RICHVALE IRRIGATION DISTRICT

P.O. BOX 147
RICHVALE, CALIFORNIA 95974-0147
TEL. (530) 882-4243
FAX: (530) 882-4580
E-mail: rid@pulsarco.com

March 13, 2012

Mr. Manucher Alemi
Chief, Water Use and Efficiency Branch
Department of Water Resources
901 P Street
Sacramento, California 95814

RE: Proposed Revision of Draft Measurement Regulation to Comply with Necessity Standards According to Government Code Section 11349.1

Dear Manucher:

As a member of the Agricultural Stakeholder Committee and A2 Subcommittee, I contributed substantially to development of the draft agricultural water measurement regulation. One of the points I (and other ASC members) repeatedly emphasized, through testimony to the California Water Commission (CWC) as well as through comments at ASC and A2 meetings, was the lack of any need for the accuracy standards to apply to each individual measurement device to effectuate the purpose of the statute. Instead, I stated that standards applicable to average accuracy of multiple devices would be sufficient to effectuate the statute's purpose, while also decreasing the burden and expense on agricultural water suppliers. Unfortunately, this suggestion was ignored, without adequate explanation, by the Department of Water Resources (DWR or Department) and the regulation was drafted to apply to individual measurement device accuracy.

DWR's regulatory action was disapproved by the Office of Administrative Law (OAL) earlier this month, based in part on DWR's failure to comply with necessity standards in Government Code section 11349.1. Consequently, DWR will need to fully articulate its reasons for adopting the specific provisions in the regulation and provide opportunity for the public to comment on the Department's reasoning. The purpose of this letter is to present my rationale and supporting evidence to demonstrate that the regulation can allow aggregated farm gate delivery measurements while still satisfying the purposes of the statute. If DWR disagrees with this rationale and supporting evidence, it must satisfy the necessity standard by demonstrating why the more burdensome and expensive individual accuracy standards are preferred.

Statutory Requirements and Regulatory Need

For reference, §10608.48(b) of the California Water Code states that:

> *"Agricultural water suppliers shall implement all of the following critical efficient management practices:*

(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).

(2) Adopt a pricing structure for water customers based at least in part on quantity delivered."

(Underlining added). For further reference, §531.10(a) of the California Water Code requires that:

"(a) An agricultural water supplier shall submit an annual report to the department that summarizes aggregated farm-gate delivery data, on a monthly or bi-monthly basis, using best professional practices."

Based on this language from the statute, the two questions help to illustrate that an aggregated farm gate measurement satisfies the purposes of the Water Code provisions:

1) What level of measurement accuracy is "sufficient" for reporting summarized, aggregated farm-gate delivery data on a monthly or bi-monthly basis using best professional practices?

2) What level of measurement accuracy is "sufficient" for adopting a pricing structure based at least in part on quantity delivered?

Sufficient Accuracy for Reporting Summarized Aggregated Farm-Gate Delivery Data

Measurement of any type involves deviation or error in the measured value relative to a standard measurement. Errors can be systematic, so that when they are aggregated (or summed) they tend to accumulate. Or, they can be random, meaning that when they are summed, the errors tend to cancel each other. To illustrate this point, consider the data presented in Table 1. This data was collected by a registered professional engineer from actual farm delivery gates in Richvale Irrigation District (RID) during the 2011 irrigation season using best professional practices. For each of 33 measurements conducted, the table presents the flow as measured by a weir at the farm gate, flow measured by a SonTek FlowTracker (acoustic Doppler measurement device, regarded as the standard measurement), the flow difference and the percentage accuracy.

It can be seen that the accuracy ranges between -17% and +75% among individual weirs (devices) while the average accuracy for all devices is +4.9%. Furthermore, when the measurements are aggregated and compared, the weighted average accuracy is +1.7%. This illustrates that, for this sample of delivery gates, average accuracy is very high (and certainly within acceptable tolerances for aggregate reporting), despite the fact that some individual devices have large measurement error. This is because, in this sample, which is considered to be representative of district-wide conditions in RID, measurement errors tend to be random and cancel each other out. Similar data collected for two other Sacramento Valley water suppliers and by Imperial Irrigation District reveal similar findings.

DWR should determine the level of accuracy needed in the aggregated farm data to meet the Department's purposes, explain the rationale for that level of accuracy, and then develop a regulation applicable to the aggregated values. The data presented in the Table illustrate that it is not necessary for each and every farm delivery measurement device to achieve an accuracy standard in order for aggregate water measurement to be very good.

It is also important to consider the cost and burden on agricultural water suppliers of the two approaches. If the ±12% accuracy standard applicable to existing measurement devices in the draft regulation were adopted, nearly 20% of RID's roughly 300 farm delivery gates would need to be improved.

Table 1. Comparison of Weir Measurement to Standard Measurement at 33 Farm Delivery Gates in

