

Interim Borrego Springs Watermaster
Technical Advisory Committee Meeting

To: Board of Directors
From: Technical Advisory Committee (TAC)
Date: November 9, 2020
Subject: Recommended Watermaster Meter Reading Program

Objective

The objective of this memorandum is to provide the Watermaster Board with a recommended meter-reading program to support the implementation of the Proposed Stipulated Judgment (Judgment) and the Groundwater Management Plan for the Borrego Springs Groundwater Subbasin (GMP).

The program recommendation was discussed at the October 27, 2020 meeting of the Technical Advisory Committee (TAC) and finalized via email coordination. The recommendation was reached by consensus among all members of the TAC.

Background

The Judgment, including the GMP constitutes the Physical Solution^{1,2} and Groundwater Sustainability Plan Alternative for the Basin (Alternative) as overseen by the Court; provided, however, that the provisions of the Judgment control over and supersede any contrary provisions contained in the GMP. The Alternative provides a roadmap for how sustainability is to be reached in the Borrego Springs Groundwater Subbasin (Basin³).

The Judgment requires that Parties⁴ holding a Baseline Pumping Allocation⁵ (BPA) install and maintain meters approved by Watermaster that can electronically transmit a recording of the amount of groundwater pumped on a schedule as determined by the Watermaster. As an alternative, the Judgment allows any Party to install and maintain, at its own expense, manual-read meters approved by Watermaster on the condition that (i) the Watermaster physically read the meters on the schedule determined by the Watermaster and (ii) the Party has executed and Entry Agreement with the Watermaster (Judgment: Section VI.A). The Judgment also requires that each

¹ Defined terms in the Judgment are defined in the footnotes.

² Physical Solution – the terms of the Judgment, including the GMP, attached as Exhibit “1”, which are intended to achieve Sustainable Groundwater Management for the Basin consistent with the substantive objectives of SGMA and Article X, section 2 of the California Constitution, and which may be modified over time in compliance with the procedures described in the Judgment.

³ Basin – Borrego Springs Subbasin of the Borrego Valley Groundwater Basin as defined by California Department of Water Resources (DWR) Bulletin No. 118 as Subbasin No. 7-024.01. The boundaries of the Basin are set forth in DWR Bulletin 118, Subbasin No. 7-024.01

⁴ Party (Parties) – Any Person(s) that has (have) been named and served or otherwise properly joined, or has (have) become subject to the Judgment and all their respective heirs, successors-in-interest and assigns.

⁵ Baseline Pumping Allocation (BPA) – The maximum allowed Pumping quantity allocated to a Party to the Judgment.

Party annually arrange for the meter manufacturer or qualified installer of such meters to provide written verification to the Watermaster of the ongoing accuracy of the meter readings and meter calibration (Judgment: Section IV.E.6).

As of October 2020, 100 percent of the pumping wells belonging to the Settlement Agreement Parties are metered and most of these wells (90 percent) have been assessed and verified as accurate by a meter manufacturer or qualified third-party installer. There are a total of 52 active pumping wells belonging to the Settlement Parties. Of these wells, 33 have manual-read meters and 19 have smart meters connected to telemetry. The Watermaster performed its first meter read event from September 28th through October 1st to collect the initial meter read for water year 2021, which began on October 1, 2020.

At its October 8, 2020 meeting, the Board directed that the TAC be convened to develop a recommendation for an ongoing meter reading program, including the frequency at which the meters should be read and reported and the protocols for collecting the meter reads.

Discussion

The purpose of reading meters is to collect and document the information needed to calculate groundwater pumping at each active pumping well of the BPA Parties. Accurate pumping data was identified as a major data gap in the GMP and one of the sources of greatest uncertainty in the Borrego Valley Hydrologic Model (BVHM) used to estimate the Sustainable Yield⁶ of the Basin. To improve the estimate of Sustainable Yield, the Alternative calls for collecting technical data including actual pumping data via existing or installation of new flow meters. The Alternative calls for the use of pumping data for:

- Annual reporting. Section IV.E.5(b) of the Judgment describes the contents of the Annual Report, including, among other things, a summary of aggregate pumping.
- Five-Year evaluation of the Sustainable Yield and Rampdown⁷. Section III.F of the Stipulated Judgment establishes a process to update the determination of the Sustainable Yield and Rampdown every five years.
- Periodic update of the groundwater model. The groundwater model is to be refined and will be used to assist in several of the activities listed above, including the re-assessment of the Sustainable Yield and Rampdown to achieve long-term sustainability goals.
- Under Watermaster Rule 4.2.9, the Watermaster Technical Consultant is to prepare and present to the Watermaster Board for approval any five-year updates to the Groundwater Management Plan required by DWR's review of the Alternative under Water Code section 10733.8, consistent with the terms of the Judgment.

⁶ Sustainable Yield – The maximum quantity of water, calculated over a base period representative of long-term conditions in the Basin that can be cumulatively Pumped on an annual basis from the Basin without causing an Undesirable Result, consistent with SGMA (Wat. Code, § 10721(w)).

⁷ Rampdown – The reduction in cumulative authorized Pumping of BPA imposed pursuant to the terms of this Judgment to alleviate the Overdraft of the Basin and achieve Sustainable Groundwater Management and the reasonable and beneficial use of the Basin's water resources.

