks for pasturing livestock is forbidden.

16. Any water user desiring to have water shut off shall make a request with the District office or the ditch tender on duty at least four (4) hours prior to the time he wishes the water shut off.

17. In case it becomes necessary for the District to ration water in order to provide for an equitable distribution of water, the following rules and regulations will apply:

    a. Not more than 10" of water will be furnished for pre-irrigation of beans and similar crops; not more than 16" of water sill be furnished for tomato seed; not more than 6" of water will be furnished for alfalfa or clover for one irrigation per month or in lieu thereof, 3" of water 15 days apart; and not more than 10" of water be furnished for orchards in any six week period.

    b. If any excessive amount of irrigation water is wasted, the water will be shut off.

    c. If more than one application for irrigation water is filed for the same parcel of land before delivery of irrigation water thereto pursuant to the first application, then the first application is the only one that has priority.

    d. Priority of application of irrigation water shall not be effective more than 48 hours after such application is made provided the District is able to start delivering the water pursuant to said application within the said 48 hour period. Otherwise, the priority shall continue until irrigation water is delivered by the District.

J L ANALYTICAL SERVICES, INC.
217 Primo Way • Modesto, California 95358 • Office (209) 538-8111 • Fax (209) 538-3966

2008 DEC 18 A 11:14

Date: 08/19/08

Sample Description:
Irrigation Water, U.M.C, 8-11-08, 1200p

Westside Irrigation District
Attn: Steve A. Kaiser
P.O. Box 177
Tracy, CA 95378-0177

Submitted By:

Laboratory Number: 0808-00459

| Results of Analysis: | | As Received | |
|---|---|---|---|
| pH | EPA 150.1 | 8.2 | |
| Bicarb Alk. (as CaCO3) | SM2320B | 180 | mg/l |
| Carb Alk. (as CaCO3) | SM2320B | <1 | mg/l |
| Hydrox Alk. (as CaCO3) | SM2320B | <1 | mg/l |
| Chloride Epa 300.0 | | 190 | mg/l |
| Sulfate | EPA 300.0 | 190 | mg/l |
| Calcium | EPA 200.8 | 60 | mg/l |
| Magnesium | EPA 200.8 | 32 | mg/l |
| Sodium | EPA 200.7 | 150 | mg/l |
| Boron Epa 200.7 | | 1.0 | mg/l |
| Tot. Diss. Solids, Sm2540c | | 840 | mg/l |
| Total Hardness | | 280 | mg/l |
| Electric. Conductivity | SM2510B | 1300 | umho/cm* |
| Sodium Absorption Ratio | | 3.9 | |
| Nitrate, Epa 300.0 | | 6.8 | mg/l |

