

EXHIBIT 1

SCOPE OF WORK TO REDETERMINE THE SUSTAINABLE YIELD BY 2025

The Borrego Springs Watermaster's current scope of work to Redetermine the Sustainable Yield by 2025 was recommended by a TAC majority and was approved by the Watermaster Board at its meeting on February 9, 2023. The scope of work is summarized in the table below:

**Table 1. Scope of Work to
Redetermine the Sustainable Yield by 2025**
WY 2023 and WY 2024

| Task No. | Task | Cost Estimate |
|--------------------------|---|---------------|
| 1 | Compare FMP-estimated Pumping to Actual Pumping for WY 2022 | \$20,222 |
| 2 | Update Water-Use Factors in the FMP | \$39,196 |
| 3 | Correct Errors Identified in 2021 BVHM | \$22,577 |
| 4 | Perform Model Recalibration | \$128,510 |
| 5 | Determine the Sustainable Yield (including documentation) | \$137,699 |
| Total Cost for All Tasks | | \$348,204 |

The scope of work is described below by task, including: a problem statement, the objective of the task to address the problem statement, a description of the work to complete the task, a cost estimate, the schedule to complete the task, a description of the consequences of not performing each task.

TASK 1 – COMPARE FMP-ESTIMATED PUMPING TO ACTUAL PUMPING FOR WY 2022

Problem Statement: In WY 2022, West Yost extended the BVHM from WY 2017 through WY 2021 (2021 BVHM). For this effort, the Farm Process (FMP) was used to estimate pumping at historically unmetered wells, and then the FMP-estimated pumping was compared against newly-metered pumping at those same wells (*i.e.*, Actual Pumping) during WY 2021 to understand the ability of the FMP to estimate pumping.^{1,2} The result of this comparison was that the FMP underestimated Actual Pumping by 4,456 af in WY 2021—a 42% difference. The TAC considers this difference to be significant, which likely indicates that the BVHM is not sufficiently calibrated based on newly collected pumping data. However, the comparison in WY 2021 relied on only one year of actual pumping data. Additional comparisons of FMP-estimated pumping versus Actual Pumping are necessary to confirm, modify, or refute the conclusions of the extension of the BVHM through WY 2021.

Objective: The objective of this task is to confirm, modify, or refute the conclusions of the extension of the 2021 BVHM by extending the BVHM through WY 2022 and then comparing FMP-estimated pumping

¹ West Yost. 2022. *Extension of the Borrego Valley Hydrologic Model through Water Year 2021* (2021 BVHM TM).

² Pumping at a few unmetered wells was estimated by Watermaster staff in WY 2021.

to Actual Pumping in WY 2022. This task was recommended by the TAC in May 2021 and approved by the Watermaster Board in July 2022 for inclusion in the WY 2023 budget with a budget of \$31,598.

Task Description: In this task, the 2021 BVHM will be extended through WY 2022 and the FMP-estimated pumping in WY 2022 will be compared against Actual Pumping as metered by the Watermaster in WY 2022. Efforts for this task will include extending the Multi-Node Well Package (MNW2) using metered pumping data from WY 2022; extending the Streamflow Routing (SFR) and Flow and Head Boundary (FHB) packages through WY 2022; and extending the FMP through WY 2022. To reduce the cost of this task, it is recommended that the boundary conditions from WY 2021 be applied to the SFR and FHB packages and the FMP. The results and conclusions of this task will be summarized and distributed to the TAC via email. The email will request TAC feedback before the Technical Consultant proceeds with Task 2.

Budget: \$20,222 [Note: A \$31,500 budget for this task was approved by the Watermaster Board for WY 2023. The Watermaster Technical Consultant has re-estimated the scope and budget for this task.]

Schedule: February to March 2023

Consequence of Not Completing Task 1: The ability of the FMP to estimate groundwater pumping is of upmost importance because groundwater pumping is a main stress to the Subbasin. If the FMP continues to significantly underestimate Actual Pumping in WY 2022, then it is likely that the FMP needs improvement and the BVHM needs re-calibration to accurately estimate the water budget and Sustainable Yield of the Subbasin as identified in the Judgment.

By not completing Task 1, the TAC will not be able to confirm the results and conclusions from the extension of the 2021 BVHM, and therefore, would be basing many of its subsequent recommendations for improvements to the FMP and BVHM on a single evaluation.

TASK 2 – UPDATE WATER-USE FACTORS IN THE FMP

Problem Statement: Water-use factors are used to estimate the consumptive use of water of different crop and land-use types in the FMP. The water-use factors currently used in the FMP were developed by the United States Geological Survey (USGS) during the initial development of the BVHM. The factors were initially based on various agricultural water-use studies (Allen et al., 1998³; Snyder et al., 1987a⁴, Snyder et al., 1987b⁵) and adjusted during model calibration.

