Laguna Irrigation District

2015 Update
Agricultural Water Management Plan

Update Prepared Pursuant to Water Code Section 10826
and Executive Order B-29-15

Laguna Irrigation District
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Adopted January 22, 2016

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Section 1: Plan Preparation and Adoption

A. Description of Previous Water Management Activities

This Agricultural Water Management Plan (AWMP) represents the first update to the 2012 Plan prepared by Laguna Irrigation District (District) to comply with the requirements of SB X7-7 (the Water Conservation Act of 2009). The District has, however, been involved in other water management efforts throughout the years as noted below.

In 1992, the District adopted an AB 1658 Groundwater Management Plan

In 1993, the District prepared an AB 255 Groundwater Management Plan

In 2005, the District participated in the preparation of an SB 1938 Groundwater Management Plan, which was adopted.

In 2012, the District prepared and submitted the "2012 Agricultural Water Management Plan" in compliance with SB X7-7. The 2012 report concluded that the District had fully implemented all of the critical and applicable conditional EWMPs.

The purposes for preparing the 2015 update to the 2012 Plan for the District are to:

1. Incorporate the requirements from the Governor's April 1, 2015 Executive Order (B-29-15) to include in the AWMP a drought management plan in addition to quantification of water supplies and demands for the 2013, 2014, and 2015 years to the extent data is available.
2. Continue to evaluate the District's water management practices.
3. Identify areas to improve the efficiency of water use within the District.
4. Consider past and future water management strategies to increase the reliability of water deliveries to the District.

B. Coordination Activities

1. Notification of AWMP Preparation

Interested Parties:

County of Kings
Date of Notification of Plan Preparation: January 6, 2016
Notice attached in Section 9: Supporting Documents.

Copy of Adopted Plan Date Sent: January 25, 2016

County of Fresno
Date of Notification of Plan Preparation: January 6, 2016
Notice attached in Section 9: Supporting Documents.

Copy of Adopted Plan Date Sent: January 25, 2016

Local Newspaper:

Hanford Sentinel
Notification of Public Meeting Published January 8, 2016, and January 15, 2016, noticing that the "DRAFT" updated AWMP was available at District Office for public review on

January 8, 2016, with a Hearing to be held on January 22, 2016, at 9:30 am at the same location.

Notification of Public Meeting is attached in Section 9: Supporting Documents.

C. Plan Adoption

At a hearing on January 22, 2016, The Laguna Board of Directors adopted the AWMP. A copy of the Resolution is attached in Section 9: Supporting Documents.

Section 2: Description of the Agricultural Water Supplier and Service Area

History of the District:

A public agency, the Laguna Irrigation District was formed in 1920 and serves an area of southern Fresno County and northern Kings County west of Laton and south, southeast and southwest of Riverdale. The service area includes a substantial portion of the historic Laguna de Tache Land Grant. The District's southerly boundary is generally along the South Fork of the Kings River. Laguna Irrigation District has multiple points of diversion that supply the Grant Canal, A Ditch, Island Canal and Summit Lake Ditch.

Laguna Irrigation District's surface water supply is from the Kings River, with approximately 56,000 acre feet of storage at Pine Flat Reservoir and other reservoirs in the Kings River Watershed. Due to the limited ability to store water, the Kings River water users depend upon storage in the Sierra Nevada Mountains in the form of snow to capture surface water that then melts in the spring and summer months when water requirements increase.

Historically, in flood years where surface water is abundant, the Laguna Irrigation District takes advantage of that available water and recharges as much as possible in groundwater storage for subsequent dry years. The District owns and operates six regulation/recharge reservoirs where water can be captured and banked as groundwater or temporarily held and reused as surface water.

Due to the unpredictable nature of Laguna Irrigation District's surface water supply, it is necessary to point out that *conjunctive use* is a very important part of District operations. The District does not operate any groundwater wells, but its landowners use their own groundwater wells to supply water for their crop needs when surface water supplies are not available.

The plan document will demonstrate that the District is very unique in the Lower Kings River Sub-Basin because its groundwater supply is fairly stable. Due to the proximity to the Kings River and permeable soils within the District, it is possible to replenish subsurface storage in wet years after drought cycles.

The District is also exceptional in that it has a very extensive distribution system consisting of about 50 miles of open canals and 47 miles of pipeline. Due to the placement of the delivery system, approximately 86 percent of the District can be supplied with surface water.

A. Physical Characteristics

1. Water Supplier History and Size

Date of Formation: 1920

District Source of Water

	Yes	No
Local Surface Water (Kings River)	X	
Local Groundwater		X
Wholesaler		X
USBR		X
SWP		X

Service Area Gross Acreage 35,197 acres
Service Area Irrigated Acreage 29,210 acres (District supplied surface water)

Prior to the construction of Pine Flat Dam in the 1950's, the District water supply was dependent upon what water was actually in the Lower Kings River and a schedule of allocation developed in the 1920's. This was extremely unreliable with extremes of abundant water, often when not needed, to little or no water at other times. Upon completion of the dam, water supplies became somewhat more manageable, but are still quite variable and not reliable. The surface water supply is unpredictable due to variations in precipitation and runoff, and the current limited surface water storage.

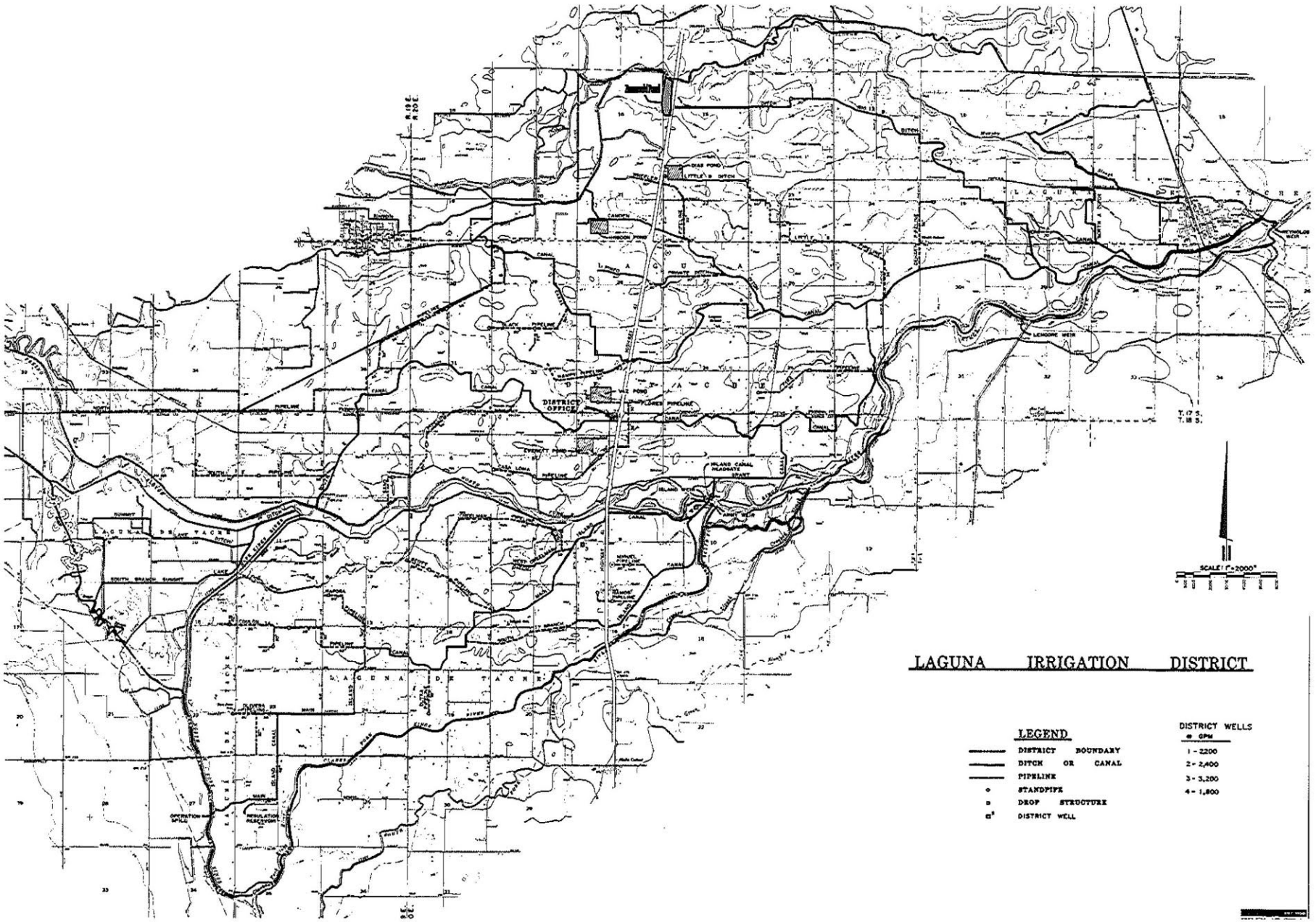
2. Location of Service Area:

The service area of Laguna Irrigation District comprises 35,197 acres total with 29,210 acres of the District able to be supplied with surface water. The balance of the land is undeveloped, operated as livestock facilities, right of ways, or areas where deliveries from the District are, for various reasons, not feasible.

Local soils and near surface conditions influence how water applied at the land surface, either from rainfall or irrigation, moves through the soil and percolates downward into the groundwater basin; how canals flow and stream flow contribute to the groundwater budget; and also may influence the location and design of recharge projects and delivery canals. Deeper geologic features control the fate and transport of water once it is in the subsurface, groundwater storage capacity, recharge-discharge relationships, flow between areas, and well designs and pumping rates.

Water Conveyance and Delivery System

System Used	Number of Miles
Unlined Canal	49
Lined Canal	1
Pipelines	47
Drains	0


LAGUNA IRRIGATION DISTRICT
LEGEND
DISTRICT BOUNDARY
DITCH OR CANAL
PIPELINE
STANDPIPE
DROP STRUCTURE
DISTRICT WELL
DISTRICT WELLS @ GPM
1 - 2200
2 - 2,400
3 - 3,200
4 - 1,800
DISTRICT OFFICE
SCALE: 1" = 2000'
T. 17 S.
T. 18 S.
LAGUNA DE TACHE

Laguna Irrigation District, as the map on the previous page shows, has a very extensive distribution system of canals and pipelines. The 50 miles of canal range in capacity from 500 cubic feet per second (cfs) as in the Grant Canal down to 20 cfs in the Little B canal. The network of pipelines ranges in size from 18 inch diameter to 42 inch diameter. The pipelines are being upgraded over time at District expense from concrete monolithic to plastic pipe to increase efficiency and reduce leakage. Historically, the pipelines were installed in areas where an existing open canal had excessive seepage loss due to the soil types present. Because of the broad system of canals and pipeline, all landowner diversions are currently made from District owned facilities. All water measurements are taken at the District (farm-gate) turnout. There are no private laterals in use at this time.

3. Description of Terrain or Soils:

Topography

There is little change in ground surface elevation within the District boundary and surrounding area. Ground surface elevations are slightly highest along the east side of the District and gradually decline to the west, ranging from 220 to 205 feet above mean sea level.

Geology

The groundwater aquifer system consists of unconsolidated continental deposits (DWR, 2003). The deposits are divided into formations that include older alluvium, marsh deposits, younger alluvium, and flood-basin deposits. The older alluvium is an important aquifer that readily yields water to wells. It consists of lenses of clay, silt, sand, gravel, cobbles, and boulders and is generally fine grained near the deepest part of the valley. Marsh deposits are mixed in with the older alluvium. The younger alluvium is a sedimentary deposit found beneath the river channels and is highly permeable. There are no known major faults or fault zones that have been mapped or identified that would inhibit groundwater flow within District boundary.

4. Climate Characteristics

The climate in the region is semi-arid, with mild winters and hot summers. Typical annual rainfall is 8-11 inches per year, with most of the rainfall occurring in winter and spring. Precipitation in the region does not provide water for crops at time or in the amounts needed to meet crop water demands. Within the District, water is applied by delivered surface water or pumped groundwater.

Worksheet 1. Average Monthly Temperature and Rainfall

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Avg. High Temp.	54.1	61.7	66.6	75.1	84.2	92.7	98.6	96.7	90.1	79.7	64.7	53.7
Avg. Low Temp.	37.4	40.5	43.4	47.3	53.7	60.4	65.1	63.8	58.8	50.7	42.5	37.1
Avg. Rainfall (Inches)	1.96	1.80	1.89	0.97	0.30	0.08	0.01	0.03	0.24	0.53	1.37	1.42

Impact of Microclimates on Water Management within the Service Area

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

B. Operational Characteristics

1. Operational Rules and Regulations

The current District Rules and Regulations were updated in April 2005. See Section 9: Supporting Documents

2. Water Delivery Measurements or calculations

Worksheet 2. Water Delivery Measurements				
Measurement Device	Percent of Measurement	Frequency of Measurement (Days)	Frequency of Maintenance (Months)	Estimated Level of Accuracy (%)
Headgate w/stilling well	0%	n/a		
Propeller Meters	100%	Daily	Annually/as needed	±2%
Weirs	0%	n/a		
Flumes	0%	n/a		
Vertical Meters	0%	n/a		
Pump, Run Time	0%	n/a		
Pump, KWH	0%	n/a		
	100%			

The District has, since 1989, allocated and measured all on farm deliveries. The allocation is the best estimate of water supply made prior to the actual start of deliveries. As indicated, the available surface water supply varies from year to year. The District supply is then spread over the acreage that is eligible to receive such water, with a per acre allocation made to the landowners.

Water measurement to the landowners is accomplished with the use of Water Specialties brand propeller type open flow meters. These meters read in cubic feet per second in instantaneous measurement and in acre feet, cumulatively. The meters' cumulative and instantaneous flows are recorded daily by the field staff and the data is entered into the District's computer system where daily available balances are calculated by landowner. Errors in readings are immediately addressed by verifying data. If there is an issue with a meter, it is repaired on site and tested or replaced. Any lapses in data are extrapolated from prior and current instantaneous flows.

3. Water Rate Schedules and Billing

Worksheet 3. Water Rate Basis			
Water Charges	Check if Used	Percent of Water Deliveries	Description
Volume of Water Deliveries	X -Yes.	100%	Water Toll established in 2014 (see Resolution 14-07 in Supporting Documents), rate to be established annually up to $5.00/AF.
Rate and Duration of Water Deliveries	X- Varies by allocation.		
Acre	X	100%	Water is allocated by acreage.
Crop	n/a		
Land Assessment	n/a		
Other	n/a		

Volume of Water Deliveries

The District does allocate, measure and account for water usage by each water user. The annual landowner allocation, as indicated above, is made on a per acre basis once the District's available surface water is estimated for that year. Water use is measured with propeller meter measuring devices and is debited against the landowner's water allocation. Water deliveries

are cut off to a water user when they have used their water allocation. Historically water deliveries were not charged volumetrically, but a water delivery (toll) charge has now been implemented as discussed below.

Rate and Duration of Water Deliveries

A Proposition 218 election, as required by law, was held in 2014 to consider implementing a water delivery charge and a majority protest was not received, allowing the District to establish a volumetric water toll charge. See Resolution 14-07 in Supporting Documents. The water delivery charge will be established each year by the District, not to exceed $5.00 per acre-foot. The water delivery charge will be in addition to the land based assessment, except for the first year of implementation in 2015-2016 when the water delivery charge will be phased in by offsetting the land based assessment by the amount of the water delivery charge. The full land based assessment and water delivery charge will be levied in the 2016-17 assessment period and thereafter, without offset.

As the attached Rules and Regulations show, those lands able or eligible to receive District surface water, Rate 1, are assessed a land based assessment each year. The current annual assessment is $24.50 per acre. Landowners who use groundwater exclusively, Rate 2, are charged an annual per acre rate that is 50% of the surface supplied irrigated rate assessment. This charge is in place to pay for the operation of recharge facilities where water that is put into the aquifer when available.