2008 DEC 18 A 10:39

* At 25 Degrees C

Respectfully Submitted,

Authorized Signature

## Water Quality at Selected Grab Sample* Locations

### June 2008

| Constituent | Units | Detection Limit | Thermalito Afterbay at Outlet, TA001000 | North Bay Aqueduct Barker Slough Pumping Plant, KG000000 | Delta-Mendota Canal Upstream McCabe Road, DMC06716 | Harvey Banks Delta Pumping Plant, KA000331 | O'Neill Forebay Outlet (Check 13), KA007089 | Kettleman City (Check 21), KA017226 |
|---|---|---|---|---|---|---|---|---|
| Alkalinity | mg/L as $CaCO_3$ | 1 | 38 | 89 | 94 | 90 | 80 | 80 |
| Antimony | mg/L | 0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Arsenic | mg/L | 0.001 | <0.001 | 0.003 | 0.002 | 0.003 | 0.002 | 0.002 |
| Beryllium | mg/L | 0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Boron | mg/L | 0.1 | <0.1 | 0.2 | 0.3 | 0.3 | 0.2 | 0.2 |
| Bromide | mg/L | 0.01 | <0.01 | 0.04 | 0.26 | 0.23 | 0.27 | 0.28 |
| Calcium | mg/L | 1 | 8 | 16 | 32 | 28 | 23 | 23 |
| Carbon-Dissolved Organic | mg/L as C | 0.5 | NR | 3.6 | 4 | 4.2 | 3.3 | 3.4 |
| Carbon-Total Organic | mg/L as C | 0.5 | NR | 4.4 | 4.2 | 4.8 | 3.4 | 3.5 |
| Chloride | mg/L | 1 | <1 | 15 | 89 | 78 | 89 | 91 |
| Chromium | mg/L | 0.001 | <0.001 | 0.001 | 0.002 | 0.001 | 0.001 | 0.002 |
| Copper | mg/L | 0.001 | <0.001 | 0.002 | 0.003 | 0.003 | 0.002 | 0.002 |
| Fluoride | mg/L | 0.1 | <0.1 | NR | NR | NR | NR | NR |
| Hardness | mg/L as $CaCO_3$ | 1 | 36 | 89 | 158 | 140 | 119 | 119 |
| Iron | mg/L | 0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| Lead | mg/L | 0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Magnesium | mg/L | 1 | 4 | 12 | 19 | 17 | 15 | 15 |
| Manganese | mg/L | 0.005 | <0.005 | 0.010 | <0.005 | 0.005 | <0.005 | <0.005 |
| rite + Nitrate | mg/L as N | 0.01 | <0.01 | 0.57 | NR | 0.58 | 0.72 | 0.70 |
| osphate-Ortho | mg/L as P | 0.01 | <0.01 | 0.13 | NR | 0.11 | 0.08 | 0.09 |
| Phosphorus-Total | mg/L | 0.01 | <0.01 | 0.20 | NR | 0.12 | 0.10 | 0.10 |
| Selenium | mg/L | 0.001 | <0.001 | <0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| Sodium | mg/L | 1 | 3 | 21 | 66 | 58 | 59 | 61 |
| Specific Conductance | µS/cm | 1 | 75 | 266 | 617 | 530 | 524 | 517 |
| Sulfate | mg/L | 1 | 2 | 18 | 75 | 66 | 41 | 41 |
| Total Dissolved Solids | mg/L | 1 | 50 | 156 | 340 | 309 | 291 | 283 |
| Turbidity | N.T.U. | 1 | 3 | 5 | 10 | 7 | 3 | 10 |
| Zinc | mg/L | 0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |

mg/L = milligrams per liter  µS/cm = microSiemens per centimeter  N.T.U. = Nephelometric turbidity unit  NR = No data recorded at this location.

*NOTE: A grab sample is a single sample chosen to represent conditions in a given matrix (usually natural water) at a specific location, depth, and time.

# J L ANALYTICAL SERVICES, INC.

217 Primo Way • Modesto, California 95358 • Office (209) 538-8111 • FAX (209) 538-3966


Date: 06/29/07

Sample Description:
Irrigation Water, Old River, 6-20-07, 130p

Westside Irrigation District
Attn: Steve A. Kaiser
P.O. Box 177
Tracy, CA 95378-0177

Submitted By:

Laboratory Number: 0706-02788

| Results of Analysis: | | As Received | |
|---|---|---|---|
| pH | EPA 150.1 | 8.0 | |
| Bicarb Alk. (as CaCO3) | SM2320B | 300 | mg/l |
| Carb Alk. (as CaCO3) | SM2320B | <1 | mg/l |
| Hydrox Alk. (as CaCO3) | SM2320B | <1 | mg/l |
| Chloride Epa 300.0 | | 350 | mg/l |
| Sulfate | EPA 300.0 | 470 | mg/l |
| Calcium | EPA 200.7 | 140 | mg/l |
| Magnesium | EPA 200.7 | 69 | mg/l |
| Sodium | EPA 200.7 | 340 | mg/l |
| Boron Epa 200.7 | | 2.9 | mg/l |
| Tot. Diss. Solids, Sm2540c | | 1600 | mg/l |
| Total Hardness | EPA 200.7 | 630 | mg/l |
| Electric. Conductivity | SM2510B | 2460 | umho/cm* |
| Sodium Absorption Ratio | | 5.9 | |
| Nitrate, Epa 300.0 | | 27 | mg/l |
| Suspended Solids | EPA 160.2 | 170 | mg/l |