It appears from the results of the 2021 BVHM extension that the FMP significantly underestimates pumping. If so, this would indicate that the water-use factors currently used in the FMP are inaccurate.

³ Allen, R.G., Pereira, L.S., Raes, D., and Smith, M. 1998. Crop evapotranspiration—Guidelines for computing crop water requirements: Food and Agriculture Organization of the United Nations, Irrigation and Drainage Paper 56. Accessed December 12, 2022 on <https://www.fao.org/3/X0490E/X0490E00.htm>.

⁴ Snyder, R.L., Lamina, B.J., Shaw, D.A., and Pruitt, W.O. 1987a. Using reference evapotranspiration (ET_o) and crop coefficients to estimate crop evapotranspiration (ET_c) for agronomic crops, grasses, and vegetable crops. Accessed December 12, 2022 on <https://calisphere.org/item/e4408893-9141-4766-89f2-c25c667071a7/>.

⁵ Snyder, R.L., Lamina, B.J., Shaw, D.A., and Pruitt, W.O. 1987b. Using reference evapotranspiration (ET_o) and crop coefficients to estimate crop evapotranspiration (ET_c) for trees and vines Accessed December 12, 2022 on <https://calisphere.org/item/fbc9dc78-de6e-4d99-a561-0028370f8107/>.

Since the FMP is an important component of the BVHM, inaccuracies in the FMP could significantly affect the ability of the BVHM to accurately estimate the water budget and Sustainable Yield of the Subbasin.

Objective: The objective of this task is to develop updated estimates of the water-use factors used in the FMP to improve the ability of the FMP to estimate groundwater pumping.

Task Description: To update the water-use factors, a new methodology will be developed. Previous efforts have been undertaken to estimate water-use factors in the Subbasin, which could be used to achieve the objective of this task. Specifically, in estimating the Baseline Pumping Allocation (BPA) for agricultural parties in the Subbasin, Dudek developed a method for estimating water-use factors for various crop types and documented the data sources and methodology. The methods used to estimate water-use factors in the FMP will need to be researched to determine if the water-use factors estimated by Dudek can be directly compared to and used in the FMP. If a comparison cannot be made, additional methods will be evaluated for estimating water-use factors.

The updated water-use factors will be used to run the BVHM through WY 2022 and the updated FMP-estimated pumping will be compared to prior estimates of FMP-estimated pumping for the entire model simulation period (WY 1930-2022). Additionally, the updated FMP-estimated pumping will be compared to the Actual Pumping for WYs 2021 and 2022 to determine if the updated water-use factors improved the FMP's ability to estimate groundwater pumping. If the updated FMP still fails to accurately estimate Actual Pumping, the water-use factors will need to be adjusted during the model recalibration (Task 6). The approach and results from comparing FMP-estimated Pumping to Actual Pumping for WY 2022 (Task 1) and updating water-use factors in the FMP (Task 2) will be presented to the TAC.

Budget: \$39,196

Schedule: March through April 2023

Consequence of Not Completing Task 2: By not completing Task 2, the FMP will continue to use the existing water-use factors initially developed by the USGS, and as a result, may continue to underestimate groundwater pumping. As noted under Task 1, the FMP's ability to estimate groundwater pumping is critical for redetermining the Sustainable Yield. If the FMP significantly underestimates pumping, then it is likely that the BVHM is not well calibrated, the BVHM cannot be satisfactorily re-calibrated, and any redetermined Sustainable Yield using the FMP and BVHM may not be accurate.

TASK 3 – CORRECT ERRORS IDENTIFIED IN THE 2021 BVHM TM

Problem Statement: During the 2021 BVHM extension, West Yost identified several errors and discrepancies in the BVHM and documented the errors and discrepancies in the technical memorandum *Extension of the Borrego Valley Hydrologic Model through Water Year 2021* (2021 BVHM TM). Some of these errors relate to the assignment of recharge in the BVHM, which may adversely impact the ability of the BVHM to accurately estimate the water budget and Sustainable Yield of the Subbasin.

Objective: The objective of this task is to fix known errors in the BVHM and quantify the influence of the errors on the BVHM results.

Task Description: In this task, the errors and discrepancies identified in the 2021 BVHM TM will be corrected. These corrections include fixing errors in the SFR, FHB, MNW2 packages, and in the FMP. Additionally, the screen depths of wells in the MNW2 package will be compared to well completion data to validate the depth distribution of pumping in the BVHM. Once all identified errors have been corrected,

the BVHM will be run through WY 2022. The results from the corrected BVHM will be compared to the historical BVHM results to quantify the influence of the errors on the model results. The approach and results from completing this task will be presented to the TAC.

