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Borrego Springs Watermaster

Technical Advisory Committee Ad-Hoc Meeting

October 16, 2024

Today's Agenda

1. Roll Call
2. Public Comment
3. Draft TM for Task 4 – *Model Calibration*
4. TAC Recommendation Report on the 2025 Redetermination of the Sustainable Yield
5. Scope of Work to Support the 2030 Redetermination of the Sustainable Yield
6. Future Meetings

TAC Comments on Draft Task 4 TM

- **Rams Hill:** Simulation period of the Initial BVHM?
- **Response to Comment:**
  - Historical period = 1929 - 2011
  - Projection period = 2011 - 2060

- **Rams Hill comment on the KC and FTR values used during FMP calibration** (pg. 8): "Recommended for the original BVHM, or recommended in some other study?"
- **Response to Comment:**
  - Values are sourced from Appendix 6 of the OWHM Model Report (Boyce et al., 2020)

TAC Comments on Draft Task 4 TM

- **Rams Hill:** "What is the change in storage when pumping is limited to 7,952 AFY?"
- **Response to Comment:**
  - The change in storage was not calculated during Task 4 – *Model Calibration.* The change in storage will be calculated when analyzing projection scenarios during Task 5.
- **AAWARE comment on Table 3. FMP-Estimated Pumping vs. Actual Pumping:** "Should we have another table similar to this one but with the results from Table 6. Water Budget for the Calibrated BVHM?"
- **Response to Comment:**
  - The percent difference between FMP-estimated Pumping and Actual Pumping are the same for the *Calibrated FMP* and *Calibrated BVHM*:
    - WY 2021: -1.7% (FMP underestimates pumping)
    - WY 2022: 0.5% (FMP overestimates pumping)

TAC Comments on Draft Task 4 TM

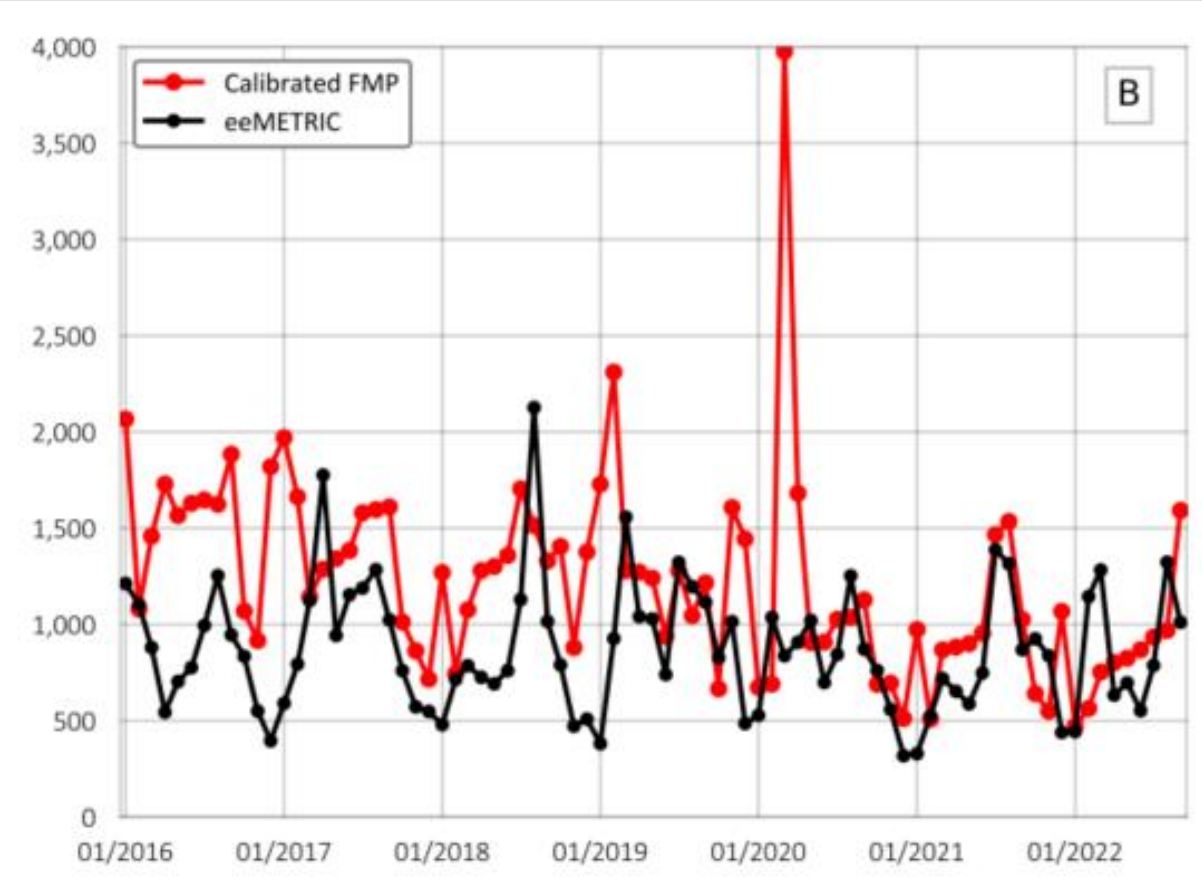
- **AAWARE comment on Table 3. FMP-Estimated Pumping vs. Actual Pumping:** "Why did the total metered pumping numbers change? According to Technical Memorandum dated March 15, 2024 Table 1, actual pumping was 12,857 AF in 2021 and 10,863 AF in 2022. See Appendix A"
- **Response to Comment:**
  - Pumping from State Park well no longer included in Actual Pumping
    - During Task 3, the State Park well was added and metered pumping data was assigned in the MNW2 package
  - Estimated pumping for two wells in WY 2021 was reduced during Water Rights Accounting Process
    - Pumping for these wells had previously been estimated using water duty method.
    - Metered data became available in WY 2022 and was used to revise the WY 2021 estimate of pumping.
  - Changes reduced Actual Pumping by 733 AF in WY 2021 and 15 AF WY 2022

