Sutter Mutual Water Company

SBx7-7 Water Measurement Compliance Program

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PURPOSE

This SBx7-7 Water Measurement Compliance Program (Program) has been developed by the Sutter Mutual Water Company (Company) to comply with, the requirements of Water Code Section 10608.48 (WC §10608.48) and the Agricultural Water Measurement Regulation, CCR §597. The Program will become a component of the Company's Agricultural Water Management Plan. Specifically, the Program outlines how the Company has or intends to address the Efficient Water Management Practices (EWMPs) identified in WC §10608.48.

WC §10608.48(a) states that agricultural water suppliers *"shall implement efficient water management practices pursuant to subdivisions (b) and (c)."* Subdivision (b) identifies the following two *"critical efficient water management practices:*

(1) Measure the volume of water delivered to customers with sufficient accuracy to comply with subdivision (a) Section 531.10 and to implement paragraph (2).

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

Subdivision (c) identifies several "additional" EWMPs that are to be implemented by agricultural water suppliers *"if the measures are locally cost effective and technically feasible."* Both the Critical and Additional EWMPs are discussed below.

CRITICAL EFFICIENT WATER MANAGEMENT PRACTICES

California Code of Regulations (CCR) §597, approved on July 11, 2012, defines how agriculture suppliers comply with WC § 10608.48(b)(1). The Company currently measures its deliveries to all customers and believes it is in compliance with the provisions of Section 10608.48(b)(1) and the measurement accuracy provisions of CCR §597. The Company's water delivery measurements are described in the 2006 Sacramento Valley Regional Water Management Plan (RWMP) and its 2009 and 2010/2011 updates, which have been prepared in accordance with the United States Bureau of Reclamation's (USBR) Regional Criteria. The Company intends to meet the measurement certification requirements of CCR §597 as described below.

A. Water Delivery Measurement

As described in RWMP and 2012 Plan Update, the Company's diversions from the Sacramento River are currently measured using flow meters and pump flow charts. Flows in laterals are measured at the lateral headgates based on headgate position and differential head pressure. Drain lift pump flows are measured using power consumption records and pump capacity information or pump curves. Drainage leaving the District is measured using a formula developed by the California Department of Water Resources (DWR) for the main drainage discharge pump station.

Deliveries to fields within the Company are made through three general types of devices, rated gates, over pour checks, and undershot checks. Currently, the Company measures and records water deliveries to fields at each turnout. For rated gate turnouts, the gate opening and water levels on both the upstream and downstream side of the gate are measured and recorded together with the date and time of the readings. Flow rates are determined from tables developed by the gate manufacturer and are also recorded. Readings at each turnout are typically made twice daily; however, additional readings are made when deliveries are first started and when conditions within the canals are fluctuating or changes in deliveries are made. Similar measurements are made for undershot checks; the opening at the bottom of the check is set or measured, the differential head pressure is determined by measuring the water levels on either side of the check and the flow rates are read from tables developed from suppressed orifice flow equations. Over pour checks are used mainly to maintain water levels in laterals and delivery canals; however, in some cases they are used for turnout deliveries. These devices are limited to locations where there is sufficient fall over the check to allow for accurate measurement. In these locations, deliveries are measured using the ITRC Weir Stick which allows the flow rate to be calculated based on the width of the check structure and the reading on the weir stick. As with the other two devices readings are made and recoded twice per day or more often if warranted. For all turnouts the volume delivered is calculated based on the flow rate data recorded for each site and time of delivery.

Table 1 below identifies the number and type of turnout measurement devices along with an estimated level of volumetric accuracy for each device.

Table 1 – Summary of Turnout Structures

Measurement Type	Number[1]	Estimated Accuracy	Reading Frequency	Maintenance Frequency
Rated Gate	357	±6% to ±12%	Bi-Daily or as needed	Annual / as needed
Over Pour/Undershot Check	70	±6% to ±12%	Bi-Daily or as needed	Annual / as needed
Total	427			

[1] The number of each type of device will be verified during the inspection and certification process.