Budget: \$22,577

Schedule: April through May 2023

Consequence of Not Completing Task 3: The known errors in the BVHM are virtually certain to impact the model estimates of:

- Subsurface inflows
- Stream inflows
- Groundwater pumping

While the magnitude of these errors on the BVHM results remains unknown, it is certain that the errors are influencing the model-estimated water budget, including the typically important sources of recharge. Estimates of historical recharge were used to establish the current Sustainable Yield of 5,700 afy.

By not completing Task 3, the known errors will remain in the BHVM and may adversely influence the BVHM-estimated water budget and Sustainable Yield. The impact of these errors on the BVHM results (e.g., water budget, recharge, groundwater pumping, and the Sustainable Yield) will remain unknown.

TASK 4 – PERFORM MODEL RECALIBRATION

Problem Statement: Past modeling efforts have indicated that the BVHM may require a recalibration. Examples include:

- The results from the 2016 BVHM extension found that the model underestimated hydraulic heads compared to measured values (Dudek, 2019).
- The results from the 2021 BVHM extension found that the FMP significantly underestimated groundwater pumping compared to Actual Pumping in the Subbasin (West Yost, 2021).
- The results from the 2021 BVHM extension identified several other discrepancies with the BVHM that could have adversely impacted its initial calibration, such as inaccurate estimates of recharge and errors in the SFR, FHB, and MNW2 packages and the FMP (West Yost, 2021).

If the BVHM is not appropriately calibrated, then the BVHM results, and interpretations derived from the BVHM results such as the Sustainable Yield, are likely inaccurate.

Objective: The objective of this task is to improve the ability of the BVHM to estimate groundwater elevations, groundwater pumping, the water budget, and the Sustainable Yield of the Subbasin by recalibrating the BVHM after completing the tasks to update the FMP and fix the errors in the BVHM.

Task Description: To recalibrate the BVHM, input files will be prepared to perform calibration using the parameter estimation code PEST. Selected measured pumping and head values will be used as calibration targets. During the model calibration, the values of aquifer parameters (such as hydraulic conductivity and storage coefficient) and, if needed, the water-use factors in the FMP will be adjusted to minimize the differences between the model estimated and measured pumping and head values. The calibration results

will include time series of simulated vs. measured values, along with calibration statistics and calculated residuals. The approach and results of the calibration will be documented in a TM and presented to the TAC. The TM will be finalized based on TAC comments and the calibrated BVHM will be used in Task 7 to determine the Sustainable Yield.

Budget: \$137,699

Schedule: December 2023 through May 2024

Consequence of Not Completing Task 4: By not completing Task 6, the BVHM results will continue to be produced from a model that likely is not sufficiently calibrated, which will result in inaccurate estimates of groundwater pumping, hydraulic heads, the water budget, and the Sustainable Yield.

TASK 5 – DETERMINE THE SUSTAINABLE YIELD (INCLUDING DOCUMENTATION)

Objective: The objective of this task is to determine the Sustainable Yield for WY 2026 through WY 2030 and document the methods, results, and conclusions of all work performed for this effort. This task is required by the Judgment and must be completed and adopted by the Board no later than January 1, 2025.

Task Description: Projection scenarios and methods to interpret model results will be developed and proposed to the TAC via a draft TM. The projection scenarios will include the Rampdown of pumping to the Sustainable Yield and future precipitation and ET based on climate projections, which may use either a change factor method or projected BCM data based on Coupled Model Intercomparison Project Phase 5 (CMIP5) climate models. The TAC will have the opportunity to provide feedback on the proposed projection scenarios and the methods for redetermining the Sustainable Yield. Once the projection scenarios and methods for redetermining the Sustainable Yield are finalized, the projection scenarios will be constructed and run with the BVHM. A draft report describing the methods and results of this task will be presented to the TAC for review and comment. The report will be finalized based on TAC comments. The final report and the TAC recommendation for the redetermined Sustainable Yield will be presented to the Watermaster Board for their consideration during the September 2024 Board meeting. The Watermaster Board will then have time to review the Sustainable Yield prior to approving it by December 2024.

Budget: \$137,699 [Note: A \$155,000 budget for this task was assumed in the SGM grant application. The Watermaster Technical Consultant has re-estimated the scope and budget for this task.]

Schedule: May through September 2024

Consequence of Not Completing Task 5: This task must be completed. Section III.F.3 of the Stipulated Judgement states that “By January 1, 2025, the Watermaster will, following receipt of input and recommendations from the Technical Advisory Committee, revise the determination of the Sustainable Yield for Water Years 2025/2026 through 2029/2030.”