California State Regulation on
Agricultural Water Measurement and Applicability to Federal Water Contractors

California Senate Bill x 7-7 (Bill) was enacted in November 2009. The Bill required that on or before July 31, 2012, agricultural water suppliers shall measure the volume of water delivered to customers. As a result, the California Department of Water Resources (DWR) will adopt regulations that provide for a range of options that agricultural water suppliers may use to comply with the measurement requirement.

On July 12, 2011, DWR submitted to the Office of Administrative Law (OAL) a Certificate of Compliance, following the Emergency rulemaking file #2011-0624-01E, to start a regular rulemaking process for the adoption of a permanent agricultural water measurement regulation.

On November 16, 2011, the California Water Commission approved California Code of Regulations Title 23, Waters Division 2, Department of Water Resources Chapter 5.1, Water Conservation Act of 2009 Article 2, Agricultural Water Measurement to send to the Office of Administrative Law (OAL) for approval. If approved by OAL, Section 597(i) of the subject regulation states:

> *An agricultural water supplier subject to Central Valley Project Improvement Act (CVPIA) (Public Law 102-575) or the Reclamation Reform Act (RRA) of 1982 shall be deemed in compliance with this article if all irrigation water delivered by that water supplier to each customer is delivered through measurement devices that meet the United States Bureau of Reclamation accuracy standards defined in Reclamation's Conservation and Efficiency Criteria Standards of 2008.*

Reclamation's Conservation and Efficiency Criteria Standards of 2008 classifies agricultural water measurement as a critical BMP and is as follows:

Measure the volume of water delivered by the Contractor to each customer, except Class II water. Measure flows with devices that are operated and maintained to a reasonable degree of accuracy, under most conditions, to +/- 6 percent by volume. Three typical categories of measurement devices are: Devices with totalizers, standard flow measurement devices, and non-standard but calibrated devices.

The first category includes devices with totalizers that measure volume: Propeller meters, Venturi meters, magnetic meters, and acoustic meters. These have a high level of accuracy with proper installation and periodic maintenance and calibration. This category also includes calibrated pumps when the suction side water level fluctuation is small when compared to the lift (+/- 6 percent) and the discharge pressure is not changed.

The second category includes standard flow measurement devices that measure flow rate and also require accurate measurements of water level and delivery time to determine volumes: Replogle and Parshall flumes; rectangular, trapezoidal (Cipolletti) and V-Notch weirs; and canal meter gates. These devices require proper installation, continuous or sufficiently frequent recording of water levels and flow rates, delivery beginning and ending times, adjustments for approach velocity in some cases, and regular maintenance and calibration for good accuracy.

The third category includes non-standard, calibrated flow measurement devices. This category includes special measurement devices developed by a District. Typically, there are no published standard dimensions or flow tables for such devices. Consistent dimensions and installations; accurate determination of delivery time; local calibration and a verification of accuracy, based on a representative sample number of devices measured over time; and a proposed schedule for maintenance and calibration would be necessary for acceptability. This category also includes calibrated pumps when the suction side water level fluctuation is small when compared to the lift (+/- 6 percent) and the discharge pressure is not changed.

Rough estimates or instantaneous measurements of flow rate or volume are **not** acceptable since such measurements do not provide a documented reasonable degree of accuracy. Examples are, flow rate estimates at check structures, the sum of the flow in siphon tubes, the use of occasional flow readings and multiplying by the time between readings, or other methods of measurement not specified here.

For a copy of Reclamation's Conservation and Efficiency Criteria Standards of 2008, please contact Ms. Sheri Looper at slooper@usbr.gov.