* At 25 Degrees C

Respectfully Submitted,

Authorized Signature

# J L ANALYTICAL SERVICES, INC.

217 Primo Way • Modesto, California 95358 • Office (209) 538-8111 • FAX (209) 538-3966


Date: 06/29/07

Sample Description:
Irrigation Water, Over Pass, 6-20-07, 1230p

Westside Irrigation District
Attn: Steve A. Kaiser
P.O. Box 177
Tracy, CA 95378-0177

Submitted By:

Laboratory Number: 0706-02789

| Results of Analysis: | | As Received | |
|---|---|---|---|
| pH | EPA 150.1 | 8.1 | |
| Bicarb Alk. (as CaCO3) | SM2320B | 130 | mg/l |
| Carb Alk. (as CaCO3) | SM2320B | <1 | mg/l |
| Hydrox Alk. (as CaCO3) | SM2320B | <1 | mg/l |
| Chloride Epa 300.0 | | 130 | mg/l |
| Sulfate | EPA 300.0 | 140 | mg/l |
| Calcium | EPA 200.7 | 53 | mg/l |
| Magnesium | EPA 200.7 | 28 | mg/l |
| Sodium | EPA 200.7 | 120 | mg/l |
| Boron Epa 200.7 | | 0.78 | mg/l |
| Tot. Diss. Solids, Sm2540c | | 550 | mg/l |
| Total Hardness | EPA 200.7 | 250 | mg/l |
| Electric. Conductivity | SM2510B | 990 | umho/cm* |
| Sodium Absorption Ratio | | 3.3 | |
| Nitrate, Epa 300.0 | | 7.5 | mg/l |
| Suspended Solids | EPA 160.2 | 110 | mg/l |

* At 25 Degrees C

Respectfully Submitted,

Authorized Signature

# J L ANALYTICAL SERVICES, INC.

217 Primo Way • Modesto, California 95358 • Office (209) 538-8111 • FAX (209) 538-3966


Date: 08/16/07

Sample Description:
Irrigation Water, Upper Main, 8-3-07, 1000a

Westside Irrigation District
Attn: Steve A. Kaiser
P.O. Box 177
Tracy, CA 95378-0177

Submitted By:

Laboratory Number: 0708-00492

| Results of Analysis: | | As Received | |
|---|---|---|---|
| pH | EPA 150.1 | 8.8 | |
| Bicarb Alk. (as CaCO3) | SM2320B | 55 | mg/l |
| Carb Alk. (as CaCO3) | SM2320B | <1 | mg/l |
| Hydrox Alk. (as CaCO3) | SM2320B | <1 | mg/l |
| Chloride Epa 300.0 | | 150 | mg/l |
| Sulfate | EPA 300.0 | 170 | mg/l |
| Calcium | EPA 200.7 | 58 | mg/l |
| Magnesium | EPA 200.7 | 30 | mg/l |
| Sodium | EPA 200.7 | 130 | mg/l |
| Boron Epa 200.7 | | 0.83 | mg/l |
| Tot. Diss. Solids, Sm2540c | | 700 | mg/l |
| Total Hardness | EPA 200.7 | 270 | mg/l |
| Electric. Conductivity | SM2510B | 1110 | umho/cm* |
| Sodium Absorption Ratio | | 3.5 | % |
| Nitrate, Epa 300.0 | | 6.0 | mg/l |

* At 25 Degrees C

Respectfully Submitted,

Authorized Signature

APPENDIX "J"

# THE WEST SIDE IRRIGATION DISTRICT
# DRAINAGE POLICY

## WATER QUALITY ELEMENT

The West Side Irrigation District (hereinafter "District") provides drainage services to lands inside and outside of District boundaries. Lands within District boundaries benefit from this service as drainage water is reused within the District.

In recent years, legal regulation of agricultural drainage has increased. In December 2002, the Agricultural Discharge Waiver Program that exempted run-off from irrigated agricultural land from waste discharge requirements under California's Porter Cologne Water Quality Act, expired. The Central Valley Regional Water Quality Control Board adopted a new Agricultural Discharge Waiver Program in July 2003 ("New Waiver Program") that requires landowners or operators to take affirmative action in order to be covered by the New Waiver Program, apply for a Waste Discharge Permit, or risk enforcement action.