The land based assessments also add to the water delivery rate. Since the annual water allocation varies, the cost per acre foot varies by virtue of dividing the annual assessment by the allocation in acre feet. For example, the Rate 1 annual assessment is currently fixed at $24.50 per acre. In a year where 2 acre feet per acre is allocated, the water cost would be $12.25 per acre foot in assessments plus up to $5.00 per acre foot in water delivery charge. In a dry year where 0.5 acre feet per acre are allocated to the landowner, the water cost would be $49 per acre foot in assessments plus up to $5.00 per acre foot in water delivery charge.

As for duration of water deliveries, that is dependent upon the water year. In a typical year, water deliveries begin in June and run through August, approximately 90 days. During that time, the entire distribution system is used to allow for flexibility of deliveries. The District does not confine deliveries to certain reaches of the canals or pipelines. By doing so, water operations are more flexible so that water from a premature shutoff can be directed to another grower on the same canal or pipeline. This method, in most cases, eliminates drastic changes in the system operation and efficient deliveries.

Laguna Irrigation District encourages water efficiency by allowing those growers who use less than their annual allocation of surface water to transfer their unneeded surface water to other growers within our District. The transferred water is then accounted to the end user.

4. Water Shortage Allocation Policies

Worksheet 4. Decreased Water Supply Allocations	
Allocation Method	Check if Used
By crop	
First come first serve	
Area in the District	
Other-Allocated to Land Owner on a per acre basis	x
No Specific Policy	

Laguna Irrigation District, regardless of water supply, allocates all water on a per acre basis to its landowners based on the acreage eligible to receive surface water. In a water shortage, all landowner allocations are reduced equally.

In the case where a water user is wasting water or using water in a manner deemed inefficient, the District may stop water deliveries until such time as the landowner follows all policies of Laguna I.D. This is accomplished by closing and locking the headgate to stop water flow. See Rules and Regulations, item 13 in Section 9: Supporting Documents.

Section 3: Description of Quantity of Water Uses of the Agricultural Water Supplier

A. Agricultural Use

Worksheet 5. Annual Agricultural Water Use (AF)	
Source	Representative Year 2010
Ag Water Supplier Delivered	
Surface Water	40,736 AF on farm
Groundwater	n/a
Other Water Suppliers Used	n/a
Surface Water	n/a
Groundwater	n/a

As Laguna Irrigation District does not operate its own groundwater wells, all groundwater is pumped by landowners only.

Worksheet 6. Agricultural Crop Data (2010)									
Crop Name	Total Acreage	Irrigation Method	Planting Month	Harvest Month	ET Crop (AF/Ac)[1]	Cultural Practices (AF/Ac)[2]	Leaching Requirement (AF/Ac)[3]	Total Crop Water Needs (AF)	Total Crop Water Usage (AF)
Alfalfa	2,696	Flood	Dec-Feb	Mar-Sep	4.15	n/a	Unknown	4.15	11,190
Grain	12,913	Flood	Oct-July	Feb-Sep	2.58	n/a	Unknown	2.58	33,315
Cotton	626	Flood/Drip	Mar-April	Oct-Dec	2.9	n/a	Unknown	2.9	1,815
Pecans	43	Flood	n/a	Oct-Dec	4.07	n/a	Unknown	4.07	173
Pistachios	347	Drip	n/a	Sept-Oct	3.24	n/a	Unknown	3.24	1,125
Walnuts	3,291	Flood	n/a	Aug-Oct	4.07	n/a	Unknown	4.07	13,394
Stone fruit (includes almonds)	5,256	Flood/drip	n/a	June-Oct	3.5	n/a	Unknown	3.5	18,397
Citrus	12	Drip	n/a	Varies	3.59	n/a	Unknown	3.59	43
Grapes	1,390	Drip	n/a	Sep-	2.57	n/a	Unknown	2.57	3,573
Pomegranate	534	Flood/Drip	n/a	Sep-	3.49	n/a	Unknown	3.49	1,864
Quince	25	Flood	n/a	Sep-Oct	3.65	n/a	Unknown	3.65	91
Pasture	1,015	Flood	varies	Varies	4.32	n/a	Unknown	4.32	4,385
Vegetables	91	Drip	varies	Varies	1.77	n/a	Unknown	1.77	161
Trees, other	46	Flood	n/a	Varies	3.00[4]	n/a	Unknown	Varies	137
Ttal Crop	28,284								
Undeveloped	923								
Livestock Facilities	2,540								
Right of Way	3,450								
Total Non-crop	6,913								
TOTAL ACRES	35,197								75,714

[1] Crop ET obtained from ETC Table for Irrigation District Water Balances, ITRC, Zone 16 for typical year.

[2] Water for cultural practices to prevent frost damage to fruit or to maintain crops, such as melons or tomatoes awaiting harvest, is not applicable to Laguna Irrigation District as there are no such crops currently grown within District boundaries.

[3] Unknown due to soil quality within Laguna Irrigation District and the purity of Kings River Water. The requirement if known would be low.

[4] Estimate for minor various tree crops.

Worksheet 6. Agricultural Crop Data (2013)									
Crop Name	Total Acreage	Irrigation Method	Planting Month	Harvest Month	ET Crop (AF/Ac)[1]	Cultural Practices (AF/Ac)[2]	Leaching Requirement (AF/Ac)[3]	Total Crop Water Needs (AF)	Total Crop Water Usage (AF)
Alfalfa	2,855	Flood	Dec-Feb	Mar-Sep	4.15	n/a	Unknown	4.15	11,848
Grain	12,555	Flood	Oct-July	Feb-Sep	2.58	n/a	Unknown	2.58	32,392
Cotton	345	Flood/Drip	Mar-April	Oct-Dec	2.9	n/a	Unknown	2.9	1,001
Pecans	43	Flood	n/a	Oct-Dec	4.07	n/a	Unknown	4.07	173
Pistachios	625	Drip	n/a	Sept-Oct	3.24	n/a	Unknown	3.24	2,025
Walnuts	3,290	Flood	n/a	Aug-Oct	4.07	n/a	Unknown	4.07	13,390
Stone fruit (includes almonds)	5,542	Flood/Drip	n/a	June-Oct	3.5	n/a	Unknown	3.5	19,397
Citrus	12	Drip	n/a	Varies	3.59	n/a	Unknown	3.59	43
Grapes	1,435	Drip	n/a	Sep-Nov	2.57	n/a	Unknown	2.57	3,688
Pomegranate	497	Flood/Drip	n/a	Sep-Nov	3.49	n/a	Unknown	3.49	1,735
Quince	25	Flood	n/a	Sep-Oct	3.65	n/a	Unknown	3.65	91
Pasture	1,015	Flood	varies	Varies	4.32	n/a	Unknown	4.32	4,385
Trees, other	46	Drip	varies	Varies	1.77	n/a	Unknown	1.77	137
Total Crop	28,284	Flood	n/a	Varies	3.00[4]	n/a	Unknown	Varies	90,305
Undeveloped	923								
Livestock	2,540								
Right of Way	3,450								
Total Non-crop	6,913								
TOTAL ACRES	35,197								90,305

Worksheet 6. Agricultural Crop Data (2014)									
Crop Name	Total Acreage	Irrigation Method	Planting Month	Harvest Month	ET Crop (AF/Ac)[1]	Cultural Practices (AF/Ac)[2]	Leaching Requirement (AF/Ac)[3]	Total Crop Water Needs (AF)	Total Crop Water Usage (AF)
Alfalfa	2,722	Flood	Dec-Feb	Mar-Sep	4.15	n/a	Unknown	4.15	11,296
Grain	12,600	Flood	Oct-July	Feb-Sep	2.58	n/a	Unknown	2.58	32,508
Cotton	555	Flood/Drip	Mar-April	Oct-Dec	2.9	n/a	Unknown	2.9	1,610
Pecans	43	Flood	n/a	Oct-Dec	4.07	n/a	Unknown	4.07	173
Pistachios	850	Drip	n/a	Sept-Oct	3.24	n/a	Unknown	3.24	2,754
Walnuts	3,290	Flood	n/a	Aug-Oct	4.07	n/a	Unknown	4.07	13,390
Stone fruit (includes almonds)	6,088	Flood/Drip	n/a	June-Oct	3.5	n/a	Unknown	3.5	21,308
Citrus	12	Drip	n/a	Varies	3.59	n/a	Unknown	3.59	43
Grapes	1,395	Drip	n/a	Sep-Nov	2.57	n/a	Unknown	2.57	3,585
Pomegranate	198	Flood/Drip	n/a	Sep-Nov	3.49	n/a	Unknown	3.49	691
Quince	25	Flood	n/a	Sep-Oct	3.65	n/a	Unknown	3.65	91
Pasture	894	Flood	varies	Varies	4.32	n/a	Unknown	4.32	3,862
Trees, other	21	Drip	varies	Varies	1.77	n/a	Unknown	1.77	62
Total Crop	28,692	Flood	n/a	Varies	3.00[4]	n/a	Unknown	Varies	91,373
Undeveloped	622								
Livestock	2,433								
Right of Way	3,450								
Total Non-crop	6,505								
TOTAL ACRES	35,197								91,373

Worksheet 6. Agricultural Crop Data (2015)									
Crop Name	Total Acreage	Irrigation Method	Planting Month	Harvest Month	ET Crop (AF/Ac)[1]	Cultural Practices (AF/Ac)[2]	Leaching Requirement (AF/Ac)[3]	Total Crop Water Needs (AF)	Total Crop Water Usage (AF)
Alfalfa	2,163	Flood	Dec-Feb	Mar-Sep	4.15	n/a	Unknown	4.15	8,976
Grain	12,720	Flood	Oct-July	Feb-Sep	2.58	n/a	Unknown	2.58	32,818
Cotton	320	Flood/Drip	Mar-April	Oct-Dec	2.9	n/a	Unknown	2.9	928
Pecans	43	Flood	n/a	Oct-Dec	4.07	n/a	Unknown	4.07	173
Pistachios	1,080	Drip	n/a	Sept-Oct	3.24	n/a	Unknown	3.24	3,499
Walnuts	3,375	Flood	n/a	Aug-Oct	4.07	n/a	Unknown	4.07	13,736
Stone fruit (includes almonds)	6,935	Flood/Drip	n/a	June-Oct	3.5	n/a	Unknown	3.5	24,273
Citrus	12	Drip	n/a	Varies	3.59	n/a	Unknown	3.59	43
Grapes	1,330	Drip	n/a	Sep-Nov	2.57	n/a	Unknown	2.57	3,418
Pomegranate	100	Flood/Drip	n/a	Sep-Nov	3.49	n/a	Unknown	3.49	349
Quince	25	Flood	n/a	Sep-Oct	3.65	n/a	Unknown	3.65	91
Pasture	744	Flood	varies	Varies	4.32	n/a	Unknown	4.32	3,214
Trees, other	21	Drip	varies	Varies	1.77	n/a	Unknown	1.77	62
Total Crop	28,867	Flood	n/a	Varies	3.00[4]	n/a	Unknown	Varies	91,580
Undeveloped	447								
Livestock	2,433								
Right of Way	3,450								
Total Non-crop	6,330								
TOTAL ACRES	35,197								91,580

B. Environmental Water Use

Laguna Irrigation District supplies water for Agricultural Uses only. The District provides no water for Environmental Uses

C. Recreational Water Use

Open space is privately owned and there are no known resource areas. There are no Recreational or Cultural resources within the District. District land is predominantly privately held land used only for agriculture.

D. Municipal and Industrial Use

Laguna Irrigation District supplies water for Agricultural Uses only. There are no municipalities or non- agricultural industrial facilities within the District's boundaries. Facilities such as cotton gins use groundwater pumped from their private wells for their water needs.

E. Groundwater Recharge Use

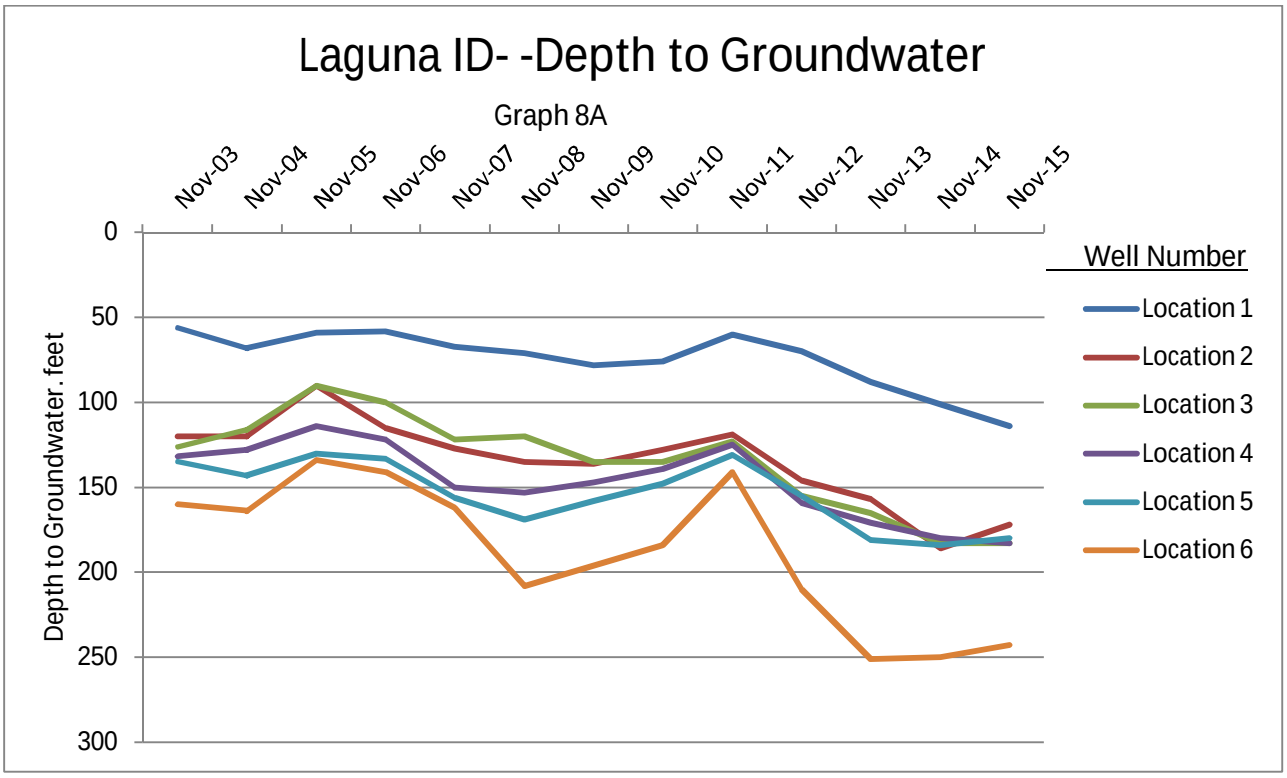
Worksheet 7. Groundwater Recharge Uses (AF)									
Location/ Groundwater Basin	**Method of Recharge**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Various Laguna ID Canals	Basin Seepage	8,323	10,651	23,105	45,355	10,604	4,079	0	3,603
Zonneveld Pond	Basin Seepage	105	135	316	120	157	0	0	0
Diaz Pond	Basin Seepage	44	68	113	731	56	0	0	0
Higdon Pond	Basin Seepage	132	158	339	996	191	0	0	0
Everett Pond	Basin Seepage	96	124	332	471	84	0	0	0
Coelho Pond	Basin Seepage	0	0	0	126	0	0	0	0
Vaz Pond	Basin Seepage	106	163	417	434	121	0	0	0
Total		8,806	11,299	24,622	48,233	11,213	4,079	0	3,603

Laguna Irrigation District is a conjunctive use district. Groundwater is recharged through basin seepage in the unlined canals and various ponds within the District. It must be noted that the Kings River runs through the District providing an unknown amount of recharge to the local groundwater basin. The river has channel losses between Pine Flat Dam and Laguna's diversion points, approximately a distance of 24 miles.