TAC Comments on Draft Task 4 TM

- **AAWARE comment on sentence about ET estimates from OpenET and FMP** (pg. 9): "This statement seems incorrect because it assumes that the monthly ET values from the Calibrated FMP have more credibility than the ET estimated from the two Open ET models."
- **Response to Comment:**
  - Removed the use of "over-estimated" and "under-estimated" in describing the comparison of OpenET to the FMP
  - The report text has been revised to state that "These charts indicate that ET estimates by eeMETRIC and geeSEBAL are lower than ET estimates of the Calibrated FMP…"

TAC Comments on Draft Task 4 TM

- **AAWARE comment on sentence about ET estimates from eeMETRIC** (pg. 10): "This should not be the reason for the eeMETRIC uncertainty in Borrego Springs given that it is less likely to have cloudy conditions which greatly reduces the atmospheric interference."
- **Response to Comment:**
  - Cloudy conditions occur in Borrego Springs occasionally and should be a consideration
  - Example: Low ET was estimated by eeMETRIC during and after rainfall (*i.e.* cloudy conditions) for the period around March 2020

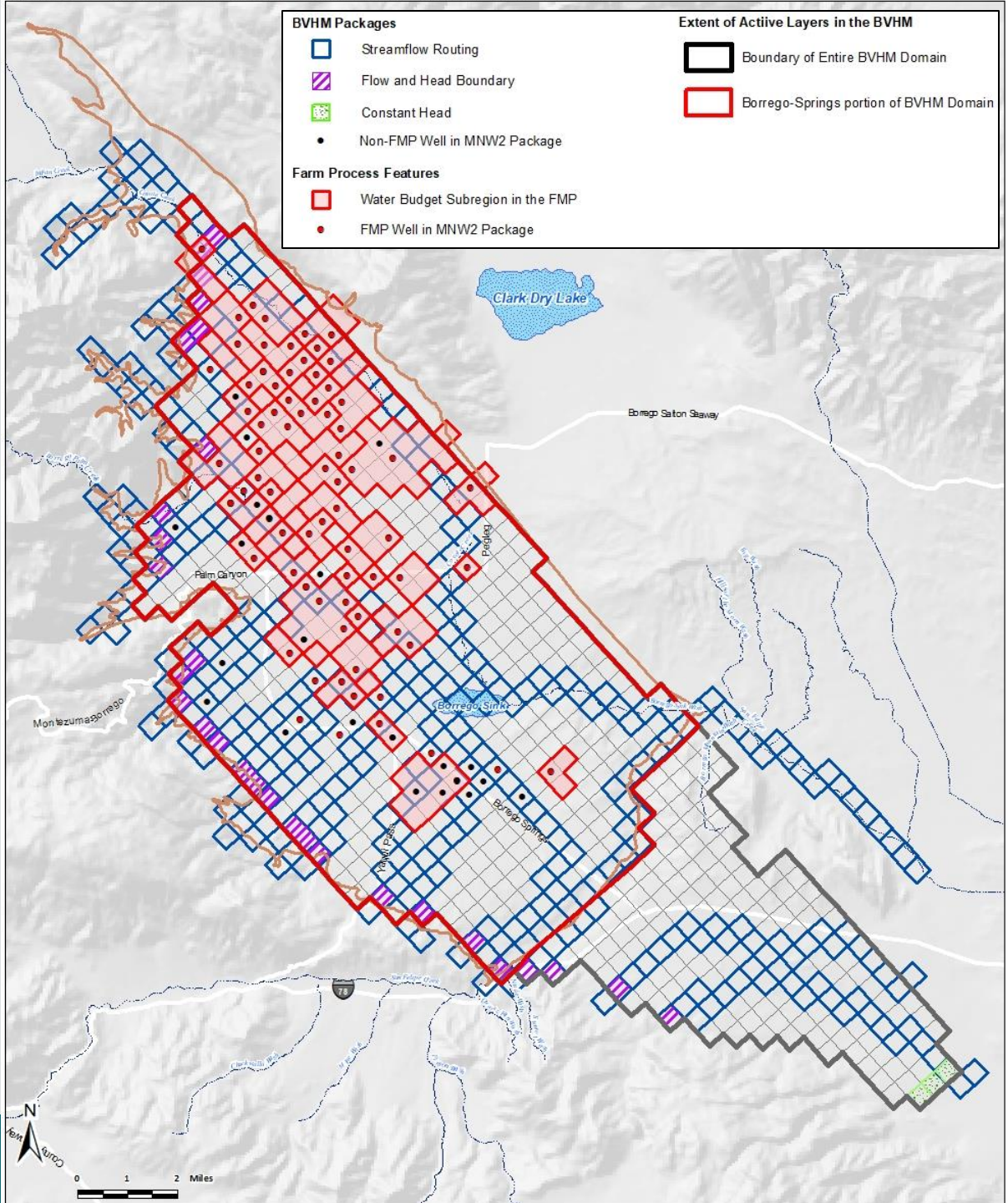


TAC Comments on Draft Task 4 TM

- **AAWARE comment on scalar multipliers used for subsurface inflow (pg. 11):** "Please add the source for the scalar multipliers used."
- **Response to Comment:**
  - Text has been revised to state: "Scalar multipliers of the Initial BVHM were used and then adjusted within reasonable ranges (constrained between 0.80 to 1.20)."