It is the District's policy that all landowners or operators that utilize District drainage facilities take full responsibility for the quality of the water discharged from their lands and comply with all applicable state and federal laws and regulations. The District does not treat drainage water and takes no affirmative action to ensure compliance with the water quality laws by discharging landowners.

The District encourages all landowners to comply with the New Waiver Program by either applying for Individual coverage or participating in a Watershed Coalition Group. Failure to comply with the terms of the New Waiver Program is grounds for termination of drainage rights to District facilities.

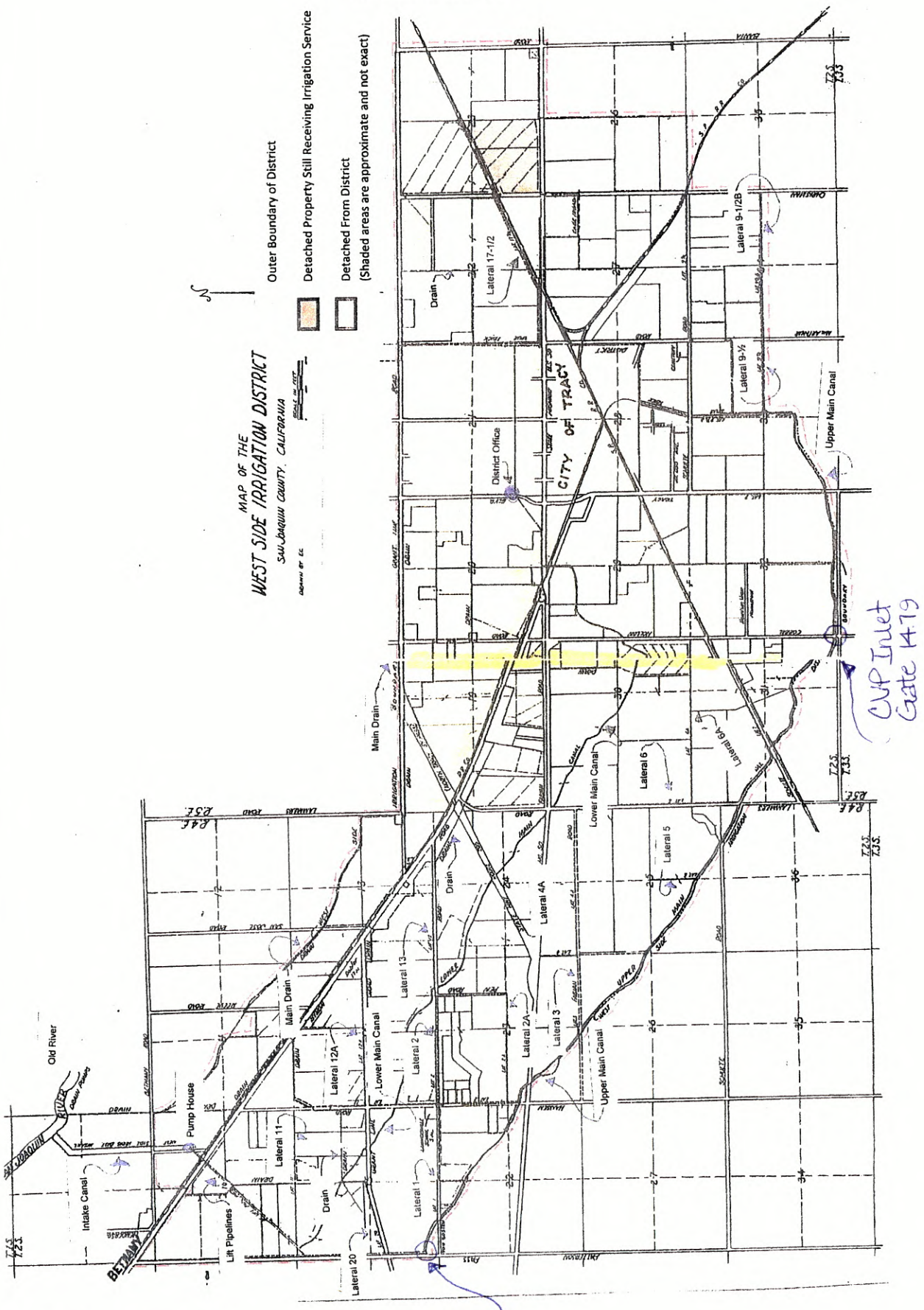
**Adopted by the Board of Directors of The West Side Irrigation District on November 12, 2003.**