The ponds mentioned in worksheet 7 are primarily used for water regulation in normal water years. In wet years, as much water as possible is diverted into the ponds to aid recharge of the groundwater supply. Because the District cannot supply its landowners with enough surface water to meet their crop needs, this and any recharge is very important.

If Global Climate change predictions indicating less precipitation as snow and more as rainfall are correct, then increased reservoir storage, be it surface or groundwater, will be essential in the future to capture water for beneficial use.

Worksheet 8. Depth to Groundwater (feet)														
Well Location	**Well #**	**Nov.-03**	**Nov.-04**	**Nov.-05**	**Nov.-06**	**Nov.-07**	**Nov.-08**	**Nov.-09**	**Nov.-10**	**Nov.-11**	**Nov.-12**	**Nov.-13**	**Nov.-14**	**Nov.-15**
Section 21, T.17S/R.21E M.D.B.M.	Loc. 1	56	68	59	58	67	71	78	76	60	70	88	101	114
Section 34, T.17S/R.20E M.D.B.M.	Loc. 2	120	120	90	115	127	135	136	128	119	146	157	186	172
Section 4, T.18S/R.20E M.D.B.M.	Loc. 3	126	116	90	100	122	120	135	135	123	155	165	183	183
Section 9, T.18S/R.20E M.D.B.M.	Loc. 4	132	128	114	122	150	153	147	139	125	159	171	180	183
Section 18, T.18S/R.20E M.D.B.M.	Loc. 5	135	143	130	133	156	169	158	148	131	155	181	184	180
Section 23, T.18S/R.19E M.D.B.M.	Loc. 6	160	164	134	141	162	208	196	184	141	210	251	250	243



The groundwater situation within Laguna Irrigation District is unique to the Lower Kings River Basin in that the groundwater supply is fairly stable, allowing for continued conjunctive use. As is demonstrated by the data in Worksheet 8, groundwater extraction is replenished during flood event years which occur about every four years on average.

Note: Location 6 is at the west end of the District, adjacent to the Lemoore Naval Air Station (LNAS), where limited surface water is available and the need to grow crops for dust and weed control, continually pulls from Laguna Irrigation District's groundwater supply as LNAS is on the lower end of Laguna's groundwater gradient. Due to this, the water levels only recover at this location on flood event years. This is why there are such wide swings in the depth to groundwater at this location. Laguna Irrigation will work with LNAS in the future to develop a plan to increase recharge in the area.

Section 4: Description of Quantity and Quality of the Water Resources of the Agricultural Water Supplier

A. Water Supply Quantity

1. Surface Water Supply

Worksheet 9. Surface Water Supplies (AF)								
Source Kings River Pine Flat Reservoir	2008	2009	2010[1]	2011	2012	2013	2014	2015
Pine Flat Release into Kings River	36,986	45,944	82,983	118,108	34,294	10,766	0	21,280
Seepage in Kings River Channel @Headworks	9,676	14,593	17,268	24,070	9,133	3,959	0	15,077
Laguna Canal Diversion @ Headworks	27,310	31,351	65,715	94,038	25,161	6,807	0	6,203
Laguna On Farm Delivery	18,504	20,052	40,736	45,805	13,948	2,728	0	2,600
Seepage Canals and Ponds (recharge)	8,806	11,299	24,622	48,233	11,213	4,079	0	3,603

[1] 2010 is a good representation of a typical water year for the Laguna I.D.

As the District's water supply is dependent upon the Kings River Watershed, the annual supply is difficult to predict. The majority of the water has traditionally been stored within the snowpack, with spring and summer snow melt flowing into Pine flat Reservoir. Laguna Irrigation District is allocated a percentage of the water kept at Pine Flat Reservoir based upon a water schedule administered by Kings River Water Association (KRWA). If Global Climate change predictions indicating less precipitation as snow and more as rainfall are correct, then increased reservoir storage will be essential in the future to capture water for beneficial use.

The 2014-15 water year on the Kings River was the driest on record at only 21.5% of the average annual runoff. The past four water years, 2011-12 to 2014-15, cumulatively are the driest 4-year period on record at only 36% of the average annual runoff. The small amount of Kings River water that Laguna Irrigation District was entitled to in 2014 was not delivered in 2014 and was held in storage to supplement the 2015 supply.

2. Groundwater Supply

As mentioned in worksheet 7, Laguna Irrigation District operates six reservoirs that are used for recharge as well as regulation. These reservoirs along with the open canals and the Kings River channel enable recharge to the groundwater basin from which our landowners pump water. See the District map in Section 2 for the location of the canals and reservoirs.

Worksheet 8 and the subsequent graph, demonstrates that the local groundwater supply is generally stable. Reduced groundwater storage within the District during drought years are generally replenished in flood years.

Worksheet 10. Groundwater Basins			
Basin Name	Size (acres)	Usable Capacity (AF)	Safe Yield (AF/Yr)
Lower Kings Sub-Basin	326,400	44,000,000	Unknown

As for the larger Sub-Basin, please refer to the Kings Basin Integrated Regional Water Management Plan. This can be accessed at: http://krcd.org/_pdf_ukbirwma/20121017_KB_IRWMP.pdf

Worksheet 11. Groundwater Management Plan	
Written By	Water Resources & Information Management Engineering (WRIME)
Compliance	SB 1938
Year	April 2005
Website for Document	http://krcd.org/_pdf/Lower%20Kings%20Basin%20SB%201938%20GWMP_lowres.pdf

Groundwater is pumped by private landowners. The landowners have no restriction from the District on the amount of groundwater they can pump, other than their ability to pay for their own facilities and energy costs.

3. Other Water Supplies

Laguna Irrigation District has no other water supplies than the Kings River supply.

4. Drainage From the Water Supplier's Service Area

Laguna Irrigation District does not drain waters out of its service area. Laguna Irrigation District has a return and regulation system to ensure no loss of water within district's facilities.

Surface applied waters within the District, if not drained into the soil profile are returned within the parcel of use and reused. Most landowners have an irrigation return system where appropriate.

Due to the quality of the soils within the District, there are no subsurface drainage facilities to remove saline water. What subsurface drainage that currently exists in the District is located near or along the Kings River to remove river seepage during flood events. These facilities are operated, in most cases by the Kings River Conservation district.

B. Water Supply Quality

1. Surface Water Supply

Surface Water Quality measurements have been collected as part of the Central Valley Regional Water Quality Control Board's (Regional Board) Irrigated Lands Regulatory Program (ILRP) since the program's inception in 2006. This data has been collected by the staff of the Kings River Conservation District (KRCD), acting on behalf of the Kings River Sub-Watershed (KRSW) and the Southern San Joaquin Valley Water Quality Coalition (SSJVWQC). The number of monitored constituents and frequency of sampling has changed as the ILRP has evolved, but several monitoring sites have remained relatively constant throughout the program. The program is expected to continue to operate in its current form until the revised program is implemented in 2014.

Three sampling sites are included within this report: Army Corps of Engineers (ACOE) Bridge, Manning Ave, and Lemoore Weir. Each site has unique characteristics and represents the best water quality data points on the Kings River.

ACOE Bridge is the calibrated weir located at the base of Pine Flat Dam. Releases from Pine Flat are measured at this point, located ¼ mile downstream of the dam. This sampling point was used by the KRCD to evaluate the baseline water quality of the Kings River before any agricultural influence could occur. The site is no longer in active use.

Manning Ave is located behind Reedley Community College and has the largest available dataset for quality analysis (50 sample events). This site is downstream of most, if not all, of the foothill watersheds that discharge into the Kings River. The operational characteristics of the Kings River means that the water quality during the winter months is more reflective of these foothill watersheds than of the Kings itself, as most of the flows for the Kings are being accumulated behind Pine Flat Dam, and only fishery maintenance flows are being released.

Lemoore Weir is a major diversion point on the lower Kings River (the portion of the river downstream of People's Weir at Kingsburg). Lemoore Canal and Irrigation Company frequently orders water during the late winter/early spring to assist growers in pre-plant irrigation needs, as well as the summer "coordinated run," where lower river water rights holders agree to take their irrigation deliveries during the same period, thus sharing the channel losses in the Lower Kings. This gives the KRCD two distinct sampling periods from which to collect water quality data.

Water quality monitoring was initially conducted during irrigation deliveries (with additional samples collected during or shortly after storm events) when flowing water was present within the system. In 2010, the program was modified to include year-round testing of all flowing water, conditions permitting. Manning Ave is the only site with samples collected year-round.

Worksheet 12. Sample Site: ACOE Bridge		
Parameter	Units	Avg. 2006-2007
Electrical Conductivity	umhos/cm	26.2 (16.4-39.1)
pH	Units	6.9 (6.3-7.3)
Dissolved Oxygen	mg/L	10 (8.5-11.0)
Temperature	°C	12.6 (9.5-17.5)
TDS	mg/L	24.4 (14.0-50.0)
Se	ug/L	Not detected
B	ug/L	Not detected
Mo	ug/L	1.1
As	ug/L	0.56 (0.4-0.7)
Pesticide	See below	
Herbicide	See below	
N03		0.86 (0.7-1.0)

Data provided as a baseline reference only. Samples discontinued after 2007.

Worksheet 13. Sample Site: Manning Ave.		
Parameter	Units	Avg. 2006-2011
Electrical Conductivity	umhos/cm	59.3 (19.1-163.9)
pH	Units	7.0 (6.1-8.2)
Dissolved Oxygen	mg/L	10 (7.9-11.4)
Temperature	°C	14.2 (8.2-26.1)
TDS	mg/L	41.4 (11.0-110.0)
Se	ug/L	2.4 (1.0-3.8)
B	ug/L	11.4 (5.0-17.3)
Mo	ug/L	1.7 (0.7-2.6)
As	ug/L	0.8 (0.3-1.4)
Pesticide	See below	
Herbicide	See below	
N03		0.7 (0.2-2.3)

First sample site downstream of all foothill tributaries to the Kings River. Represents water quality of Upper River.

Worksheet 14. Sample Site: Lemoore Weir		
Parameter	Units	Avg. 2006-2011
Electrical Conductivity	umhos/cm	41.8 (20.0-107.8)
pH	Units	7.3 (6.7-8.7)
Dissolved Oxygen	mg/L	9.7 (6.7-12.0)
Temperature	°C	17 (9.6-26.9)
TDS	mg/L	32.8 (10.0-63.0)
Se	ug/L	1.1 (0.99-1.3)
B	ug/L	11.3 (10.2-12.3)
Mo	ug/L	1.4 (0.6-2.1)
As	ug/L	0.6 (0.2-1.0)
Pesticide	See below	
Herbicide	See below	
N03	mg/L	0.6 (0.2-1.3)

Represents water quality on lower Kings River, and is generally more representative of water diverted to the lower Basin.

Worksheet 15. Pesticides/Herbicides included in Surface Water Testing			
Constituent	Units	Constituent	Units
Aldicarb	ug/L	Carbaryl	ug/L
Carbofuran	ug/L	Methiocarb	ug/L
Methomyl	ug/L	Thiobencarb	ug/L
Oxamyl	ug/L	DDD	ug/L
DDE	ug/L	DDT	ug/L
Dicofol	ug/L	Dieldrin	ug/L
Endrin	ug/L	Methoxychlor	ug/L
Toxaphene	ug/L	Azinphos-methyl	ug/L
Chlorpyrifos	ug/L	Diazinon	ug/L
Dichlorvos	ug/L	Dimethoate	ug/L
Demeton-S	ug/L	Disulfoton	ug/L
Malathion	ug/L	Methamidophos	ug/L
Methidathion	ug/L	Methyl Parathion	ug/L
Phorate	ug/L	Phosmet	ug/L
Atrazine	ug/L	Simazine	ug/L
Cyanazine	ug/L	Diuron	ug/L
Molinate	ug/L	Glyphosate	ug/L
Paraquat	ug/L	Linuron	ug/L
Trifluralin	ug/L	Bifenthrin	ug/L
Cyfluthrin	ug/L	Cypermethrin	ug/L
Esfenvalerate	ug/L	Fenpropathrin	ug/L
Permethrin	ug/L	Lambda Cyhalothrin	ug/L

The above listed pesticides are currently tested for in a One year, high intensity sampling regime followed by Two years of lower intensity testing. For the most part, none of the above chemistries have been detected in reportable/actionable quantities.

C. Water Quality Monitoring Practices

1. Source Water

Worksheet 16. Water Quality Monitoring Practices		
Monitoring Program	Analysis Performed	Frequency of Analysis
ILRP (Surface Water)	See above	Monthly when flowing water is available
ILRP (Ground Water)	TBD	TBD

The Kings River Conservation District (KRCD) through its management of the Irrigated Lands Regulatory Program (ILRP) for the Kings River Service Area (Kings Basin and Tulare Lake Basin) monitors surface water quality within the basin on a monthly basis. The constituents monitored are specified by the Regional Water Quality Control Board (Regional Board). Project specific Quality Assurance and Quality Control (QA/QC) is outlined in the Quality Assurance Project Plan (QAPP) that has been prepared by the Southern San Joaquin Valley Water Quality Coalition (SSJVWQC) and submitted for Regional Board approval. This document outlines detection limits (detection and reporting limits), methods used to detect the constituent in question, and the laboratory procedures used to process the submitted samples. The QAPP also outlines sample collection and handling procedures and required actions should problems arise.

Sampling of surface water is not limited to chemical constituents; basic physical parameters

(conductivity, pH, temperature, dissolved oxygen) are measured and bacterial and water column toxicity samples are collected as well. Bacteria samples are analyzed for E. coli and fecal coliform, water column toxicity is a combination of tests of indicator species (algae, minnow, crustacean) to evaluate toxicity within the food chain.

Sampling is conducted once per month on a fixed schedule (approximately the same time each month, adjusted for holidays.

Groundwater monitoring under the ILRP is a yet to be implemented program and is still in draft form. As currently proposed, sampling would be done a minimum of once per year and include basic physical parameters with chemical tests for nitrate + nitrite levels, total nitrogen, some key metals, and specific constituents of concern (on a once per five year basis). Areas identified as being impacted by nitrates would have higher frequency and density of monitoring activities.

The Laguna Irrigation District and KRCD already measures depth to groundwater on a Spring and Fall measurement schedule, and coordinates the data collection for several cooperating agencies for reporting under the CASGEM program.

Section 5: Water Accounting and Water Supply Reliability

A. Quantifying Water Supplier's Water Supplies

1. Agricultural Water Supplier Water Quantities

Worksheet 17. Surface and Other Water Supplies (AF)													
Source	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Kings River 2010	0	0	0	0	4,506	18,514	20,073	19,061	3,568	0	0	0	65,722
Kings River 2011	14,926	3,792	13,004	19,571	29,887	43,821	18,117	4,063	1,214	2,336	873	910	152,514
Kings River 2012	1,066	849	1,162	7,932	6,042	835	862	900	962	910	980	3043	25,543
Kings River 2013	1,436	819	918	2,390	2,110	845	883	900	867	885	869	906	13,828
Kings River 2014	916	909	908	1,127	1,212	857	894	837	994	876	867	972	11,369
Kings River 2015	906	1176	873	822	855	811	839	840	866	876	866	908	10,638

The water amounts indicated in Worksheet 17 are the actual Laguna Irrigation District entitlement from the Kings River. The District is allocated surface water based upon a water schedule created after the completion of Pine Flat Dam. This water accumulates in varying amounts throughout the water year, October 1 through September 30. The majority of the water is accumulated between the months of September and May. The District, in a typical year (2010), delivers the accumulated surface water in late spring and summer.

There are no other water resources available to Laguna Irrigation District.