Richvale Irrigation District during the 2011 Irrigation Season

Customer Delivery Measurement No.	Farm Gate Weir Flow (cfs)	Standard Flow (cfs)	Flow Difference (cfs)	Accuracy
1	8.0	8.3	-0.3	-3.9%
2	18.0	15.3	2.8	18.1%
3	6.6	6.3	0.3	4.3%
4	1.1	0.7	0.5	74.6%
5	2.2	2.5	-0.3	-11.6%
6	6.4	6.6	-0.2	-2.7%
7	4.7	5.7	-1.0	-17.2%
8	7.3	8.3	-0.9	-11.4%
9	2.4	2.5	-0.1	-2.6%
10	1.4	1.3	0.1	6.9%
11	3.0	3.1	-0.1	-4.6%
12	3.9	3.9	0.0	-1.0%
13	6.1	6.2	-0.1	-1.2%
14	23.1	22.5	0.6	2.5%
15	3.6	3.7	-0.1	-1.8%
16	4.5	4.7	-0.2	-3.5%
17	2.3	2.3	0.0	-1.5%
18	3.6	3.5	0.2	4.4%
19	6.3	6.2	0.1	1.5%
20	7.5	7.6	-0.1	-1.3%
21	2.4	2.2	0.2	7.9%
22	4.3	4.7	-0.5	-9.6%
23	2.7	2.7	0.0	0.6%
24	1.9	1.6	0.3	17.3%
25	3.1	2.9	0.2	8.6%
26	4.3	4.2	0.1	2.5%
27	2.8	2.5	0.3	11.7%
28	5.0	4.8	0.2	3.4%
29	5.7	5.6	0.0	0.6%
30	6.9	7.0	-0.1	-1.5%
31	2.4	2.0	0.4	18.1%
32	1.6	1.1	0.5	48.3%
33	2.1	2.0	0.1	5.3%
Minimum	1.1	0.7	-1.0	-17.2%
Maximum	23.1	22.5	2.8	74.6%
Average	5.1	5.0	0.1	4.9%
Aggregated Values	167.4	164.6	2.8	1.7%
Number of measurements failing draft ±12% accuracy standard				6
Percentage of measurements failing draft ±12% accuracy standard				18%

Using a conservative cost estimate of $10,000 per gate to implement improvements to comply with the draft ±12% measurement standard, the capital cost would be $600,000, or $20 per acre averaged over RID's approximately 30,000

irrigated acres. It is also worth noting that RID would need to successfully conduct a Proposition 218 process to gain landowner approval of any rate increase needed to cover these costs. Based on discussions with various landowners in RID, my prediction is that such an initiative would fail. If the Proposition 218 process were to fail, RID would be stuck complying with the mandates of the regulation, while also not having any available funding source to comply.

Sufficient Accuracy for Adopting a Pricing Structure Based at Least in Part on Quantity Delivered

While some agricultural water suppliers, including RID, do not currently charge for water volumetrically, many suppliers have for decades employed volumetric water charges using a variety of pricing structures. Many of these suppliers do not incorporate individual accuracy standards into their volumetric pricing scheme; instead, these suppliers rely on customer/supplier dialog to ensure accurate measurements and to identify and correct outliers.

To address the question of "sufficient" measurement accuracy for purposes of volumetric water pricing, it is helpful to consider (i) how suppliers who use volume based pricing measure water deliveries and (ii) whether they have adopted measurement accuracy standards. What this reveals, not surprisingly, is that supplier measurement programs are highly varied, reflecting that they have been designed according to policy direction from locally elected governing boards to meet local needs and purposes. However, we are aware of no supplier with a volumetric measurement program that has adopted a numeric measurement standard for administration of its pricing program. This clearly indicates that successful volume-based pricing structures do not require a numeric accuracy standard.

Because measurement cost generally increases with increasing measurement accuracy, all local governing boards are faced with the practical question of how good is good enough? Or, in other words, how much are customers willing to pay in order to implement a water measurement program? This question is generally addressed through processes of appeal initiated by the water customers or the supplier. If a customer perceives that measurement is not fair or equitable (i.e., it is an outlier), he can appeal to the supplier for a validation measurement and, depending on the finding, the supplier and customer negotiate a solution. All suppliers have processes for conducting such appeals. Naturally, such a process tends to focus on the largest outliers or farm gates with the highest measurement error. Thus, using the data presented in Table 1 as an example, one would expect that customers would appeal measurements like #4 and #32, which indicate that the customer is being significantly overcharged.

Conversely, the supplier may initiate delivery measurement validation in cases where it is believed that the customers may be undercharged. The purpose in doing this is to ensure that all water delivered to customers is charged for, and that charges accurately reflect the quantity of water delivered. One would expect measurements like #5, #7 and #8 to attract the supplier's attention.

With customers focused on avoiding overcharging and suppliers concerned with undercharging, the combined effect is that the largest positive and negative measurement errors are corrected so that sufficient accuracy is achieved and maintained. Importantly, by addressing the largest outliers, these processes tend to improve the accuracy of the aggregated farm delivery measurement over time.

The Water Code does not necessarily require numeric measurement accuracy standards. Rather, it requires sufficiently accurate water measurements that allow the supplier to adopt a pricing structure based "at least in part on quantity delivered". (Water Code § 10608.48(b)(2)). My recommended approach satisfies the spirit and letter of the Water Code. There are built in incentives for suppliers and customers to define "sufficient accuracy" for their own conditions and purposes. Requiring the accuracy standard to apply to each farm gate unnecessarily and dramatically increases the cost of compliance. However, an accuracy standard applied to aggregate reporting as proposed in the preceding section would satisfy the requirements of the Water Code; would be less burdensome and less expensive to implement; and would ensure that large aggregate measurement errors in the total quantity of water being delivered and charged to customers are corrected and avoided.

Summary

In reconsidering the measurement regulation and in revising its Statement of Reasons as called for by OAL's disapproval, specifically regarding compliance with necessity standards, it is strongly urged that DWR revise the regulation so that an accuracy standard would be applicable to aggregated farm-gate delivery data and not individual

measurement devices. Such a standard would ensure that the purpose of the statute is effectuated without imposing unnecessary costs on water suppliers.

Please feel free to contact me should you have any questions or want to discuss my recommendation.

Sincerely,

Brad Mattson
General Manager
Richvale Irrigation District

cc: Mark Cowin, Director, Department of Water Resources
Kamyar Guivetchi, Chief, Division of Statewide Integrated Water Management, Department of Water Resoucres
California Water Commission Members
Todd Manley, Northern California Water Association
David Bolland, Association of California Water Agencies