AYES: Alvarez, Amaral, Pombo, Serpa
NOES: None
ABSTAIN: None
ABSENT: Arnaudo

_____
Jack Alvarez, President

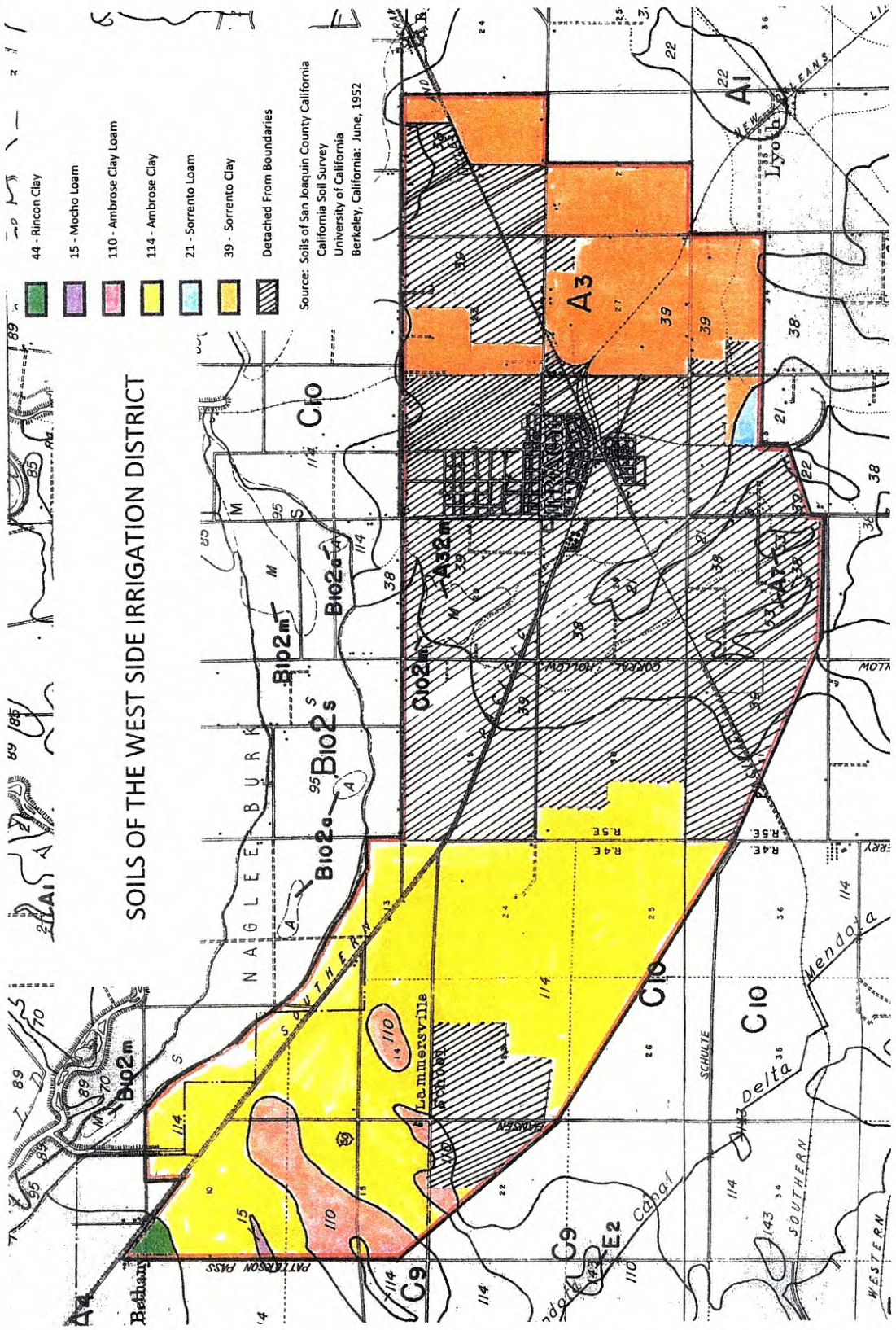
Attest: _____
Barbara Kleinert, Secretary

