



# McCROMETER - RSA

Environmental, Inc.

## RSA Flow Conditioned Metering Pipe to Economically Comply with SBx7-7

McCrometer Reverse Propeller Flow Meter with added trash shedding webbing

Battery powered totalizer



Replogle Flow Conditioned Pipe

2 person, 4 hour install – Installation at Merced Irrigation District

Existing site: Upstream gate

Downstream discharge pipe



Insert flow conditioned pipe with reverse propeller flow meter into existing discharge pipe



Grout around upstream pipe opening and seal downstream pipe. Battery totalizer records flow.



Field Calibration +/- 2% accuracy measurement. Installation at Imperial Irrigation District



Organic and Inorganic Trash Passing Tests



Replogle Flume constructed in the wet with measurement instruments.

Dr. John Replogle performed a calibration test of the reverse propeller flow meter confirming the measurement accuracy of McCrometer's factory claim of +/-2%.

**Enhanced Control System  
Gate/SCADA System added to Metering Pipe**



# FINANCE

Metropolitan Water District of Southern California requirements to fund SBx7-7 project  
Each District must:

- Be interested in installing metering devices on their turnouts;
- Has conducted a water balance study to quantify the amount of water saved by the metering devices;
- Has conducted an analysis to determine whether any third parties or the environment would be impacted by the loss of the conserved water; and
- Has indicated a willingness to transfer the conserved water to Metropolitan in exchange for compensation which could help offset the costs for purchasing and installing the metering devices.

## Benefits to Districts

**1. Stabilizes the delivery in the lateral.**

With RSA software at each gate to maintain constant delivery (having the flow meter automatically set the gate position) the Ditch Tender sets the system once during the entire delivery time. The advantage is to be able to have independent stable delivery to every user. Right now the users have no control regarding over or under deliveries due to lateral fluctuations. Usually this problem increases with distance downstream in the lateral line.

**2. Assures billing equity.** The Farmer pays for what is accurately measured and delivered. Therefore, the District no longer needs to over-deliver to assure user satisfaction, which wastes water.

**3. Generates the possibility of a conservation transfer with improvements in efficiency over current practices.**

# 3 STEPS

**RSA customizes system through  
District supplied data:**

1. Range of flows through the turnout
2. Vertical difference between water surfaces of canal and farm side ditch
3. Percent opening used of turnout gate during normal operation

**RSA determines with District where to  
install the pipe system:**

1. Insert RSA Meter Pipe inside existing turnout pipe
2. Attach RSA Meter Pipe to end of turnout pipe inside farmer ditch
3. Place RSA Meter Pipe inside District Canal

**RSA fabricates and delivers system:**

1. RSA installs **or**
2. District installs

## SYSTEM CAPABILITIES

### CANAL WATER METERING SYSTEM

Size I.D.-in	Q cfb	velocity ft/s	V <sup>2</sup> /2g ft	Headloss inches
30	25	5.1	0.403	8.7
	23	4.36	0.341	7.3**
	15	3.1*	0.145	3.1
	13	2.64	0.109	2.19
27	20	5	0.393	8
	18.5	4.65	0.337	6.9
	17.5	4.4	0.301	6.1
	15	3.8	0.221	4.5
24	12	3.0	0.142	2.9
	25	7.5	0.985	21
	20	6.4	0.630	14
	15	4.8	0.354	7.7**
22.44	13	4.1	0.266	5.5
	10	3.1*	0.158	3.4
	20	7.28	0.824	17
	15	5.46	0.463	9.7
16	13	4.7	0.348	7.3
	10	3.64	0.206	4.3
	10	7.1	0.797	17
	6.5	4.7	0.336	7.3**
12	5	3.6	0.199	4.3
	4.5	3.2*	0.165	3.6
	5.0	6.4	0.630	14.0
	4.0	5.1	0.403	9.7
12	3.5	4.5	0.309	6.8**
	3	3.8	0.227	5
2.5	3.2*	0.158	3.5	

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## Benefits to Farmers

**1. Assured an equitable delivery – gets delivered what they purchase.**

**2. May allow the farm operator to trim their delivery with assurance that it will lower his water cost.**

**3. Important with sloping border or furrow irrigation systems. These are the majority of the surface irrigation systems in California. This gives the Farmer the ability to match application rates to soil intake rates to improve uniformity of application.**

**4. Costs of metering may be borne by many Districts on the possibility of revenue from conservation transfers.**

**CONTACT: McCrometer Att: Pamela Fuller, Regional Sales Manager 800-220-2279 ext. 5352**

# 2 person, 4 hour install – Installation at Merced Irrigation District

Existing site: Upstream gate



Downstream discharge pipe



Insert flow conditioned pipe with reverse propeller flow meter into existing discharge pipe



Grout around upstream pipe opening and seal downstream pipe. Battery totalizer records flow.



Opening control gate



Insert flow conditioned/flow meter  
HDPE pipe into existing discharge pipe



**View from upstream**



HDPE pipe indented 11",  
just beyond the  
10" control gate collar





Downstream HDPE pipe projects 8'  
out of concrete discharge pipe



Grout pipe in place using  
3,000 psi concrete





Secure downstream portion of HDPE pipe using bell restraint





Filling downstream end of pipe with concrete





Sufficient supplied cable to remove totalizer from box and place near gate handwheel for operator to simultaneously operate gate and view display



Fully installed system





Optional soil cover over saddle meter to obscure flow meter to protect from vandalism