2. Other Water Sources Quantities

Worksheet 18. Effective Precipitation Summary												
	2010[1]			2013			2014			2015		
Month	Precip (in)	Eto (in)	Effective Precip (AF)	Precip (in)	Eto (in)	Effective Precip (AF)	Precip (in)	Eto (in)	Effective Precip (AF)	Precip (in)	Eto (in)	Effective Precip (AF)
January	3.22	1.02	5,861	0.34	1.76	0	0.11	2.18	0	0.13	1.16	0
February	1.56	1.59	2,184	0.34	2.58	0	1.28	2.48	1,586	0.68	2.22	239
March	0.33	4.21	0	0.83	4.51	0	0.81	4.62	0	0.11	4.94	0
April	1.02	5.24		0.23	7.28		0.15	6.52		0.53	6.79	
May	0.16	7.79		0.46	8.65		0.00	9.18		0.57	7.50	
June	0.00	9.44		0.00	9.24		0.00	9.70		0.00	9.05	
July	0.00	9.29		0.00	9.20		0.00	9.19		0.03	8.72	
August	0.00	8.37		0.00	8.48		0.00	8.52		0.00	8.42	
September	0.00	6.32		0.00	6.48		0.00	6.54		0.00	6.57	
October	0.55	4.09	682	0.00	4.41	0	0.65	4.28	843	0.40	4.36	467
November	1.27	2.24	1,541	0.06	2.66	0	0.13	2.15	0	0.61	2.33	80
December	4.44	0.99	8,564	0.04	1.93	0	2.04	1.18	3,294			0
Total	12.55	60.59	18,832[1]	2.30	67.18	0	5.17	66.54	5,723	3.06	62.06	786
Crop Acres			28,284			28,284			28,692			28,867

[1] Corrected since 2012 AWMP using guidelines from DWR's "Effective Precipitation", MacGillivary and Jones, 1989.

Average yearly rainfall for the District is 8-12 inches of rain. As shown by the table, the majority of the rainfall occurs in December, January and February, when it can only be used for pre-irrigation, vegetables, and other winter crops.

Land owners within Laguna Irrigation District use private wells to pump necessary groundwater for their crops to supplement surface water deliveries from the District. The amount of groundwater pumped varies with the availability of surface water. For instance, in 2013, a very dry year, landowners would have to have pumped approximately 87,577 acre feet of groundwater, which is calculated by subtracting on- farm delivery (worksheet 9) from total crop water usage (worksheet 6). In 2010, approximately 34,978 acre feet of groundwater was needed.

B. Quantification of Water Uses

Worksheet 19. Applied Water (AF)				
	2010	2013	2014	2015
Applied Water (worksheet 9)	40,736	2,728	0	2,600

Worksheet 20. Quantify Water Use (AF)				
Water Use	2010	2013	2014	2015
Crop Water Use				
1 Crop Evapotranspiration (worksheet 6)	75,714	90,305	91,373	91,580
2 Leaching	N/A	N/A	N/A	N/A
3 Cultural Practices	N/A	N/A	N/A	N/A
Conveyance & Storage System				
4 Conveyance seepage (worksheet 7)	23,105	4,079	0	3,603
5 Conveyance evaporation	197	35	0	31
7 Reservoir evaporation	160	0	0	0
8 Reservoir seepage (worksheet 7)	1,517	0	0	0
Conjunctive Use				
9 Groundwater recharge	Only during flood years			
Subtotal	100,693	94,419	91,373	95,214

C. Overall Water Budget

Worksheet 21. Quantify Water Supplies (AF)				
Water Supplies	2010	2013	2014	2015
Surface Water On-Farm Deliveries (worksheet 9)	40,736	2,728	0	2,600
District Ground Water	0	0	0	0
Annual Effective Precipitation (total worksheet 18)	18,832	0	5,723	786
Subtotal	59,568	2,728	5,723	3,386

Worksheet 22. Budget Summary (AF)				
Water Accounting	2010	2013	2014	2015
Subtotal of Water Supplies (worksheet 21)	59,568	2,728	5,723	3,386
Subtotal of Water Use (worksheet 20)	100,693	94,419	91,373	95,214
Total Estimated Groundwater Needed	41,125	91,691	85,650	91,828

Worksheet 9, under representative year 2010, demonstrates that through conveyance and reservoir seepage the District recharged 24,622 acre feet. The Budget Summary, Worksheet 22 above, shows a groundwater need of 41,125 acre feet. This indicates a slight overdraft of 16,503 acre feet. Additional

groundwater recharge is achieved by Kings River Channel seepage, which was 17,628 acre feet in 2010. This indicates that groundwater use and recharge is essentially balanced in a typical year. Please refer to Worksheet 8 for depth to groundwater within the District to exhibit that conjunctive use is working effectively.

Section 6: Climate Change

Climate Change – Kings River Service Area and Surrounding Counties

In general, climate change models are predicting annual average statewide temperature rises of up to 4 degrees Celsius and up to 5 degrees Celsius for individual months. The changes will differ by location with the smallest increases forecast for the Tulare Lake Hydrologic Region. February, March and May are shown to have the largest temperature increase. The net result is milder winter temperature and earlier arrival of spring and increased summer temperatures. Snow accumulation is significantly decreased in all months, with snow accumulation still beginning in November but with lower monthly accumulations and ending about one month earlier. The impact would be much less in the high elevations of southern Sierra. Translated to the San Joaquin River and Tulare Lake Hydrologic regions, about 70 percent of the snow zone would remain. It is anticipated that the overall levels of evapotranspiration will increase while soil moisture will generally decline except in areas where precipitation will significantly increase. The higher water consumption with warmer temperatures will likely only be partially offset by carbon dioxide-base reductions, thus the net result could be slightly higher agricultural water requirements. It is expected that warmer winter temperatures between storms would increase evapotranspiration, thereby drying out the soil between storms. Changes in groundwater recharge would likely result from changes in effective rainfall as well as a change in the timing of the recharge season (journal of the American Water Resources).

Total Demand Change Does Not Meet the Regional Goals - Primarily a Maintenance Issue for Fire

The changes in total water demand in the Tulare Lake Hydrologic Region were cast into three scenarios:

1. Current Trends
   Current trends are assumed to continue into the future. California's population is projected to reach nearly 60 million by 2050. Affordable housing draws families to the interior valley. Through the passage of time, areas where urban development and natural resources restoration increases, irrigated crop lands decreases.

2. Slow and Strategic Growth
   Population growth is assumed to be slower than currently projected – a California population of about 45 million by 2025. Californians implement water and energy conservation measures. Conversion of agricultural land to urban development has slowed. State government implements comprehensive programs to improve water quality, protect fish and wildlife and protect communities from flooding.

3. Expansive Growth

   Future conditions are assumed to occur at a more rapid pace than currently projected and are thus more resource exhaustive. California population is projected to reach approximately 70 million by 2050. Families prefer low-density housing, and may pursue rural rather than urban

residential properties increasing the footprints of urban areas. Minor changes to water and energy conservation programs are offered but are adopted at a slower rate than trends earlier in the century. Irrigated crop land decreases significantly whereas urban development and environmental habitat restoration increase.

Changes in water demand are based on the difference between the historical average (1998-2005) and future estimated average (2043-2050) water demands. Future water demand relative to the historical average applied to a no climate change scenario indicates a reduction of about 550,000 acre feet under current trends. The reduction was even more significant under the Slow and Strategic Growth scenario. The Expansive Growth scenario nets a decrease in water demand (150,000 acre-feet). When compared against 12 climate change sequences, the Current Trends scenario shows a lower reduction in water demand - 435,000 acre-feet to an increase of almost 200,000 acre-feet. The Slow and Strategic Growth scenario also shows a lower future water demand than historical demands across the 12 climate sequences. Under the Expansive Growth scenario, the range of possible future water demand varies across the 12 climate sequences; from a decrease of 35,000 acre-feet to an increase of 650,000 acre-feet.

Agricultural Demand Change

Agricultural water demands in the Kings River Service Area will be generally lower under future conditions estimates due to the reduction in irrigated acreage, increase in water conservation and utilization of water use efficiency products. The Slow and Strategic Growth scenario had a slightly larger reduction followed by the Current Trends and Expansive Growth scenarios. When climate change is the assumed outcome, there is a smaller reduction in future water demand under all three trends.

In an August 2009 paper prepared by the California Climate Change Center entitled "Climate Change Impacts on Water Supply and Agricultural Water Management In California's Western San Joaquin Valley and Potential Adaptation Strategies" results of an analysis conducted using the Water Evaluation and Planning (WEAP) modeling system were presented. WEAP was developed for the Sacramento River and Delta export region of the San Joaquin and was expanded to include agricultural areas in the Tulare Lake Basins that receive water pumped from the Delta. The model is an integrated rainfall/runoff water resources systems modeling framework that can be applied directly from time series of climatic scenarios as well as the water management ramifications of hydrologic change to be assessed.

Future climate scenarios were developed based on downscaling of two general circulation models – the Geophysical Fluid Dynamic Laboratory model and the Parallel Climate Model – run under two emissions scenarios. The results suggested that increased agricultural demand under climate change due to increased evapotranspiration (ET) would place additional stress on the effectiveness of two agricultural adaptations; improved on-farm efficiency and crop shifts toward lower consumption/higher value crops in times of shortage. These practices were considered to be effective at reducing supply shortfalls in agriculture.

Water Supply

Most of the water users within the Tulare Lake Basin receive surface water deliveries from snowmelt in the Sierra Nevada Mountains designed around a system which is dependent on occasional above normal snow pack. In normal years and depending on previous years' storage carry-over, local reservoirs within the region are able store all snow melt during periods of low/no demand. Flood releases occur on the Kings River on average once every 4 years as a result of above average snow melt. During these flood events, flood water typically exits the region because of the lack of banking and groundwater recharge facilities to store the water.

Laguna Irrigation District in an effort to prepare for such events where flood events occur has a series of regulation reservoirs which can be used to temporarily store water for near term use and to recharge the groundwater though percolation. Additional facilities that will greatly increase the District's annual groundwater recharge capacity in flood years are planned.

Future climate change impacts may result in reduced snowpack, more precipitation as rain than snow and higher temperatures leading to higher evaporation. Over an extended period of time, conditions could potentially exacerbate the declines in surface and groundwater supplies in the region. Climate change may also alter the total amounts of runoff in watersheds. While precipitation projections do not show a clear trend in the future, an ensemble of twelve climate models shows a trend of decreasing runoff for Southern California between the end of the twentieth and twenty first centuries (IPCC 2008).

Water Demand

Water users receiving Kings River water generally hold much of their water in storage behind Pine Flat Dam for delivery during the coordinated summer irrigation run period. The intent of the summer water run is to provide the most effective and efficient method of water delivery when local demands are at their peak. In the summer the majority of water consumed in the region is applied towards irrigating crops. Surface and groundwater demands are very low in the winter months during which time most permanent crops are dormant, a large percentage of row crop farmland is idle, and typical winter precipitation provides most of the needed moisture. Historically, water users have been able to supplement surface water supplies with groundwater, resulting in continuous and uninterrupted availability of water.

However, with or without the future impacts from climate change the region will continue to struggle to meet water demands without the addition of new ground and surface water projects. Water conservation and irrigation management will also help reduce water demands. The seasonal component of water demands (e.g., irrigation and other water uses) will likely increase with climate change as droughts become more common and more severe, temperatures alter evapotranspiration rates, and growing seasons become longer. Without accounting for changes in evapotranspiration rates, agricultural crop and urban outdoor demands are expected to increase in the Sacramento Valley, for example, by as much as 6% (Chung et al 2009).

Water Quality

Surface water in the region predominately comes from Sierra snowmelt and is cold and of extremely high quality. Local surface water supplies are able to meet all beneficial uses, which include agricultural,

industrial, recreation, aquatic habitat and municipal water use. If future climates impacts result in more frequent flood events then flood water will become more readily available for groundwater recharge. This would allow for the capture of extremely high quality surface water and improve the existing groundwater quality in the region. Agricultural management practices and irrigation management will also continue to play an important role in the improvement of water quality. Higher temperatures are likely to increase the rates of chemical reactions in water generally, increasing rates of algal growth and decay, perhaps adding problems and instability to the water quality throughout the region.

Water quality can be impacted by both extreme increases and decreases in precipitation. Increases in storm event severity may result in increased turbidity in surface water supplies (DWR 2008). Lowered summertime precipitation may also leave contaminants more concentrated in stream flows. Higher water temperatures may exacerbate reservoir water quality issues associated with dissolved oxygen levels; and increased algal blooms (DWR 2008).

Sea Level Rise

The Kings Basin is at an average elevation of about 300 feet above mean sea level and is approximately 100 miles from the ocean. Based upon current estimates of sea level rise due to global climate change, the region is under no threat of impact.

Flooding

Most of the floodplains in the Kings River Service Area are farmland. Some houses, roads, and water supply infrastructure (wells, canals, etc.) are located in the floodplains. Friant Dam along the northern boundary on the San Joaquin River is considered to be in good condition. Major flooding would not likely cause serious disruptions to essential emergency-response services.

Future Climate Conditions in Kings Basin and the Surrounding Counties

The Service Area has a reliable water supply, largely because groundwater is a dependable backup supply during droughts and dry season. However, groundwater levels may continue to decline as a result of below normal snowpack and increased groundwater demands if climate changes reduces precipitation or causes earlier spring run-off that cannot be stored. If groundwater levels decline too much then groundwater will become a less reliable supply, and groundwater quality may also be adversely impacted. Susceptibility to climate change can be measured with several parameters including groundwater overdraft, groundwater level decline, groundwater remaining in storage, and changes in well yields.

Adaptation to climate change within the agricultural sector is likely to occur naturally in response to economic signals that are driven by public policy, market conditions and the availability of irrigation water supply. As a result of existing and anticipated future pressures, growers will increase their use of water use efficiency products such that most corps will employ drip or micro sprinklers in the future.

As an example, Laguna Irrigation District has already seen the impact of water use efficiency in permanent crops. Almost all of the Grapes are currently under drip irrigation and nearly all of the new Almond plantings are micro sprinkled or under some form of drip irrigation. Recent improvements in subsurface irrigation have also allowed for reduced water use in Tomatoes, Cotton and now Alfalfa. The water savings has been evident in the District being able to extend the internal water supply by up to 7 days in a "normal" water year.

Improvements in irrigation efficiency will likely be achieved applying less water to allow soils to become dryer through properly managed irrigation scheduling. This would reduce the lower threshold supply requirement because the irrigation is less frequent and similar reductions in the upper threshold imply that the same depth of water will be applied at the scheduled irrigation. This practice would help reduce irrigation losses to surface water run-off. However, as a result of reduced soil moisture, percolation to groundwater is also reduced and thus reducing the water table in the region. The net effects of climate warming on total runoff volumes are still unclear and highly uncertain (Dettinger 2005). It is likely to be decades before we know if and by how much precipitation and runoff volumes are changing (Klemes 2000a, b).

Higher temperatures could reduce losses for some crops based on fewer occurrences of winter freezes, but may negatively impact other crops that rely on winter freezes to kill pests and trigger effective dormancy. Higher temperatures could also result in lower yields. Currently there are no adaptation measures available for these impacts, other than changing crop types, which may not be economically viable if permanent crops are impacted.

In 2010, the National Center of Conservation Science and Policy (NCCSP) prepared a report entitled "Future Climate Conditions in Fresno County and Surrounding Counties". The counties in the report include Fresno, Madera, Kings and Tulare. The report is based on climate change model outputs provided by the USDA Forest Pacific Northwest Research Station. Three global climate models were used to represent a range of projections for temperature and other climate variables and the results were divided up into two regions (below and above 1,000 feet elevation). The chart below summarizes the predicted changes in precipitation and temperature.

Time Period	Worksheet 23. Average Precipitation (% change from historic)			
	Lower Region		Upper Region	
Historic	9.4 in.	-	29.9 in.	-
2035-2045	6.9 – 10.6 in.	-27% to +13%	21.7- 33.6 in.	-28% to 12%
2075-2085	6.8 – 8.8 in.	-28% to -7%	20.5 – 28.2 in.	-32% to -6%

Projections for future precipitation varied among the three models. All three agreed on drier conditions, on average, by late century as noted below.