# APPENDIX "A"


MAP OF THE
WEST SIDE IRRIGATION DISTRICT
SAN JOAQUIN COUNTY, CALIFORNIA
Outer Boundary of District
Detached Property Still Receiving Irrigation Service
Detached From District
(Shaded areas are approximate and not exact)
CITY OF TRACY
District Office
Lateral 17-1/2
Lateral 9-1/2B
Lateral 9-½
Upper Main Canal
Main Drain
Lower Main Canal
Lateral 6
Lateral 6A
Lateral 5
Lateral 4A
Lateral 3
Lateral 2A
Lateral 2
Lateral 13
Lateral 12A
Lateral 11
Lateral 1
Lateral 20
Drain
Pump House
Old River
Intake Canal
Lift Pipelines
BETHANY
CVP Inlet Gate 8.51
CVP Inlet Gate 14.79

The West Side Irrigation District

**APPENDIX "B"**
**SOIL MAP**



JACK ALVAREZ, President
ERNEST J. POMBO, JR., Vice President

BARBARA L. KLEINERT, Secretary
Treasurer, Assessor, Collector

# THE WEST SIDE IRRIGATION DISTRICT

**DIRECTORS**
Stevens J. Arnaudo
Stephen R. Serpa
Jack Alvarez
Ernest J. Pombo, Jr.
Manuel Amaral

1320 N. Tracy Boulevard
P.O. Box 177
Tracy, California 95378-0177

Telephone (209) 835-0503
Fax (209) 835-2702

## IMPORTANT NOTICE TO LANDHOLDERS OF THE WEST SIDE IRRIGATION DISTRICT

## NOTICE OF WATER RATE CHANGE

Effective January 9, 2008 and applicable to the 2008 irrigation season, the Board of Directors of The West Side Irrigation District approved the following water rates:

| | |
|---|---|
| Water Rate to Lands Within WSID Boundaries: | $14/af |
| Water Rate to Lands That Were Previously Within WSID Boundaries, But That Have Detached: | $25/af |
| Water Rate to Lands That Have Never Been Within WSID Boundaries: | $75/af* |
| Municipal and Industrial Water Rate: | $200/af |

If you are unsure which rate applies to the land you plan to irrigate, please call Barbara: 835-0503

*The annual in-lieu stand-by charge that has historically applied to lands that have never been within WSID boundaries has been discontinued and will no longer be assessed.

A water service agreement is now required for all lands located outside of WSID boundaries as a condition to receiving irrigation water.

At its February 2008 meeting, the Board will be reviewing and will consider changing the current policy of requiring a security deposit of $7.50/acre for all lands being irrigated.

Please feel free to contact either Barbara or Steve Kaiser if you have any questions: Barbara: 835-0503; Steve: 209-479-2115

Thank you for your courtesies.

**2007 Rates & Tolls:**

| | |
|---|---|
| Water to District Water User's: | $14/af |
| Surplus Water Outside District Boundaries: | $15/af |
| Annual Water Rate: | $90/acre |
| Annual Water Rate - Mt. View Road: | $100/acre (based on assessor's acres) |
| Annual Water Rate - Surplus Water Outside District Boundaries: | $120/acre |
| Municipal Water: | $200/acre ft. |
| SURPLUS WATER AGREEMENT | |
| Minimum Water Service Stand By Charge: (based on assessor's acres - given back as grower irrigates) | $25/acre |
| In-Lieu Stand By Charge: (based on assessor's acres - NOT given back as grower irrigates) | $25/acre |
| Drainage Fee to Ag. Customers: | $10/acre |
| Wheeling Rate: (By contract) | $5.25/acre |
| Construction Water: (At secretary's discretion: $100/day) | $1000/mo |
| DeWatering Schedule: | |
| 0-5 acres | $500/mo |
| 6-40 acres | $ 1,000/mo |
| 41-80 acres | $1,500/mo |
| over 81 acres | $2,000/mo |