1. Certification Program

The Company intends to certify that the existing measurement devices meet the accuracy requirements for existing measurement devices using field inspections and analysis as described in CCR §597.4(b)(3). The initial certification process will include determining volumetric accuracy of each type of device under standard conditions, development of protocols to confirm each of the existing devices are installed and maintained to the manufacturer's recommendations, design specifications, or industry recognized standards. All field inspections will be conducted by individuals trained in the use of the field inspection techniques and will be documented in a report approved by an engineer. In addition to the field inspections, current operation and maintenance practices will be reviewed to assure they meet best professional practices. A summary of the operation and maintenance practices, together with any recommendations for changes, will be included in the report approved by the engineer. The initial estimate of the cost to develop and implement the certification program and to prepare the report required pursuant to CCR §597 is $200,000. The cost estimate may be revised as the certification program developed and refined. The Company intends to conduct the certification program over a three year period. Table 2 below provides the anticipated schedule for implementation.

2. Finance Plan

As identified above, the costs to certify the accuracy of the Company's existing turnout measurements and to comply with the requirements of SBx7-7 are estimated to be approximately $200,000. As identified in the 2012 RWMP, the District intended to begin implementation of the turn-out measurement program in 2014. Initial site visits and coordination with Company staff to assist in the development of the certification plan were conducted in 2016; however, complications resulting from the extreme drought conditions experienced in 2014 and 2015, including but not limited to reduced water supplies, increased expenses related to coordination with Reclamation and other SRSCs, and reduced revenues, as well as new requirements by the State for measuring recording and reporting diversions pursuant to Senate Bill 88 (SB-88) resulted in the inability to implement the certification program as described. The Company proposes to conduct the Program over the next three year period. Table 2 below identifies the estimated annual Program costs. In order to offset the impact of these added costs on the Company and its customers, the Company intends to seek funding though any grants that may be available from either the DWR or the USBR.

Table 2 – Schedule of Certification Tasks

Task	2017	2018	2019
Development of Inspection Protocols, Review of O&M Practices and Procedures	X		
Field Inspections, Testing, and Quality Control	X	X	X
Document Results and Preparation of Report by Engineer			X
Initial Estimate of Annual Costs	$90,000	$50,000	$60,000

3. Corrective Action Plan

As identified above, the Company believes its existing measurement devices meet the accuracy requirements of CCR §597. A plan for corrective action will be developed following completion of the certification program if it is determined that the existing measurement devices or practices do not meet the accuracy requirements of the regulation.

B. Pricing Structure

Prior to 2003, the Company charged customers for the volume of water delivered using the existing devices and methods described above. Beginning in 2003, the Company's Board changed the pricing policy to charge users based on acreage and duties for various crop types. The duties are based on generally recognized quantities of water required for each crop type, e.g. the duty for crops with higher water demands are greater than those with lower demands. Although the pricing policy changed, the Company has continued to measure and record deliveries at each turnout.

Once the certification plan described under Critical EWMP #1 has been completed, the Company's Board will consider and develop an appropriate pricing policy based in part on the measured volume delivered to customers in accordance with Water Code Section 10608.48(b)(2).

The results of the certification program, including the report approved by an engineer as required under CCR §594.4, together with any necessary corrective actions, and a summary the actual costs to implement the Program will be included with the Company's next update to the AWMP. Changes to the Company's pricing structure will also be included in the AWMP update.

ADDITIONAL EFFICIENT WATER MANAGEMENT PRACTICES

In addition to the critical EWMPs discussed above, Water Code § 10608.48(c) identifies additional EWMPs which are to be implemented if the measures are locally cost effective and technically feasible. These additional EWMPs are referred to in DWR's AWMP Guidebook as Conditional EWMPs.

The Company has evaluated many of the Conditional EWMPs as part of the 2007 RWMP and its updates through addressing the targeted benefits (TBs) and quantifiable objective (QOs). The Company may further address Conditional EWMPs at a future date.