Worksheet 24. Future Precipitation		
Time Period	Upper Region	Lower Region
Historic	46.4	62.3
2035-2045	+2.5 – 4.8	+2.3 – 4.3
2075-2085	+5.2 – 8.9	+4.7 – 8.2

General Climate Change Predictions

"In the most general sense, climate change is the long-term change in the statistical distribution of weather patterns over periods ranging from decades to millions of years. It is well documented and widely accepted that the Earth's climate has fluctuated and changed throughout history. Global warming is the name given to the increase in the average temperature of the Earth's near-surface air and oceans that has been observed since the mid-20th century and is projected to continue. Warming of the climate system is now considered to be unequivocal (International Panel on Climate Change 2007). Global warming, therefore, refers to a specific type of rapid climate change occurring over the last 60 years and projected to continue into the future which falls outside of the normal range of historic climate variation." – Climate Change Handbook for Regional Water Planning

The California Department of Water Resources (DWR), 2008, "Climate Change Adaptation Strategies for California's Water" notes that water managers should use a drought component that assumes, until more accurate information becomes available, a 20% increase in the frequency and duration of future dry conditions. DWR projects the Sierra snowpack will experience a 25 to 40 percent reduction from its historic average by 2050.

The Sierra Nevada Alliance, in their second addition of the Sierra Climate Change Toolkit, predict (in most cases) the total annual streamflow into major Sierra Nevada reservoirs is projected to drop about 10 to 20 percent before mid-century and 20 to 30 percent before the end of the century.

The Ahwannee Principles for Climate Change, produced by the Local Government Commission in 2009, indicate the State's largest reservoir (snowpack) is predicted to lessen by one third over the next 50 years and to half by the end of the century.

Adaptation Measures

The Upper Kings Integrated Regional Water Management Authority (UKBIRWMA) is a collaborative effort amongst 53 public, private and non-governmental agencies to manage water resources within the region. Laguna Irrigation District serves as interested party to the Authority. As part of the plan, a workgroup was formed to address climate change adaptation and concluded that no-regret strategies should comprise the majority of adaptation measures. The following management strategies were deemed the most practical and effective for climate change adaptation in the Kings Basin:

- Improve urban and agricultural water efficiency
- Increase use of recycled water (where energy efficient)
- Revise land use planning policies to encourage conservation
- Develop groundwater recharge and banking projects
- Develop storage project inside and outside of the Kings Basin
- Increase ability to capture floodwater both for flood control and water supply
- Restore mountain meadows, wetlands, and riparian areas to regulate flows resulting in more summer runoff
- Change crop types to accommodate climate change.

The primary adaptation objective in the region and surrounding counties addressing water supply

impacts from climate change is to eliminate or reduce groundwater overdraft.

Monitoring

The Kings Basin has an extensive network for monitoring the hydrology, meteorology, water demands, water use, crop yields and wildlife. Monitoring programs are continually evaluated and upgraded as well as the need for improvements to assess climate change will also be periodically evaluated. Even though certain changes with respect to hydrology are unclear based on some scientific models as to whether the region will have a wet or dry future climate, future projects will continue to be sought out based on historical hydrology until more decisive predictions are available.

As new technology continues to mitigate and adapt to climate, CDWR (California Department of Water Resources) will continue to provide revised estimates of changes in sea levels, drought, and flooding that may occur over the following 25 years.

Mitigation of Greenhouse Gas Emissions (GHG)

Promoting and developing water projects that reduce energy demand and enhance ecosystem restoration will reduce emissions help mitigate climate change. As an example, riparian habitat restoration area can sequester carbon and create habitat for species effect by climate change. By promoting water conservation efforts using best management irrigation practices will also help to conserve water and reduce energy demands.

Section 7: Drought Management Plan

As a conjunctive use district with a highly variable surface water supply, the District and its water users are constantly juggling supply and demand and landowners must pump groundwater to make up for the deficit between demand and available surface water supplies. In accordance with the Rules and Regulations, the District allocates all available water supply each year among water users whose lands are classified as Irrigation Rate (and are not delinquent on any payments) on a pro-rata equal amount per acre in so far as practical. In most years, there is usually more demand for surface water than there is supply, so proper water management is critical. Water users in the District must have a private deep groundwater well in order to supplement surface water available from the District. For decades, the District has taken a multi-year approach to drought management by developing and operating numerous recharge basins that capture water in average and wet years. Then, during below average years, growers utilized their private wells to meet demands. The District captures as much floodwater as possible during wet years to deliver water to growers and recharge basins.

In most years, especially average and below normal years, the District coordinates with the other lower river units to deliver water down the lower Kings River system to maximize water deliveries and minimize river seepage losses. The "coordinated water run" can be several months long or only a couple of weeks long, depending on the river runoff and water supply available to the lower river units. The District provides early communication and periodic updates to water users on the projected water supply and allocation, when the coordinated run will start, and the projected duration of the coordinated run.

Laguna Irrigation District encourages water efficiency by allowing those growers who use less than their annual allocation of surface water to transfer their unneeded surface water to other growers within our District. The transferred water is then accounted to the end user.

In the case where a water user is wasting water or using water in a manner deemed inefficient, the District may stop water deliveries until such time as the landowner follows all policies of Laguna I.D. This is accomplished by closing and locking the headgate to stop water flow. See Rule #13, Rules and Regulations in Section 9: Supporting Documents.

In below normal and drought years, the District will minimize expenditures as much as possible to reduce operating costs. The District historically has collected revenue through acreage based assessments and will be collecting additional revenue through volumetric water charges based on the quantity of water delivered, measured in acre-feet. The volumetric water rate is established by the District each year to cover projected expenditures that exceed the revenue collected through the acreage based assessments.

Section 8: Water Use Efficiency Information

Report of EWMPs

Worksheet 25. Report of EWMPs Implemented/Planned		
EWMP No.	Description of EWMPs Implemented	Description of EWMPs Planned
Critical EWMPs		
1-Water Measurement	Meters in use at each turnout since 1989	
2-Volume-Based Pricing	Prop 218 election was approved to implement water delivery charges.	First year of implementation for water delivery charges will be 2015-2016.
Conditional EWMPs		
1-Alternate Land Use	No Authority to impose land restrictions on customers.	
2-Recycled Water Use	No sources in Laguna ID service area	
3-On Farm Irrigation Capital Improvements	District has no funding for such improvements, but supports NRCS and grower financing of such improvements.	
4-Incentive Pricing Structure	In place	
5-Infrastructure Improvements	Replacement of leaking concrete monolithic pipelines.	Continue replacement of leaking concrete monolithic pipelines.
6-Order/Delivery Flexibility	Orders, both on and off are made with 24 hours notice. The delivery system operates as a unit. As one delivery ends, another begins.	
7-Supplier Spill and Tailwater Systems	Laguna Irrigation District uses regulation ponds to divert excess water. The water can then be returned to the system or used for recharge.	
8-Conjunctive Use	Laguna Irrigation District currently operates 6 recharge	Planning additional recharge facilities for use during abundant water years
9-Automated Canal Controls	Laguna I.D. has an automated gate at Reynolds Weir to maintain the pool height for uniform diversions into the Grant and "A" Canals.	Automation for the Island Canal System will Installed in the next five years.
10-Customer Pump Test/Eval.	Laguna I.D. facilitates KRCD provided customer pump testing and evaluations upon request.	
11-Water Conservation Coordinator	Laguna I.D.'s Water Conservation Coordinator is Scott Sutphin.	
12-Water Management Services to Customers	Laguna I.D. facilitates KRCD provided water management services to our customers.	
13-Identify Institutional Changes	In place.	
14-Supplier Pump Improved Efficiency	No District Owned Groundwater Wells.	

Critical EWMPs

1. Water Measurement
   The District has, since 1989, primarily used Water Specialties propeller type meters. These devices are made to deliver readings to an accuracy of 98% by volume. These meters are used for all of the farm delivery measurements within the District.

   Laguna Irrigation District considers that it has adequately implemented this EWMP.

2. Volume base pricing
   Laguna Irrigation District, as required by law, sought approved from the landowners through a Prop 218 election in 2014 to impose a water toll charge based on the volume of water delivered. The water delivery charge will be established each year by the District, not to exceed $5.00 per acre-foot. The water delivery charge will be in addition to the land based assessment, except for the first year of implementation in 2015-2016 when the water delivery charge will be phased in by offsetting the land based assessment by the amount of the water delivery charge. The full land based assessment and water delivery charge will be levied in the 2016-17 assessment period and thereafter, without offset.

Conditional EWMPs

1. Alternate Land Use
   Laguna Irrigation District does not have the authority to impose land restrictions on landowners in the District. However, the District has no lands with exceptionally high shallow water tables or whose irrigation contributes to on farm or recognized downstream drainage issues.

   No action on this EWMP is required.

2. Recycled Water Use
   Currently, there are no sources of this type of water within the District.

   No action on this EWMP is required.

3. On-Farm Irrigation Capital Improvements
   Laguna Irrigation District does not have the funding necessary to facilitate such improvements, but supports NRCS and grower financing of such improvements. District Staff does help facilitate and offers technical help with drip and micro sprinkler irrigation as well as assistance in design of surface water delivery facilities for such projects.

   Laguna Irrigation District considers that it has adequately implemented this EWMP.

4. Incentive Pricing Structure

   The current pricing structure of the District allocates available water on a per acre basis. Therefore, the price of the water increases in dry years because the landowners receive less water per acre. The price effectively decreases in wet years as there is more water available. In these years, surface water use is encouraged to aid with recharge for future dry years as the District is a conjunctive use entity.

   No action on this EWMP is required.

5. Infrastructure Improvements

   Laguna Irrigation District has been replacing existing broken or leaking concrete monolithic pipelines with plastic pipe. The District continues this practice as funds allow. The current pipeline system replaced high seepage canals in the 1960's through the 1980's. The balance of the Laguna Irrigation District canals are of relatively good soil type, and due to the District's conjunctive use nature, it would not be beneficial to line additional canals or convert them to pipeline.

   Laguna Irrigation District considers that it has adequately implemented this EWMP.

6. Order/Delivery Flexibility

   Laguna Irrigation District's delivery system works as a complete unit. Customers order water a minimum of 24 hours before their desired delivery start. Customers give 24 hours prior to their shutoff in order to deliver that water to another customer. In effect, one customer finishes irrigating and another is able to take that water and begin his irrigation. This minimizes the fluctuation of water and reduces the possibility of water loss. Any errors in shut off times by a customer can be compensated for with early start by another customer or temporary diversion to a District regulation reservoir.

   Laguna Irrigation District considers that it has adequately implemented this EWMP.

7. Supplier Spill and Tailwater Systems

   Laguna Irrigation District uses regulation ponds to divert excess water to eliminate spillage. The short term stored water can then be returned to the system or used for recharge.

   Laguna Irrigation District considers that it has adequately implemented this EWMP.

8. Conjunctive Use

   The proximity to the Kings River and the soil types in the area are one facet of conjunctive use in the District. Laguna Irrigation District currently operates six recharge facilities along with 49

miles of open canal. The District could not survive without conjunctive use as its surface water supply is generally not sufficient to meet the water needs of its landowners.

In order to take full advantage of abundant water years, the District plans to construct additional recharge facilities as property and funding allow.

Laguna Irrigation District considers that it has adequately implemented this EWMP.

9. Automated Canal Controls

Laguna Irrigation District has an automated gate at the Reynolds Weir to maintain the pool height for uniform diversions into the Grant and "A" Canals. The District plans to install automation controls for the Island Canal System.

Laguna Irrigation District considers that it has adequately implemented this EWMP.

10. Customer Pump Test/Evaluation

Laguna Irrigation District facilitates customer pump testing and evaluations by the Kings River Conservation District, upon request.

Laguna Irrigation District considers that it has adequately implemented this EWMP.

11. Water Conservation Coordinator

Laguna Irrigation District has designated Steven Sutphin as water conservation coordinator.

Steven Sutphin
Laguna Irrigation District office (559) 923-4239
5065 19 ½ Avenue cell (559) 352-7903
Riverdale, CA 93656 e-mail steven@lagunaid.com

Laguna Irrigation District considers that it has adequately implemented this EWMP.

12. Water Management Services to Customers

The District works in cooperation with the Kings River Conservation District to assist valley farmers with finding the most efficient and cost-effective use of water. Growers can schedule an appointment for a member of the KRCD staff to visit the location to review current irrigation practices.

Laguna Irrigation District considers that it has adequately implemented this EWMP.

13. Identify Institutional Changes

The institution whose policies most directly affect Laguna Irrigation District is the Kings River Water Association (KRWA). If a problem is found, we work with the KRWA Watermaster to find a solution within the governing policies of the Association. If this is not possible, as a voting member of the Association, the problem is brought before the Executive Committee of the Association for discussion and ruling. The District works well with the Association. An example would be in the water run itself. The District is able to run water whenever the District needs to run. However, with the help of KRWA, each member unit is able to coordinate its water run with other KRWA members in order to reduce losses in the kings River channel.

Laguna Irrigation District considers that it has adequately implemented this EWMP.

14. Supplier Pump Improve Efficiency

Laguna Irrigation District does not operate any groundwater pumps.

No action on this EWMP is required.

Evaluation of Water Use Efficiency Improvements

Quantifying the improvements in water use efficiency is difficult, or in some cases impossible, due to the complexity of the LID conveyance system, varying water supply on an annual basis, and limited or lack of certain data needed for evaluations. However, a qualitative assessment using existing data in consideration of completed and proposed projects and/or policies is a more feasible approach in quantifying the magnitude of efficiency improvements. Worksheet 26 below discusses the qualitative improvements in water-use efficiency for each EWMP, indicating the 'improvements' in water use efficiency that have occurred since LID's 2012 AWMP, or are anticipated to occur in the near future, and are qualitatively denoted as potentially "None", "Minor", "Moderate" or "Significant" with a brief explanation of each item. Some EWMPs are already making contributions to water use efficiency, but no changes have occurred recently or are anticipated in the future.

Worksheet 26 – Report of EWMPs Efficiency Improvements			
EWMP No.	EWMP Description	Estimate of Water Use Efficiency Improvements Since Last Report (2012-14)	Estimated Water Use Efficiency Improvements 5 to 10 years in the Future
10608.48. b(1)	Measure the volume of water delivered to customers with sufficient accuracy to comply with subdivision (a) of Section 531.10 and to implement paragraph (2) of the legislation.	Minor Flowmeters are installed on each grower turnout and are used to measure all farm water deliveries.	Minor Existing flowmeters used to measure farm water deliveries will be maintained on the normal maintenance schedule and replaced as needed to maintain meter accuracy.

Worksheet 26 – Report of EWMPs Efficiency Improvements			
EWMP No.	EWMP Description	Estimate of Water Use Efficiency Improvements Since Last Report (2012-14)	Estimated Water Use Efficiency Improvements 5 to 10 years in the Future
10608.48. b(2)	Adopt a pricing structure for water customers based at least in part on quantity delivered	Moderate The District imposed a water delivery charge in 2014 following a successful Prop 218 election.	Minor The District has initiated annual water delivery charges, with the rate being set by the Board of Directors each year depending on the available water supply. As a conjunctive use District, the rate structure is meant to encourage growers to use all available surface water.
10608.48.c (1)	Facilitate alternative land use for lands with exceptionally high water duties or whose irrigation contributes to significant problems, including drainage	None There is no need to facilitate alternative land use within LID. In addition, the District does not have authority to impose land restrictions on landowners in the District.	None
10608.48.c (2)	Facilitate use of available recycled water that otherwise would not be used beneficially, meets all health and safety criteria, and does not harm crops or soils	None Currently there are no sources of available recycled water within the District.	None
10608.48.c (3)	Facilitate financing of capital improvements for on-farm irrigation systems	Minor District staff does help facilitate and offers technical help with drip and micro-irrigation as well as assistance in design of surface water delivery facilities. Growers are encouraged to seek NRCS funding of on-farm capital improvement projects.	Minor The District will continue the current program of offering assistance as needed.
10608.48.c (4)	Implement an incentive pricing structure that promotes one or more of the following goals: (A) more efficient water use at the farm level; (B) conjunctive use of groundwater: (C) appropriate increase of groundwater recharge, (D) reduction in problem drainage; (E) improve management of environmental resources; (F) effective	Minor The current pricing structure of the District allocates available water on a per acre basis. Therefore, the price of the water increases in dry years because the landowners receive less water per acre. The price effectively decreases in wet years as there is more water available. In these years, surface	Minor Continue with current program, charging water deliveries on a volumetric basis. In above average water years the water toll rate will likely be reduced to encourage the use of surface water to conserve groundwater resources.