Equipment Rental to District Landowners: All equipment rental subject to availability of District personnel to operate equ
(Hauling charges may apply)

| | |
|---|---|
| Hyundai Excavator: | $150/hr |
| Drott Excavator: | $100/hr |
| Grader: | $75/hr |
| Backhoe: | $75/hr |
| D-4 Tractor: | $60/hr |
| Disc: | $75/day |

| | | | | | | |
|---|---|---|---|---|---|---|
| Total Water Sold in 2007 | 25,573.78 af | | | | | Cost Per Acre Foot |
| **Source of Supply Costs:** | | | | | | |
| CVP Water Purchased | $ | 68,225.85 | | | | |
| CVP Restoration | $ | 21,450.00 | | | | |
| Self-Funding to SLDMWA | $ | 7,489.89 | | | | |
| CVP O&M | $ | 895.10 | | | | |
| Water Right's Fees | $ | 3,128.78 | | | | |
| | | | $ | 101,189.62 | $ | 3.96 |
| **Pumping Costs** | | | | | | |
| PWRPA Power | $ | 228,865.10 | | | | |
| Other Engineering - PWRPA | $ | 70,234.26 | | | | |
| Other Power | $ | 1,984.05 | | | | |
| Pumphouse Maintenance | $ | 5,498.10 | | | | |
| Pump Repair & Maintenance | $ | 37,832.95 | | | | |
| Panel Maintenance | $ | 9,413.11 | | | | |
| | | | $ | 353,827.57 | $ | 13.84 |
| **Transmission Costs** | | | | | | |
| Pipeline Maintenance | $ | 8,231.10 | | | | |
| Other Maintenance | $ | 9,680.98 | | | | |
| Outside Canal Dredging | $ | 11,152.50 | | | | |
| Weed/Rodent | $ | 14,605.01 | | | | |
| Fuel | $ | 24,712.24 | | | | |
| Auto | $ | 7,205.45 | | | | |
| Tractor | $ | 15,735.00 | | | | |
| Tools & Supplies | $ | 13,665.93 | | | | |
| Outside Labor | $ | 1,254.40 | | | | |
| | | | $ | 106,242.61 | $ | 4.15 |
| **Operations Labor** | | | | | | |
| Ditchtenders & Maintenance Salary | $ | 175,258.14 | $ | 175,258.14 | $ | 6.85 |
| **Administrative Salaries + Expense** | $ | 101,247.08 | $ | 101,247.08 | $ | 3.96 |
| **Administrative Expenses** | | | | | | |
| Directors & Expense | $ | 6,822.59 | | | | |
| Workman's Comp. & Liability | $ | 38,706.72 | | | | |
| Pension & Gov't Payroll Taxes | $ | 30,973.58 | | | | |
| Group Insurance | $ | 134,823.48 | | | | |
| Office Expenses | $ | 15,027.38 | | | | |
| Legal & Accounting | $ | 24,605.70 | | | | |
| Dues & Membership | $ | 16,942.25 | | | | |
| Other Engineering | $ | 44,337.50 | | | | |
| Miscellaneous | $ | 7,078.23 | | | | |
| Depreciation | $ | 63,000.00 | | | | |
| | | | $ | 382,317.43 | $ | 14.95 |
| **TOTAL 2007 Costs To Date** | | | $ | 1,220,082.45 | $ | 47.71 |

APPENDIX "I"

WATER RATES FOR 2007

| | | |
|---|---|---|
| Water Rate: | $ 14.00/af | |
| Water Rate – Surplus Water: | $ 27.00/af | |
| Water Rate – M&I Water: | $ 100.00/af | |
| Annual Water Charge – Small Parcels: | $ 90/acre | |
| Annual Water Charge – Mt. View Road: | $ 100/acre | |
| Annual Water Charge – Surplus Water – Small Parcels: | $ 120.00/acre | |
| Minimum Water Service Stand-By Charge: | $ 25.00/acre | |
| Wheeling Rate: | | $ 5.25/af |

The West Side Irrigation District