TAC Comments on Draft Task 4 TM

- **AAWARE**: Why did outflows from the model stay the same after excluding the portion of the model overlying Ocotillo Subbasin?
- **Response to Comment:**
  - Only two tables in the report present water budgets:
    - Table 2 - entire model domain of the *Pre-Calibrated BVHM.* Outflows = *14,057* afy
    - Table 6 - Basin-only portion of the *Calibrated BVHM.* Outflows = *17,192* afy



Next Steps

- **October 31, 2024** - Finalize Task 4 TM
  - Final TM will include an appendix documenting the response to comments
- **October 31, 2024** - Publish final Technical Report on the 2025 Sustainable Yield for Board and TAC review
  - Compilation of work completed in Tasks 1-4 of the scope of work

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5. Scope of Work to Support the 2030 Redetermination of the Sustainable Yield
6. Future Meetings

Redetermination of the 2025 Sustainable Yield

- Tasks 1-4 of the scope of work to Redetermine the Sustainable Yield are complete
- Watermaster Board provided the following guidance at the September 2024 Board Meeting:
  1. 2025 Redetermination of the Sustainable Yield should be based on results of Task 4 – *Model Calibration*
     - Any important caveats (*e.g.,* next steps to evaluate impacts) should be part of the recommendation
  2. Task 5 of the scope of work to *Redetermine the Sustainable Yield* should be performed in parallel to finalizing the Sustainable Yield
     - Task 5 → Develop pumping projections (i.e., Rampdown to 2025 Sustainable Yield) and simulate projection scenarios to assess for Undesirable Results under the 2025 Sustainable Yield
     - Task 5 results can be used to support evaluations of Carryover Rules and/or 5-year GMP update

Redetermination of the 2025 Sustainable Yield

- Redetermination must occur by January 1, 2025
- Board will consider the following for the redetermination:
    1. TAC Recommendation Report
    2. Technical Consultant Recommendation Report

Considerations for TAC Recommendation Report

1. **Results of Task 4 – Model Calibration.** Task 4 TM concluded that:
   - Calibrated BVHM is a good simulator of hydrology of the Basin and should be used to redetermine the Sustainable Yield
   - Based on the uncertainty analysis, the **2025 Sustainable Yield should range from 7,600 afy to 8,100 afy**
   - Calibrated BVHM can be used to predict future groundwater conditions
2. **Future Improvements to the BVHM**
   - The current scope of work has resulted in significant improvements to the BVHM, but these efforts have identified other potential improvements to the BVHM
   - These potential improvements can be implemented prior to redetermination of the 2030 Sustainable Yield
3. **Model Projections of Pumping Rampdown to the 2025 Redetermined Sustainable Yield**
   - Model projections of pumping are proceeding, but separately from the Sustainable Yield redetermination

Technical Consultant Recommendation

- The *Calibrated BVHM* is a good simulator of the good simulator of the hydrology of the Basin and can confidently be used to:
  - Establish the 2025 Sustainable Yield
  - Predict future groundwater conditions in the Basin under future groundwater pumping plans and climatic conditions to support the GMP Assessment Report
- **The 2025 Sustainable Yield should be set at 7,900 afy**
  - Rounds-down the *Preliminary* Sustainable Yield of 7,952 afy
  - More conservative estimate
  - Consistent with the average Sustainable Yield result from all 10 model realizations evaluated in the uncertainty analysis (7,800 afy)

TAC Recommendation Report - Outline

1. **Background and Objectives**
   - Description of scope of work and technical information considered in recommending the 2025 Sustainable Yield
   - Objectives of the TAC Recommendation Report
2. **TAC Recommendation(s)**
   - If TAC consensus is not achieved, each TAC member will document their non-consensus
3. **Appendix with supplemental TAC submissions** (if applicable)
   - TAC guidelines allow TAC members to prepare and submit supporting materials for TAC Recommendation Reports
   - Materials can be submitted prior to the October Ad-Hoc or November Regular TAC meeting

TAC Recommendation Report

- TAC members were sent Table 1 to consider prior to this Ad-Hoc meeting
- TAC members are asked to share their recommendations by October 17th

Sustainable Yield Consideration	TAC Recommendation
The *Calibrated* BVHM is a good simulator of the hydrology of the Basin and can confidently be used to redetermine the 2025 Sustainable Yield. (Y/N)	
The 2025 Sustainable Yield should be set at _____ afy	
Description of the limitations of the analysis that the Board should consider in setting the 2025 Sustainable Yield (*if any*).	
Additional Considerations/Recommendations:	