Worksheet 26 – Report of EWMPs Efficiency Improvements			
EWMP No.	EWMP Description	Estimate of Water Use Efficiency Improvements Since Last Report (2012-14)	Estimated Water Use Efficiency Improvements 5 to 10 years in the Future
	management of all water sources throughout the year by adjusting seasonal pricing structures based on current conditions.	water use is encouraged to aid with recharge for future dry years as the District is a conjunctive use entity.	
10608.48.c (5)	Expand line or pipe distribution system, and construct regulatory reservoirs to increase distribution system flexibility and capacity, decrease maintenance and reduce seepage.	Minor Existing broken or leaking concrete monolithic pipelines are replaced with plastic pipe. The portions of the unlined canal system are used for groundwater recharge which is needed in a conjunctive use district.	Minor Continue replacement of leaking concrete monolithic pipelines.
10608.48.c (6)	Increase flexibility in water ordering by, and delivery to, water customers within operational limits.	Minor The District delivery system operates as a complete unit. As one customer finishes irrigating then another is able to take that water and begin his irrigation. Any errors in shut off times by a customer can be compensated for with early start by another customer or temporary diversion to a District regulation reservoir. Any over irrigation contributes to groundwater recharge.	Minor Continue existing practices, allowing flexibility as much as possible.
10608.48.c (7)	Construct and operate supplier operational outflows and tailwater recovery systems	Minor The District has several existing regulation ponds that are used to divert excess water and eliminate spillage. The short term stored water can then be returned to the system for reuse or is used for groundwater recharge.	Minor Continue existing practices utilizing existing regulation ponds to capture and beneficially use water that otherwise would have spilled.
10608.48.c (8)	Increase planned conjunctive use of surface water and groundwater within the supplier service area	Significant LID is a conjunctive use district with the District delivering and recharging surface water and the landowners pumping groundwater as needed to	Significant (if funding is available) The District plans to construct additional recharge facilities as property and funding allow for use in abundant water years.

Worksheet 26 – Report of EWMPs Efficiency Improvements			
EWMP No.	EWMP Description	Estimate of Water Use Efficiency Improvements Since Last Report (2012-14)	Estimated Water Use Efficiency Improvements 5 to 10 years in the Future
		supplement the surface water. LID currently operates six recharge facilities along with 49 miles of open canal. A large recharge basin is currently under construction and will be operational in 2016.	
10608.48.c (9)	Automate canal control structures	None The District previously installed an automated gate at the Reynolds Weir to maintain the water level for uniform diversions into the Grant and "A" Canals.	Significant (if funding is available) The District plans to install automation controls for the Island Canal System.
10608.48.c (10)	Facilitate or promote customer pump testing and evaluation	None LID facilitates customer pump testing and evaluations by the Kings River Conservation District upon request, which can lead to more efficient pumping and less energy use.	None
10608.48.c (11)	Designate a water conservation coordinator who will develop and implement the water management plan and prepare progress reports	Minor A District staff member serves as the Water Conservation Coordinator and oversees water conservation measures and programs.	Minor Continue existing program.
10608.48.c (12)	Provide for the availability of water management services to water users.	Minor LID works in cooperation with the Kings River Conservation District to assist growers with implementing efficient and cost-effective measures to improve water management.	Minor Continue existing program.
10608.48.c (13)	Evaluate the policies of agencies that provide the supplier with water to identify the potential for institutional changes to allow more flexible water deliveries and storage.	Minor The institution whose policies most directly affect LID is the Kings River Water Association (KRWA). The District cooperatively works with KRWA and other member units to resolve issues and manage	Minor Continue existing cooperative efforts.

Worksheet 26 – Report of EWMPs Efficiency Improvements			
EWMP No.	EWMP Description	Estimate of Water Use Efficiency Improvements Since Last Report (2012-14)	Estimated Water Use Efficiency Improvements 5 to 10 years in the Future
		water deliveries as efficiently as possible.	
10608.48.c (14)	Evaluate and improve the efficiencies of the supplier's pumps	None The District does not operate any groundwater wells or lift pumps.	None

Section 9: Supporting Documentation

LAGUNA IRRIGATION DISTRICT

PUBLIC NOTICE

Intent to update the District's 2012 Agricultural Water Management Plan (AWMP) and adopt a 2015 AWMP

A Draft 2015 Agricultural Management Plan can be reviewed at the Laguna Irrigation District Office, located at 5065 19 ½ Avenue, Riverdale, CA.

Office Hours: Monday thru Friday 7:00am-3:30pm
(Closed for lunch 12:30-1:00pm)

A public hearing will be held at 9:30 am on January 22, 2016 at 5065 19 ½ Avenue, Riverdale, CA to review the Draft 2015 Agricultural Management Plan. Subsequent to the public hearing, the Laguna Irrigation District Board of Directors at a public meeting will adopt the plan as presented, amend the plan or not take action on the plan.

Published: Hanford Sentinel – January 8, 2016, January 15, 2016

Posted at LID Office January 8, 2016

LAGUNA IRRIGATION DISTRICT

5065 19 ½ AVENUE
RIVERDALE, CA
93656

January 6, 2016

Chuck Kinney, Deputy Director - Planning
Kings County Community Development Agency
Kings County Government Center
1400 W. Lacey Blvd., Engineering Building #6
Hanford, CA 93230

RE: Laguna Irrigation District's Intent to Update an Ag Water Management Plan

Dear Chuck,

As you may know, Laguna Irrigation District (District), as an Agricultural Water Supplier in California, is required to update its 2012 Ag Water Management Plan (AWMP) as set forth in SB X7-7, the Water Conservation Act of 2009. The District is currently updating that existing plan.

As part of the update of the AWMP and pursuant to Water Code §10821(a), the District is required to notify each city or county in which it supplies water for agricultural use that it will be preparing an updated plan. As our District supplies water in your county and we are preparing such a plan, you are hereby notified.

Please feel free to contact our office if you have any questions.

Sincerely,

Scott Sills
General Manager
Laguna Irrigation District

TELEPHONE 559-923-4239 FACSIMILE 559-867-3062

LAGUNA IRRIGATION DISTRICT

5065 19 ½ AVENUE
RIVERDALE, CA
93656

January 6, 2016

Augustine Ramirez
Fresno County Public Works and Planning
Development Services Division
2220 Tulare Street, Sixth Floor
Fresno, CA 93721

RE: Laguna Irrigation District's Intent to Update an Ag Water Management Plan

Dear Augustine,

As you may know, Laguna Irrigation District (District), as an Agricultural Water Supplier in California, is required to update its 2012 Ag Water Management Plan (AWMP) as set forth in SB X7-7, the Water Conservation Act of 2009. The District is currently updating that existing plan.

As part of the update of the AWMP and pursuant to Water Code §10821(a), the District is required to notify each city or county in which it supplies water for agricultural use that it will be preparing an updated plan. As our District supplies water in your county and we are preparing such a plan, you are hereby notified.

Please feel free to contact our office if you have any questions.

Sincerely,

Scott Sills
General Manager
Laguna Irrigation District

TELEPHONE 559-923-4239 FACSIMILE 559-867-3062

A RESOLUTION BY THE BOARD OF DIRECTORS OF LAGUNA IRRIGATION DISTRICT

AUTHORIZING THE ADOPTION OF THE LAGUNA IRRIGATION DISTRICT'S UPDATED 2015 AGRICULTURAL WATER MANAGEMENT PLAN DEVELOPED UNDER THE AUTHORITY OF SB X7-7

WHEREAS, Laguna Irrigation District is located in portions of Fresno and Kings Counties; and

WHEREAS, Laguna Irrigation District did notice the counties within Laguna Irrigation District's boundaries of its intent to review, hold a public hearing and adopt Laguna Irrigation District's Updated 2015 Agricultural Water Management Plan; and

WHEREAS, Laguna Irrigation District did notice pursuant to Government Code 6066 its intent for the public to review the Laguna Irrigation District Agricultural Water Management Plan, hold a public hearing to consider all comments and adopt the Laguna Irrigation District Agricultural Water Management Plan; and

WHEREAS, the Laguna Irrigation District Updated Agricultural Water Management Plan includes changes that are being contemplated in the near future, including for example:
Implementation of water banking facilities, strategies for mitigating climate change and drought, and continued water measurement at the turnout and volumetric pricing.

NOW, THEREFORE, BE IT RESOLVED, at a Special Board Meeting held on January 22, 2016, Laguna Irrigation District did consider all comments and adopted the Laguna Irrigation District Updated Agricultural Water Management Plan developed under applicable law and Executive Orders. By taking this action, it is Laguna Irrigation District's intent to demonstrate its long-term commitment to water management and conservation.

NOW, THEREFORE, BE IT FURTHER RESOLVED, that Laguna Irrigation District did adopt the Laguna Irrigation District Agricultural Water Management Plan on January 22, 2016, as submitted, by the following vote:

AYES: 5

NAYS: Ø

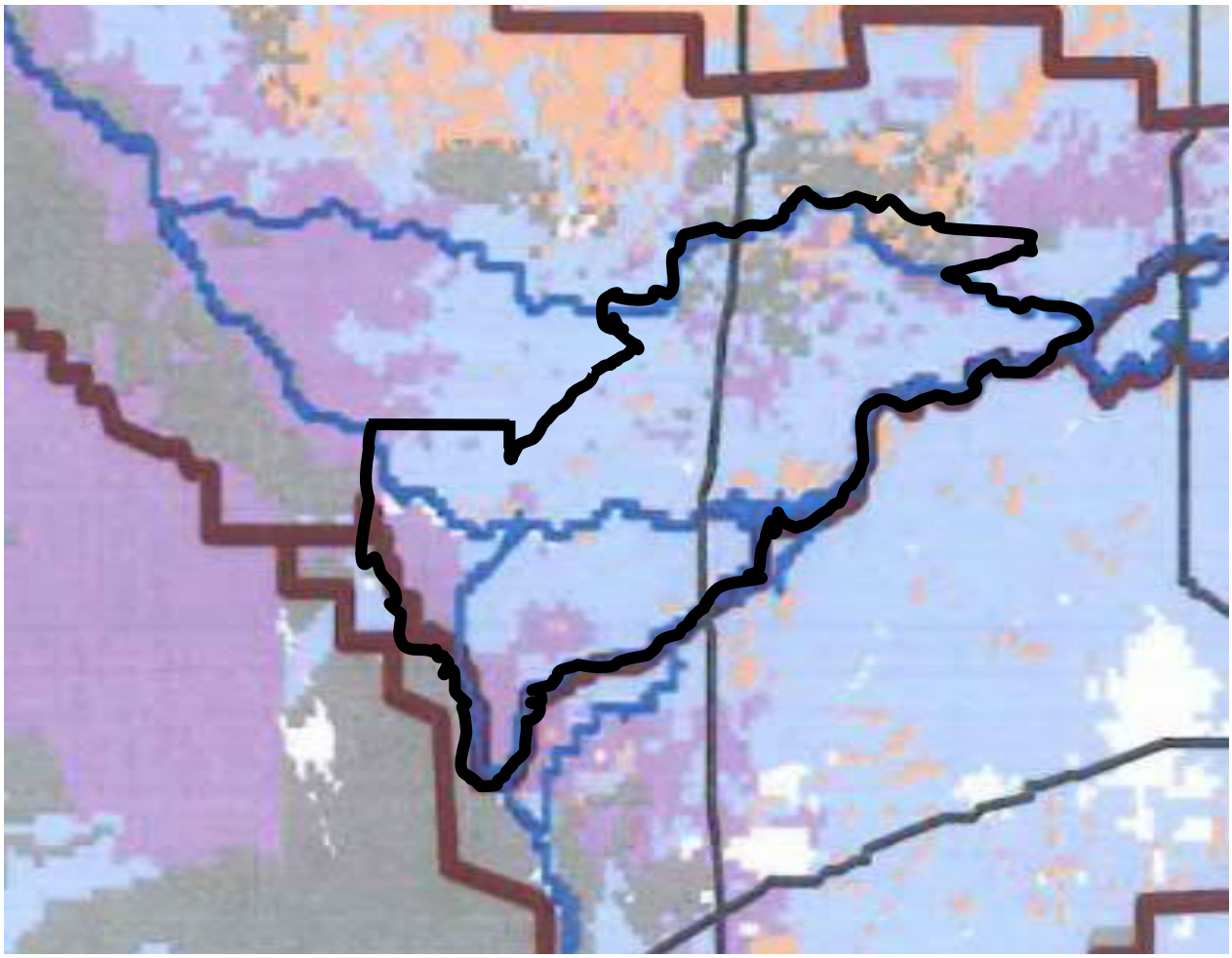
ABSTAIN: Ø

ABSENT: Ø

Frank Zonneveld, President

Tony Thomas, Secretary

Laguna Irrigation District - Hydrologic Soils Group



The four hydrologic soil groups are:

- Soils having a high infiltration rate (low runoff potential) when thoroughly wet;
- Soils having a moderate infiltration rate when thoroughly wet;
- Soils having a slow infiltration rate when thoroughly wet; and
- Soils having a very low infiltration rate (high runoff potential) when thoroughly wet.

RULES AND REGULATIONS

Governing the Distribution of Water in the Laguna Irrigation District

Rules and regulations governing the distribution of water in the Laguna Irrigation District were adopted May 2, 1928 and amended September 4, 1984 and April 14, 2005, by the Board of Directors under authority of the provisions of Section 22257 of the *California Water Code*, which reads, in part, as follows:

> "Each District shall establish equitable rules for the distribution and use of water, which shall be printed in convenient form for distribution in the District."

DEFINITIONS

1. The following definitions apply to these Rules and Regulations:

"Board" or "Board of Directors" shall mean Board of Directors of Laguna Irrigation District.
"District" shall mean the Laguna Irrigation District.
"Landowner" shall mean one who owns land within the District.
"Rules and Regulations" or "Rules" shall mean these Rules and Regulations.
"Water User" shall mean one who owns and/or leases land within the District and who places water orders with the District.
"Year" shall mean the calendar year, that is January 1 through December 31.

SUPERVISION

2. All matters relating to the distribution and use of water shall be under the general charge of the General Manager of the District acting under the authority conveyed by and with the approval and supervision of the Board of Directors.

EMPLOYEES

3. The General Manager shall, subject to the approval of the Board of Directors, employ such employees as may be necessary for the proper operation and maintenance of the system and for the equitable and economical distribution of the water. He shall assign the employees to and prescribe their several duties, supervise and direct all of their activities as they relate to the maintenance and operation of the system. He shall prescribe the form and extent of field records to be kept and shall cause such field reports to be made by these employees as he may deem expedient.

DISTRICT RIGHT OF WAYS - GENERAL

4. The diversion works, canals, and conduits, headgates and other structures owned by the Laguna Irrigation District were acquired by virtue of prescriptive use, grants, and various forms of conveyance agreements. All are dedicated to public use and are under the exclusive control of the elected Board of Directors acting through the General Manager of the District and its employees.

WATER DISTRIBUTION

5. In general, water shall be distributed among the landowners eligible to be allocated water according to equitable schedules prepared under the direction of the General Manager, provided however that when the supply of water and the demand for its use are so related and other contributing factors make it feasible, service may be given on request.

The Board may prescribe applications and other forms for Water Users to order water and for administration of same.

If a Water User fails, neglects, or refuses to use water when scheduled, it shall not be a valid basis for claiming the right to use water until rescheduled and confirmed by the General Manager. In the event a headgate is opened without being ordered or rescheduled, the District reserves the right to close and lock the headgate until the problem is corrected.