In considering a recommended metering program to the Board, the TAC considered the following factors: frequency to support Alternative implementation, cost, and accuracy of meters. The following were the points of discussion:

- Annual reads are the minimum necessary to satisfy SGMA reporting requirements.
- Meter reads will be among the key data that will be used for the update of the Sustainable Yield and Rampdown.
- A monthly time step for pumping data would allow for the best understanding of seasonal variability of basin conditions (groundwater levels, storage, recharge), which are related to the variability in pumping and seasonal recharge.
- Quarterly meter reads could also capture seasonal variability, but given the current lack of data, it may be prudent to collect monthly data for the first year and then assess if quarterly reads are sufficient to capture the variability.
- Executive Director Adams reported that:
 - The total cost for the Borrego Water District to perform the initial meter reading event at the manual read meters was about \$1,700. Based on the current number of manual-read meters (33), this works out to a cost of about \$52 per meter. The BWD has reported that future meter read events are expected to be less costly because the first meter read event included initial coordination efforts with the pumpers that will not be needed in the future if BWD continues to provide meter reading services for the Watermaster. The total cost could be about half to one-third the cost of the initial meter read event (\$600 to \$850). This estimated cost equates to approximately \$18-\$26 per meter.
 - Only pumpers with manual-read meters are incurring costs associated with meter reading. The pumpers with smart meters that read via telemetry don't incur costs for the Watermaster's remote meter reading.
- At the request of the TAC, Michele Staples (legal counsel to the parties represented by AWARE) reported that the goal of the stipulated agreement was to incentivize the installation of smart meters that could be read at the same frequency as manual-read meters without the Watermaster physically reading, inspecting and validating the accuracy of meters. (See Judgment section VI.A.).
- Self-reporting of meter reads should be considered for costs savings, but the frequency should be balanced with the need to ensure accuracy of pumping estimates and that seasonality of the data is captured in the event that pumpers don't self-report.
- Accurate groundwater pumping data is critical information for the five-year updates of Sustainable Yield and Rampdown under Judgment section III.F. The accuracy of the meter reading program is a concern considering the errors that are sometimes associated with start-up of the new meter-reading program. The meter verification and accuracy protocols required in the Judgment will ensure the long term accuracy of the

meters, however more frequent reads are prudent in the first year to assess accuracy of the pumping estimates and identify any challenges.

- Technology on the telemetry systems is rapidly evolving. Based on past work by TAC members, agencies have experienced challenges and errors with telemetry system reporting. It would be helpful to better understand the telemetry systems installed by the pumpers in Borrego and it would be prudent for owners of smart meters to perform periodic verification in the field to compare the manual meter readouts with the telemetry reports, at least in the initial year of monitoring.
- Executive Director Adams reported that there are two different telemetry vendors (McCrometer and SWIIM) used by the pumpers and that both could be contacted to provide information about the technology to the TAC.
- With regards to assessing the accuracy of the pumping data and as a check on assumptions made in the GMP to estimate water use (in particular, the parcel-level estimates), there should be a review process to compare the measured pumping with the pumping estimates in GMP.
- Executive Director Adams reported that there has been a reported concern of allowing BWD to read its own meters as part of the official Watermaster meter reads of manual-read meters and she requested input on how to address this concern. Director Bennett commented that, as a public agency, there are already very strong incentives for accurate reporting and concern is limited given the protocols adopted by the Watermaster for meter reading, which include providing a picture of the meter face during the meter read event. During the annual meter accuracy testing event, the meter reads provided by the third-party vendor performing the testing could serve as a data point to verify that the meter reads are consistent with the BWD reporting.

Recommendation to the Board

Based on the above discussion, and subsequent coordination via email, the TAC recommends the following meter reading program:

- Watermaster should initially establish a monthly frequency for meter read reporting to support the effective implementation of the GMP based on the Water Year⁸ (WY).
- Not all meter reads need to be performed by Watermaster. Self-reporting of meter reads is acceptable between official Watermaster meter read events.
- During the first seven months of the meter reading program (through March 31, 2021), a high frequency of meter reading is recommended as follows for manual-read and smart meters:
 - Manual-Read Meters

⁸ Water Year – October 1st to September 30th. (Wat. Code, § 10721(aa).)

- Official Watermaster meter-read events: Watermaster should perform official meter read events on a bimonthly schedule for the first six months, on or about:
 - November 30, 2020
 - January 31, 2021
 - March 31, 2021
 - Self-Reporting meter meter-read events: Watermaster should direct the Parties to read and self-report meter reads on or about the last day of the month in December 2020, February 2021, and April 2021. Parties with manual-read meters can provide Watermaster staff with an email of the reporting period meter read, including the date and time of the read and a time-stamped photograph of the meter face as evidence of its readout value.
 - Smart Meters
 - Official Watermaster meter-read events: Watermaster should perform official meter read events via telemetry on a bimonthly schedule for the first six months, on or about:
 - November 30, 2020
 - January 31, 2021
 - March 31, 2021
 - Self-Reporting meter meter-read events: Watermaster should direct the Parties to read and self-report meter reads on or about the last day of the month in December 2020, February 2021, and April 2021.
Parties can provide Watermaster staff with a PDF print out of the meter reads from the telemetry dashboard for the reporting period, or they can request Watermaster staff to read the smart meters via telemetry.
 - Parties with smart meters should perform quarterly field verifications (manual reads) of smart meters to compare to the telemetry reported reads, and report the results (including the date and time of the manual read and a time-stamped photograph of the meter face as evidence of its readout value), on or about:
 - December 31, 2020
 - March 31, 2021
- The ongoing frequency of official Watermaster meter reads for the remainder of WY 2021 should be revisited by the TAC in April 2021 based on an assessment of the data collected through March 31, 2021 and the effectiveness of the self-reporting.

- If BWD will continue as the Watermaster contractor to perform meter reads of manual-read meters, a third-party verification of BWD meters should be done annually.