Next Steps

- **October 17, 2024** – TAC comments on Table 1 due
- **October 18, 2024** – West Yost will publish a draft TAC Recommendation Report for TAC review
- **October 25, 2024** – TAC comments due on the draft TAC Recommendation Report
  - Email comments to West Yost and copy the entire TAC
- **October 31, 2024** – draft TAC Recommendation Report published for Board review
  - Package will also include:

    1) Final Technical Report

    2) Technical Consultant Recommendation Report

Today's Agenda

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2030 Redetermination of Sustainable Yield

- The Judgment requires the Sustainable Yield be redetermined every 5 years
  - Currently performing the Redetermination of the 2025 Sustainable Yield (2025 – 2030)
  - Next redetermination is due by January 1, 2030 (Sustainable Yield for 2030-2035)
- Judgment also requires the Watermaster and TAC to develop a scope of work and budget for redetermining the 2030 Sustainable Yield
  - Work to be implemented from WY 2026 – 2029
- **Objective of future scope of work**: Improve the ability of the BVHM to estimate:
  - Hydrology of the Basin (water budget, groundwater levels, etc.)
  - 2030 Sustainable Yield

TAC Recommendation Report - Outline

1. **Background and Objectives**
   - Description of scope of work and technical information considered in recommending a scope of work for the Redetermination of the 2030 Sustainable Yield
   - Objectives of the TAC Recommendation Report
2. **TAC Recommendation(s)**
   - If TAC consensus is not achieved, each TAC member will document their non-consensus
3. **Appendix with supplemental TAC submissions** (if applicable)
   - TAC guidelines allow TAC members to prepare and submit supporting materials for TAC Recommendation Reports
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Scope of Work – Minimum Effort

1. Collect metered pumping data through WY 2028
2. Extend the model through WY 2028
   - Assign metered pumping data to all wells
   - Collect and assign FMP-required parameters (*i.e.,* precipitation, PET, crop type) to estimate return flows and actual ET
3. Run the BVHM through WY 2028
   - Calculate the water budget
   - Estimate the 2030 Sustainable Yield using same methodology used to redetermine the 2025 Sustainable Yield (Natural Inflows – Natural Outflows)

Additional/Alternative Methods

- Topics discussed while executing the current scope of work to redetermine the 2025 Sustainable Yield:
  - Update the Hydrogeologic Conceptual Model
  - Develop methods to improve the estimates of subsurface inflow and stream inflow
  - Upgrade BVHM to new version of MODFLOW-OWHM (or another platform)
  - Confirm estimates of OFE values in the FMP
  - Use other sources of Reference ET (*i.e.* OpenET)
  - Validate estimates of return flows
  - Continue to use the FMP to estimate pumping and return flows
  - Remove the FMP and replace it with processes for estimating return flows and ET
  - Others??

TAC Recommendations on Scope of Work

- AAWARE
- Borrego Springs Community
- BWD
- County of San Diego
- Rams Hill
- Roadrunner Club

Next Steps

- **October 18, 2024*** – TAC comments on Table 1 due
- **October 24, 2024*** – West Yost publishes a draft TAC Recommendation Report on the Scope of Work for TAC review
- **October 31, 2024** – TAC comments due on the draft Scope of Work
  - Email comments to West Yost and copy the entire TAC
- **November 4, 2024** – draft TAC Recommendation Report on Scope of Work published for Board review
  - Published as part of the November Board Meeting agenda package

*date different than published in schedule

Future Meetings

- November 19, 2024
  - Discuss Board/Stakeholder comments on Redetermination of the 2025 Sustainable Yield
  - Discuss Board comments on 2026-2029 Scope of Work
  - Analysis of Carryover Rules
- December 9, 2024
  - Discuss additional Board comments on Redetermination of the 2025 Sustainable Yield
  - Discuss additional Board comments on 2026-2029 Scope of Work
  - Analysis of Carryover Rules

Thank You!