APPORTIONMENT OF WATER / NO GUARANTEE OF QUALITY OR QUANTITY

6. Surface water available to the District will be apportioned among the Districts Water Users whose lands are classified as Irrigated Rate (as defined in Rule 27) and who are not delinquent in payment of assessments on a pro-rata equal amount per acre in so far as practical.

The District does not guarantee service and will not be liable for defective quality of water, shortage of water, either temporary or permanent, or for failure to deliver water or delay in doing so.

The District's water supply is in a raw, untreated condition, and as a result, is considered to be unfit for human consumption without treatment. The District does not warrant the quality of water delivered and is under no obligation to construct or furnish water treatment facilities or maintain or better the quality of water.

MAINTENANCE AND REPAIRS OF CANALS AND DITCHES

7. There are two classes of ditches and canals in the District:

Class (A) Those owned, operated and maintained by the District as a whole.

Class (B) The distribution ditches, owned, operated and maintained by individuals or groups of landowners, which are also known as "private ditches."

The management, operation and maintenance of all of the canals and ditches in Class (A) shall be exclusively a function of the District organization and no Water User shall be allowed to make any changes whatever in the distribution of the water in these canals and ditches except when specifically instructed or requested to do so by the General Manager, or other authorized agent of the District, or in case of an emergency in which latter case he shall expeditiously report his action to the local ditchtender or to the District's office.

No person shall be allowed to make any opening in, cut, plow down or otherwise interfere with or weaken any bank of any Class (A) ditch except by specific written authority of the General Manager and in such case only for the period, to the extent and for the purpose which shall be specifically provided in such written authority.

The District shall construct, operate and maintain the gates and outlets for serving water from Class (A) to Class (B) ditches, and have full and complete jurisdiction thereof. The District may construct and maintain at the head of Class (B) ditches, such measuring devices, gauges, etc. as the General Manager may deem expedient to facilitate equitable distribution or records of flow in such ditches.

The District may temporarily discontinue water service or reduce the amount of water to be furnished for investigation, inspection, maintenance, repair or replacement of any of the District's facilities. The District will give the Water User notice in advance of such temporary discontinuance or reduction, except in case of an emergency, in which event no notice need be given. No liability shall accrue against the District or any of its officers, directors or employees for damage, direct or indirect, because of the failure to provide water as a result of system malfunctions, interruptions in service necessary to properly operate and maintain the water distribution system or other similar causes which are beyond the District's reasonable control.

CLASS (A) DITCHES AND CANALS

8. The District does not encourage the use of its ditches and canals for private conveyance of water. However, on a case by case basis with the written approval of the General Manager, the private use of a specific ditch or canal may be allowed. When permission is granted by the General Manager, the user of the ditch or canal shall be responsible for any and all maintenance costs related to the private use of same and any liabilities or damages arising from use of same. The Water User using the District's ditch or canal shall assume the defense of, indemnity and hold harmless the District and its officers, directors, agents and employees from any loss, damage, liability, claims or courses of action arising out of or incidental to Water User's use of such ditch or canal. The user shall not prevent or hinder in any way, maintenance or any other operations deemed necessary by the District. Failure to comply with these rules will be cause for immediate termination of the permit.

CLASS (B) DITCHES

9. The management and maintenance of the ditches and pipelines in Class (B) shall be taken care of by the individuals and groups of individuals who use them and ditchtenders shall be instructed not to turn water into these ditches until they are cleaned and otherwise prepared to convey the water with reasonable efficiency. Any disputes concerning use of such Class B ditches and pipelines and conveyance of water in same beyond the head of such ditch or pipeline shall be a matter between the affected Landowners and Water Users, provided, however, a District Ditchtender may provide for each Landowner receiving his prorate share of District supplies consistent with these Rules and Regulations

The authorized agents of the District shall, at all times, have access to such private ditches and the lands irrigated from them for the purpose of making any investigations relating to any matters affecting the use of flow of water through the ditches, pipelines or on the lands.

DAMAGE LIABILITY – CLASS (A) CANALS AND DITCHES

10. Water Users or Landowners who, by opening, closing or otherwise interfering with regulating gates or devices, cause any fluctuations in the flow of the ditches or canals in Class (A) or therefore cause any breaks in such ditches or canals, or any damage of any kind whatsoever, shall be responsible to the District for the whole of the expense and damage caused thereby, except where regulation is made on instructions or requests of the District agents.

DAMAGE AND LIABILITY ON CLASS (B) DITCHES AND LATERALS

11. The District will not be liable for any damage resulting from the use of water in the ditches and laterals of Class (B).

LIABILITY OF PERSONS TAKING WATER WITHOUT AUTHORITY; INTERFERING WITH REGULATION OF WATER

12. Section 592 of the Penal Code of California is as follows:

(a) Every person who shall, without authority of the owner or managing agent, and with intent to defraud, take water from any canal, ditch, flume or reservoir used for the purpose of holding or conveying water for manufacturing, agricultural, mining, irrigating or generation of power, or domestic uses, is guilty of a misdemeanor."

(b) If the total retail value of all the water taken is more than four hundred dollars ($400), or if the defendant has previously been convicted of an offense under this section or any former section that would be an offense under this section, or of an offense under the laws of another state or of the United States that would have been an offense under this section if committed in this state, then the violation is punishable by imprisonment in the county jail for not more than one year, or in the state prison.

Under such statute and other statutes (for example Penal Code section 607), persons interfering with the regulation of water in the canals and ditches are subject to prosecution.

If any person takes water at any other time than that provided in the schedule, or without permission of the ditchtender, he shall not only be subject to such criminal prosecution, but may forfeit his right to water for the balance of the Year.

WASTE OF WATER. INADEQUATE DITCHES

13. Landowners or Water Users who waste water, either willfully, carelessly or on account of defective or inadequate ditches and structures, or on account of inadequate preparation of the land for irrigation, may be refused further service until the conditions are remedied.

LIABILITY

14. The District will not be responsible for the control, carriage, handling, use, disposal or distribution of water delivered to Water User outside the facilities then being operated and maintained by the District. Water User does hereby indemnify and shall assume the defense of and hold harmless the District and its officers, agents and employees from any and all loss, damage, liability, claims, or causes of action of every nature whatsoever, for damage to or destruction of property, including the District's property, or for injury to or death of persons, in any manner arising out of or incidental to the control, carriage, handling, use, disposal, or distribution of water outside such District facilities.

WATER TRANSFERS

15. Water Users may be permitted to transfer water from one parcel to another, provided that both parcels are operated by the same Water User and both parcels are entitled to receive water service and any such transfer will not exceed the safe operating capacity of any canal, ditch or conduit as determined by the ditchtender.

In addition, Water Users may transfer water to other Water Users for use on the transferee's lands, provided such lands are eligible to receive Water Service from the District. Prior to any such transfer becoming effective, the transferor and transferee shall execute a transfer form provided by the District consistent with then existing policies and applicable fee structures. As a convenience to District Water Users, the District shall maintain and post a list of Water Users wishing to transfer all or a portion of their allocated supply, provided arrangements for any such transfers shall be made among individual Water Users.

PIPELINES

16 a. The District does not encourage the use of its pipelines for private conveyance of water. However, on a case-by-case basis with the written approval of the General Manager, the private use of a specific District pipeline may be allowed. When permission is granted by the General Manager, there is no implied warranty that the pipeline will not leak. Should any leaks or pipe failures occur when the District pipeline is being used by a private water user, then that user shall be financially responsible for all repair costs and related property and/or crop damage. An example of the misuse of the District pipeline is closing of a gate too fast, or of the sudden discharge of a full head of water into the pipeline, either of which could cause a surge of water sufficient to break the pipe. The Water User using the District's pipeline shall indemnify and shall assume the defense of, indemnity and hold harmless the District and its officers, directors, agents and employees from any loss, damage, liability,

claims or causes of action arising out of or incidental to Water Users use of such pipeline.

b. No dirt is to be removed from a District pipeline right of way without prior permission of the District. Any plans to relevel a field which contains a District pipeline shall be reviewed by the General Manager. If needed, the District will uncover the District's pipeline at spots solely for the purpose of determining the amount of dirt on top of the pipe. The use of any heavy equipment will be limited to crossing the District's pipeline at locations as directed by the General Manager. All pipeline breaks at other locations caused by landowner operations shall be repaired at the cost of the landowner.

c. If any deep tillage is proposed, or the use of any heavy equipment is to be used which may cause damage to a District pipeline, the General Manager shall be notified in advance in order to determine what must be done to protect that pipeline. Failure to comply with this provision shall result in any pipeline repair cost to be paid for by the landowner.

REQUESTS FOR WATER SERVICE

17. Landowners within the District who are not presently receiving water from the District's distribution system, but desire to do so, shall be required to provide the necessary facilities to transport the water from the District's system to their lands. Requests for new water service must be submitted to the Board which may prescribe additional conditions concerning such proposed new service.

Said Landowner shall pay all costs incurred by the District to install facilities necessary for delivery to Landowner, including, but not limited to water meters.

RIGHTS OF WAY

18. Rights of way and easements for canals, ditches and pipelines owned by the District include the land actually occupied by the canal, ditch, or pipeline and such land on both sides thereof, as is reasonably necessary for the maintenance and operation of such canals, ditches or pipelines. Widths of easements vary with the size of the canal or pipeline and other factors. Maps and other records of the District generally show the location of such easements and right-of-ways.

ENCROACHMENTS

19. No trees, vines, shrubs, corrals, fences, buildings, bridges, or any other type of encroachment shall be planted or placed in, on, over or across any District canal, ditch, conduit or the right of way therefore except pursuant to a written encroachment permit

issued by the District. Any such encroachment of an unusual or extraordinary nature shall be approved by the Board of Directors. Any unauthorized encroachment may be removed by the District at the expense of the encroacher and the encroacher shall be liable for any damages or liability arising from such encroachment. In that regard, the following set backs shall be presumed for any facilities constructed, reconstructed or planted after April 14, 2005:

Fences at least 10 feet from the toe of canal bank
Buildings and trees at least 20 feet from the toe of canal bank

ACCESS TO LANDS

20. The authorized agents and employees of the District shall have reasonable access at all times to all lands irrigated from the District's distribution system for the purpose of maintaining, operating, or inspecting the canals, ditches, and conduits and the flow of water therein and for the purpose of ascertaining the acreage of crops on lands irrigated or to be irrigated. If the District holds a right of way or easement across private land for the operation and maintenance of a canal or other facilities, the law provides that the District shall have certain secondary rights, such as the right to enter upon the property on which the right of way or easement is located to make repairs and do such things reasonably necessary for the full exercise of the easement rights.

WELL MEASUREMENTS

21. If requested, landowners shall be expected to allow District employees to enter upon their property and measure the depth of water in their private wells for the purpose of determining the conditions of the groundwater within the District.

UNAUTHORIZED INSTALLATION

22. No delivery gate, pipe, siphon or any other structure or device shall be installed or placed in any canal, ditch or conduit owned by the District without express written permission and must be in strict compliance with plans and specifications approved by the General Manager or his designated representative. *Any such structure or device installed on* a District canal, ditch or conduit without approval may be removed by the District at the expense of the owner.

BRIDGES AND CANAL CROSSINGS

23. Bridges and Canal Crossings shall not be installed without express written permission of the General Manager. All such private crossing when approved shall be at the sole expense of the Landowner. Bridge structures shall be engineered by a licensed civil engineer and must meet all requirements of the applicable county

building code. In addition to District approval, a county building permit will be obtained for all bridge structures to be installed on District rights of way.

PERSONAL LIABILITY

24. Any person entering upon District property or District right of way, does so at his own risk and assumes all risks associated therewith and by such action accepts the responsibility for any damage to District or private property resulting therefrom.

TRASH AND DEBRIS

25. No tires, trash, debris, litter, garbage, prunings, brush, grass, dairy waste, dead animals, herbicides, pesticides, or any other material which is offensive to the senses or injurious to health, or which pollutes or degrades the quality of water or which obstructs the flow of water, shall be placed, emptied, discharged, thrown, or be allowed to slide, flow, wash or be blown into any canal, ditch or conduit belonging to the District. The District reserves the right to take appropriate legal action and seek restitution in incidents of this nature.

DISCHARGES INTO CANALS

26. No person, firm, company, corporation or agency shall be permitted to pump, siphon, or drain surplus irrigation water (tail-water), storm water, waste water, or any other water, including but not limited to well water, into any District canal, ditch, or conduit, without the express written consent *of* the Board of Directors. The General Manager may require the installation of line gates or back flow devices for specific turnouts where there is the risk of such other waters entering the District's facilities. A short term authorization for conveyance of well water may be issued by the General Manager. Any such written authorization shall include the manner, method, limitations, and terms and provisions for the District's control and regulation of the conveyance of well water.

ASSESSMENTS

27. The District's principle source of revenues to carry out its responsibilities and operations is through assessments levied pursuant to the Water Code. Lands within the District are classified into four classifications, which are as follows:

a. Irrigated Rate—that being lands eligible to receive irrigation water from District facilities.

b. Pump Rate—that being lands eligible to receive irrigation water pumped from the Kings River or interconnected channels, OR lands

irrigated exclusively from groundwater, which are enhanced by the District importing principally Kings River water.

c. Pasture Rate—lands which are not developed to irrigated agriculture or other uses which consume surface water or groundwater.

d. Exempt—typically lands held by governmental entities which do no use water, except for incidental domestic needs.

Lands served by River diversions or River pumps shall not be eligible to receive surface water supplies from the District.

In years where a flood release occurs, the Board may adopt other policies to move effectively allocated water.

Historically, the Pump Rate has been 50% of the Irrigated Rate and the Pasture Rate 10% of the Irrigated Rate to reflect an approximate apportionment of the benefits the different classes of lands receive from the District. The District reserves the right to modify these classifications and percentages in the future as the Board of Directors determines appropriate.

The typical process regarding levy and collection of assessments, as prescribed by the Water Code, is that in September the Board meets as a Board of Equalization to determine if the classification of any lands should be changed and to finalize the rate of the assessment. It is incumbent on each landowner to check with the District and determine whether his lands have been properly classified. Assessments may be paid in installments, with the first installment delinquent on December 20th and the second installment delinquent on June 20th. Lands for which the assessment is delinquent are ineligible to receive water service form the District. In addition, as prescribed by the Water Code, penalties and interest are assessed for delinquent assessments and failure to pay assessments will result in liens being filed against the delinquent land and eventual loss of the land if not paid.

The District reserves the right to implement other means to collect revenues to pay for District operations, including implementing a water toll and other charges for services rendered.

REPAIR COSTS DUE TO VIOLATION OF RULES

28. The District will submit a bill for repairs to District facilities caused by a Water User for any violation of these Rules and Regulations or otherwise damaging the District's facilities. Water User shall pay for any such repairs within 30 days of invoice.

ENFORCEMENT OF RULES

29. Refusal to comply with the requirements hereof, or transgression of any of the foregoing Rules and Regulations, or any interference with District employees carrying out their duties, shall be sufficient cause for shutting off the water, and water will not again be furnished until full compliance has been made with all requirements herein set forth.

APPEALS

30. In cases where Landowners or Water Users have disputes or disagreements with employees of the District, in relation to the delivery of water or maintenance of ditches, they may appeal to the General Manager who shall diligently investigate and reach a conclusion in the matter.

If a controversy still exists they may appeal to the Board of Directors. Decisions of the Board of Directors shall be final.

GENERAL PROVISIONS

31. Any waiver by the District of any breach of these Rules and Regulations shall not be deemed a waiver of any subsequent breach or default. Where appropriate, words in the singular include the plural and words in the masculine shall include feminine or an entity. These rules are supplementary to provisions of the California Water Code with respect to Irrigation Districts.

The Board of Directors may promulgate from time to time, policies and procedures to carry out and administer these Rules and Regulations or to otherwise govern the affairs of the District, which are incorporated by this reference and are on file for inspection at the District office.

CERTIFICATION

I hereby certify that the foregoing Rules and Regulations were revised by the Board of Directors of the LAGUNA IRRIGATION DISTRICT at its meeting of April 14, 2005.

Secretary
LAGUNA IRRIGATION DISTRICT

[SEAL]

END OF DOCUMENT

BEFORE THE BOARD OF DIRECTORS OF THE LAGUNA IRRIGATION DISTRICT

IN THE MATTER OF: **RESOLUTION NO. 14-07**

RESOLUTION CERTIFYING THE RESULTS OF A PROPOSITION 218 MAJORITY PROTEST PROCEEDING REGARDING THE ESTABLISHMENT OF A WATER DELIVERY CHARGE AND IMPLEMENTATION POLICY

WHEREAS, through the adoption of Proposition 218, which added Article XIIID, Section 6 to the State of California's Constitution, public agencies are now required to hold a "majority protest" hearing before they may adopt an increase in certain property related fees and charges; and,

WHEREAS, in accordance with the authorization found in Water Code section 20500 *et seq.*, the District provides water services to the properties within the District; and,

WHEREAS, in accordance with the authorization found in Water Code section 22280, the District may fix charges for any service furnished by the District and may collect those charges in lieu of (in whole or in part) levying assessments for the same; and

WHEREAS, the Board has previously determined that is it necessary to establish a Water Delivery Charge ("Water Delivery Charge") to ensure compliance with the Water Conservation Act of 2009 and agreed, as part of its 2012 Agricultural Water Management Plan, to do so in the 2014 budget year; and,

WHEREAS, on December 2, 2014, the District, in accordance with the provisions of Proposition 218, held a properly noticed "Majority Protest" hearing regarding the establishment of a Water Delivery Charge and Implementation Policy set forth herein; and,

WHEREAS, the District, in accordance with the provisions of Proposition 218, asked for, and encouraged, comment on the Water Delivery Charge and Implementation Policy set forth herein; and,

WHEREAS, the District, in accordance with the provisions of Proposition 218, accepted written protests regarding the Water Delivery Charge and Implementation Policy set forth herein; and,

WHEREAS, District Resolution 14-01 which authorized the "Majority Protest" hearing herein described, provided that if a "Majority Protest" was not found to exist that the District's Board of Directors may adopt the Water Delivery Charge and Implementation Policy set forth herein; and

WHEREAS, at the conclusion of the Public Hearing, the written protests received by the District were counted and the results are herein reported.

NOW, THEREFORE, THE BOARD OF DIRECTORS OF THE LAGUNA IRRIGATION DISTRICT does hereby resolve, declare and order as follows:

1. The Board having reviewed the results of the written protests provided to it by the General Manager does hereby certify and affirm that there were not enough written protests filed to reach the required "Majority Protest" threshold.

2. The Board having reviewed the reported results of the written protests provided to it by the General Manager does hereby certify that 82 written protests were submitted by the public. This was out of a possible 1,199.

3. The Board, therefore, in accordance with District Resolution 14-01, does hereby adopt the following Water Delivery Charge and Implementation Policy:

   A. Water Delivery Charge: In order to ensure compliance with the Water Conservation Act of 2009, the District proposes to establish up to a $5.00 per acre foot Water Delivery Charge. The Water Delivery Charge will be determined annually, generally in September, and billed later in the year, generally November. The District may set the Water Delivery Charge at less than $5.00 per acre foot in any given year, but shall not exceed $5.00 per acre foot without first calling for a Majority Protest.

   B. Implementation Policy. While the Water Delivery Charge herein provided for will become effective immediately upon the adoption of a resolution certifying the results of the majority protest and adopting the newly established charge, in order to reduce the impact to landowners, the District will phase the Water Delivery Charge in over the first year of implementation, 2015-2016, by offsetting the annual land based assessment by the Water Delivery Charge. For example, the current land based assessment is $24.50 per acre. If a landowner owns 20 acres, the land based assessment for that landowner equals $490.00 ($24.50/acre x 20 acres). If that same landowner uses 20 acre feet of water, the proposed Water Delivery Charge will equal $100.00 ($5.00/AF x 20 acre feet). Rather than charging the total $590.00, the District will charge only $490.00 in the first year of implementation of the Water Delivery Charge. The land based assessment will be reduced to $19.50 per acre, which is the amount of reduction necessary to offset the $100 Water Delivery Charge described in this scenario. The full land based assessment and Water Delivery Charge will be levied in the 2016-2017 assessment period, without offset.

PASSED, APPROVED AND ADOPTED by the Board of Directors of the Laguna Irrigation District this 2nd day of December, 2014, on the following roll call vote:

AYES 5

NOES: Ø

ABSTAIN Ø

ABSENT: Ø

Frank Zonneveld, President

Todd Cotta, Secretary

ALL VALLEY PRINTING INC., HANFORD, CA 3022499-11

WATER ORDER

LAGUNA IRRIGATION DISTRICT

USER _____

_____

DATE ORDER TAKEN _____

DATE REQUESTED _____ TIME _____

PHONE #'s _____

_____

TURNOUT # _____ CFS _____

_____

COMMENTS _____

_____

DITCHTENDER _____ BY _____

01164

2012

WATER ORDERS

34

	GROWERS NAME	DATE ORDER PLACED	START/END DATE	PHONE#	TURNOUT #	FLOW QUANTITY CFS	TAX PAID
1161							
1162							
1163							
1164							
1165							
1166							
1167							
1168							
1169							
1170							
1171							
1172							
1173							
1174							
1175							
1176							
1177							
1178							
1179							
1180							

Laguna Irrigation Water Meter Maintenance Program

1. Only Laguna Irrigation Personnel trained to do so shall inspect and repair meters.
2. All Open Flow Meters are to be inspected annually, prior to their use in the water run.
3. Any meters in need of maintenance are to be repaired as necessary.
4. 10 percent of the meters will be fully inspected each year.
    a. Disassemble Drive Mechanism. Clean components and replace worn parts as necessary. Replace lubricant.
    b. Inspect Meter Head for proper gear fit and operation. Repair and replace as necessary.
    c. Reassemble meter s. calibrate and test.
5. During season of operation, all anomalies are to be immediately investigated. Meters found to have a problem will be repaired or replace immediately.
6. Problem meters are to be identified with a "RED TAG" and not put back into service until repairs and testing are complete.
7. As necessary, meters may be sent to Water Specialties Test and Repair Facilities in Porterville, CA (61.31 miles away) for additional testing.

Flow Meter Maintenance Sheet

Serial No.	Date	Condition, problem, recommendations	Initials

LB 1.7'

7/8/13

CERTIFIED TEST REPORT

CUSTOMER: LAGUNA IRRIGATION DISTRICT

MODEL NO: OF12-16

METER SERIAL NO: 20131417

CONFIGURATION

METER INSIDE DIAMETER: 16

DIAL: AFT X 0.01 10 CFS

GEARS: 27 / 35

TOTALIZER GEARS: 22C / 48C

ACTUAL METER INDEX: 1.5400

TEST FACILITY: Volumetric

CALIBRATION DATA

	FLOW RATE GPM	% ACCURACY
1	4690.00	101.78
2	2421.67	101.68
3	1050.00	100.10

TEST DATE: 7/2/2013

CERTIFIED BY: Paul Hobbs

PRINT DATE: 7/2/2013

This calibration was performed on a primary or secondary test facility, traceable to the National Institute of Standards and Technology, USA. The estimated flow measurement uncertainty of the calibration facilities are:
Primary +/- 0.15% Secondary +/- 0.5%

McCROMETER
3255 WEST STETSON AVENUE
HEMET, CA 92545 USA
PHONE (951) 652-6811 / FAX (951) 652-3078
WEB SITE: http://www.mccrometer.com E-MAIL: info@mccrometer.com

20131417

Printed by Ruben Moreno
7/2/2013 10:39:07 AM
Version 1.0 (3/9/2007)

NE 3,42 11/5/13

CERTIFIED TEST REPORT

CUSTOMER: LAGUNA IRRIGATION DISTRICT
MODEL NO: OF12-36
METER SERIAL NO: 20132293

CONFIGURATION

METER INSIDE DIAMETER: 36
DIAL: AFT X 0.1 50 CFS
GEARS: 27 / 35
TOTALIZER GEARS: 11 / 48U
ACTUAL METER INDEX: 7.7016
TEST FACILITY: Volumetric

CALIBRATION DATA

	FLOW RATE GPM	% ACCURACY
1	19133.50	101.85
2	9883.67	101.43
3	2723.40	101.42

TEST DATE: 10/29/2013
CERTIFIED BY: Paul Hobbs
PRINT DATE: 10/29/2013

This calibration was performed on a primary or secondary test facility, traceable to the National Institute of Standards and Technology, USA. The estimated flow measurement uncertainty of the calibration facilities are:
Primary +/- 0.15% Secondary +/- 0.5%

McCROMETER
3255 WEST STETSON AVENUE
HEMET, CA 92545 USA
PHONE (951) 652-6811 / FAX (951) 652-3078
WEB SITE: http://www.mccrometer.com E-MAIL: Info@mccrometer.com

20132293

Printed by Don Hawley
10/29/2013 4:20:13 PM
Version 1.0 (3/9/2007)

SE 1.51 11/5/13

CERTIFIED TEST REPORT

CUSTOMER: LAGUNA IRRIGATION DISTRICT
MODEL NO: OF12-30
METER SERIAL NO: 20132292

CONFIGURATION

METER INSIDE DIAMETER: 30
DIAL: AFT X 0.01 40 CFS
GEARS: 23 / 33
TOTALIZER GEARS: 33T / 18S
ACTUAL METER INDEX: 5.5652
TEST FACILITY: Volumetric

CALIBRATION DATA

	FLOW RATE GPM	% ACCURACY
1	14852.50	99.49
2	7497.00	99.73
3	17813.20	101.15

TEST DATE: 10/29/2013
CERTIFIED BY: Paul Hobbs
PRINT DATE: 10/30/2013

This calibration was performed on a primary or secondary test facility, traceable to the National Institute of Standards and Technology, USA. The estimated flow measurement uncertainty of the calibration facilities are:
Primary +/- 0.15% Secondary +/- 0.5%

McCROMETER
3255 WEST STETSON AVENUE
HEMET, CA 92545 USA
PHONE (951) 652-6811 / FAX (951) 652-3078
WEB SITE: http://www.mccrometer.com E-MAIL: info@mccrometer.com

20132292

Printed by Don Hawley
10/30/2013 11:58:59 AM
Version 1.0 (3/9/2007)

6/29/15

B 3.41 – Permanent Mount
Sulphin / Ribiero
(D. Mello)

CERTIFIED TEST REPORT

CUSTOMER: CALWEST RAIN - Laguna Irrigation District
MODEL NO: LP32-12
METER SERIAL NO: 20151352

CONFIGURATION

METER INSIDE DIAMETER: 12.374
DIAL: AFT X 0.01 5000 GPM
GEARS: 18 / 45
TOTALIZER GEARS: 21S / 41T
ACTUAL METER INDEX: 0.8925
TEST FACILITY: Volumetric

CALIBRATION DATA

	FLOW RATE GPM	% ACCURACY
1	3031.00	99.45
2	1543.20	99.36
3	326.80	100.54

TEST DATE: 6/24/2015
CERTIFIED BY: Paul Hobbs
PRINT DATE: 6/24/2015

This calibration was performed on a primary or secondary test facility, traceable to the National Institute of Standards and Technology, USA. The estimated flow measurement uncertainty of the calibration facilities are:
Primary +/- 0.15% Secondary +/- 0.5%

McCROMETER
3255 WEST STETSON AVENUE
HEMET, CA 92545 USA
PHONE (951) 652-6811 / FAX (951) 652-3078
WEB SITE: http://www.mccrometer.com E-MAIL: customerservice@mccrometer.com

20151352
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6/24/2015 8:20:40 AM
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LB 2139 6/29/15

Coolant Lift Pump

CERTIFIED TEST REPORT

CUSTOMER: CALWEST RAIN - Laguna Irrigation District

MODEL NO: LP32-08

METER SERIAL NO: 20150863

CONFIGURATION

METER INSIDE DIAMETER: 8.249

DIAL: AFT X 0.01 2500 GPM

GEARS: 16 / 45

TOTALIZER GEARS: 12K+ / 47KK

ACTUAL METER INDEX: 0.3955

TEST FACILITY: Volumetric

CALIBRATION DATA

	FLOW RATE GPM	% ACCURACY
1	1536.33	101.16
2	821.80	101.52
3	261.00	101.07

TEST DATE: 4/24/2015

CERTIFIED BY: Paul Hobbs

PRINT DATE: 4/24/2015

This calibration was performed on a primary or secondary test facility, traceable to the National Institute of Standards and Technology, USA. The estimated flow measurement uncertainty of the calibration facilities are:
Primary +/- 0.15% Secondary +/- 0.5%

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20150863

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4/24/2015 11:55:31 AM
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5/29/10

CERTIFIED TEST REPORT

CUSTOMER: CALWEST RAIN - Laguna Irrigation DIstrict

MODEL NO: LP32-14

METER SERIAL NO: 20100926

CONFIGURATION

METER INSIDE DIAMETER: 14.82

DIAL: AFT X 0.01 10 CFS

GEARS: 25 / 39

TOTALIZER GEARS: 22C / 48C

ACTUAL METER INDEX: 1.2797

TEST DATE: 5/11/2010

TEST FACILITY: Volumetric

CALIBRATION DATA

	FLOW RATE GPM	% ACCURACY
1	3883.20	101.18
2	2120.29	100.99
3	389.40	98.98

CERTIFIED BY: Paul Hobbs **DATE:** 5/11/2010

This calibration was performed on a primary or secondary test facility, traceable to the National Institute of Standards and Technology, USA. The estimated flow measurement uncertainty of the calibration facilities are: Primary +/- 0.15% Secondary +/- 0.5%

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5/29/10

CERTIFIED TEST REPORT

CUSTOMER: CALWEST RAIN - Laguna Irrigation District

MODEL NO: OF12-24

METER SERIAL NO: 20100925

CONFIGURATION

METER INSIDE DIAMETER: 23.83

DIAL: AFT X 0.01 25 CFS

GEARS: 24 / 33

TOTALIZER GEARS: 31A+ / 27G+

ACTUAL METER INDEX: 3.6370

TEST DATE: 5/17/2010

TEST FACILITY: Volumetric

CALIBRATION DATA

	FLOW RATE GPM	% ACCURACY
1	9304.50	100.54
2	4980.00	99.36
3	1239.60	98.79

CERTIFIED BY: Paul Hobbs **DATE:** 5/17/2010

This calibration was performed on a primary or secondary test facility, traceable to the National Institute of Standards and Technology, USA. The estimated flow measurement uncertainty of the calibration facilities are:
Primary +/- 0.15% Secondary +/- 0.5%

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1/10/13

WATER SPECIALTIES PROPELLER METER™

CERTIFIED TEST REPORT

CUSTOMER: CALWEST RAIN -Laguna Irrigation District

MODEL NO: LP32-08

METER SERIAL NO: 20122605

CONFIGURATION

METER INSIDE DIAMETER: 8.249

DIAL: AFT X 0.01 2500 GPM

GEARS: 17 / 43

TOTALIZER GEARS: 12K+ / 47KK

ACTUAL METER INDEX: 0.4397

TEST FACILITY: Volumetric

As Calibrated

CALIBRATION DATA

	FLOW RATE GPM	% ACCURACY
1	2425.81	100.55
2	1214.83	100.20
3	555.94	98.29

TEST DATE: 12/20/2012

CERTIFIED BY: Paul Hobbs

PRINT DATE: 12/20/2012

This calibration was performed on a gravimetric or volumetric test facility, traceable to the National Institute of Standards and Technology, USA. The estimated flow measurement uncertainty of the calibration facilities are:
Gravimetric +/- 0.15% Volumetric +/- 0.5%

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