From: McGlothlin, Russell <RMcGlothlin@bhfs.com>
Sent: Friday, November 2, 2018 4:01 PM
To: 'PDS.Groundwater@sdcounty.ca.gov'; 'Jim.Bennett@sdcounty.ca.gov'
Cc: 'tdriscoll@dudek.com'; 'Geoff Poole'; 'Leanne.Crow@sdcounty.ca.gov'; 'Steve Anderson'; 'Shannon Smith (SSmith@considinecos.com)'; 'Considine, Terry (Denver) (Terry.Considine@aimco.com)'; 'Cathy Milkey (crmilkey@gmail.com)'; 'Tom Watson'; Malone, Caitlin K.; Michele Staples; Boyd Hill; Mike Seley (mike@seleyco.com); jim@seleyco.com
Subject: Borrego Springs Groundwater Model and Proposal for Collaborative Technical Approach
Attachments: Ltr to J Bennett Re GW Model and Proposal for Technical Collaboration.pdf; Items for Potential Future Collaborative Technical Effort (November 2, 2018)_(17721967_1).pdf

Jim:

Attached is a letter sent on behalf of T2 Borrego and AAWARE concerning a proposed collaborative approach for refining technical understanding in the Borrego Valley Basin over time. We look forward to discussing this proposal with you. Wishing you a nice weekend.

Russ

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November 2, 2018

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VIA E-MAIL: PDS.Groundwater@sdcounty.ca.gov

Borrego Valley GSA Core Team
C/O Jim Bennett
Planning & Development Services
5510 Overland Avenue, Suite 310
San Diego, CA 92123

RE: Borrego Springs Groundwater Model and Proposal for Collaborative Technical Approach

Dear Members of the Borrego Valley GSA Core Team:

On September 27, 2018, Cathy Milkey, on behalf of T2 Borrego, LLC requested a copy of Dudek's updated USGS model for the Borrego Valley Groundwater Basin. On October 9, 2018, you responded on behalf of the Borrego Valley GSA Core Team and explained that the Core Team is withholding the release of the updated model because the updated model is in preliminary draft form, is evolving, and the Core Team is in the middle of its internal deliberative process. You further explained that when the draft GSP is released for public review, the updated groundwater model files will also be available for public review. We understand that this is scheduled to occur in December of 2018.

T2 Borrego requested the updated model so that T2 Borrego's consultants (aquilogic) could assess it in a transparent and open way with Dudek and AAWARE's consultants (Wagner & Bonsignore). After attending the technical meeting at Dudek's offices on August 31st, T2 Borrego's and AAWARE's consultants realized it would be beneficial for all stakeholders if Dudek's updated USGS model was further refined. We had hoped this assessment could begin this fall, but we are willing to wait until the draft GSP is released in December to receive the model files. If the GSP is delayed and, as such, the model is also delayed, we would appreciate receiving the model as soon as practicable.

We feel it is important to emphasize that it is not our intent to undercut the GSP process. Rather, we desire to work collaboratively with the Core Team and our technical experts to identify where our collective technical understanding can be improved, both in connection with the Dudek updated USGS model and continuing over time. Based on what we understand (absent the ability to work with the updated model), there are likely aspects of the model that can be improved, such as those summarized in the attached chart developed by aquilogic.

Disagreements over hydrogeology, particularly concerning the accuracy of numerical groundwater models, have often been a substantial subject of conflict in past groundwater basin adjudications in California, typically resulting in extensive delay and expense. We sincerely hope such conflicts can be avoided in Borrego, as we are sure the Core Team does as well. To avoid such conflicts, we respectfully urge the GSA to promote a collaborative technical approach among the GSA and stakeholders represented by technical consultants.

Specifically, we urge the Core Team to schedule a series of working-sessions with our technical experts following disclosure of the model and before final approval of the GSP to provide a meaningful opportunity for review and input. Also, we urge the GSA to provide in the GSP for the creation of a permanent technical advisory group (TAG) with qualified representatives from all stakeholders desiring to participate. The TAG would meet on an appropriate schedule, seek consensus on future technical work and findings in a transparent manner, and present recommendations to the GSA to pursue. During the first five years of the GSP's operation, the TAG would seek to refine the model and to collectively assess observed groundwater conditions.

We also urge the GSA, pursuant to SGMA, to include within the GSP an acknowledgement that the TAG will continue to improve the model and work to eliminate data gaps through an iterative process over time throughout the GSP's implementation.[1] Such acknowledgement is important to avoid stakeholders reacting to perceived misplaced confidence in the precise accuracy of the model and the estimate of the Basin's sustainable yield. We should all acknowledge that the model is a helpful tool to understand initial estimates of sustainable yield and the Basin's hydrogeologic characteristics, but by acknowledging the potential to improve the model, the GSA can hopefully channel stakeholder efforts into an extended collaborative and adaptive approach to Basin management rather than conflict and confusion over the model's current level of accuracy.

We should all also acknowledge that the model will likely serve various functions over time. Initially, it is being used to establish the preliminary estimate of the sustainable yield for inclusion in the GSP, which we understand the GSA anticipates to be approximately 5,700 AFY. In this respect, we all recognize that we do not need a perfect model to know that we have to achieve substantial pumping reductions. Likewise, we agree that the initial rampdown during the first five years of the plan's operation should achieve a 20% reduction of baseline pumping allocations, as has been discussed. As the model is improved and new data becomes available, the model can be used to better assess how the Basin is likely to respond to changes in pumping quantities and locations and other management actions. An improved model will also assist in understanding, as pumping quantities and locations change, whether observed conditions are as anticipated or whether there are unanticipated inconsistencies suggesting that the technical assumptions are inaccurate and need to be reassessed. Finally, an improved model, together with observed hydrogeologic data, can help to refine the sustainable yield to facilitate adaptive management measures, including the ultimate requisite rampdown quantity.

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[11] The SGMA regulations provide that the GSP shall "identify reasonable measures and schedules to eliminate data gaps." Cal. Code Regs., tit. 23, § 355.4.

We know that certain pumpers are concerned that the initial sustainable yield assessment may be under estimated, leading to an unnecessarily high projected rampdown, which has significant business and economic impacts for the community and pumpers in the Basin. This need not be a source of conflict. It appears all agree that a 20% rampdown for the first five years is appropriate. The question is how aggressive rampdown needs to be in the "out" years (e.g., years 10-20 after all Basin users have implemented reductions). This uncertainty can be resolved by the collaborative technical process we are proposing. The improved model, together with observed data collected during GSP implementation, can guide us concerning the ultimate rampdown requirement to achieve sustainable and adaptive Basin management.

Thank you for considering these comments and recommendations. Of course, we welcome further discussion with the Core Team and other stakeholders respecting the development of an effective technical process that avoids unnecessary conflict.

Sincerely,

Russell M. McGlothlin
For T2 Borrego, LLC

Michele Staples
For AAWARE

cc: Terry Considine
Shannon Smith
Cathy Milkey
Jim Seley
Mike Seley

Enclosure: Chart of Items for Potential Future Collaborative Technical Effort

aquilogic, Inc.
environment • water • strategy

Items for Potential Future Collaborative Technical Effort

Item	Why Important
1. Update of mountain front underflow for the basin as a whole and individual management areas.	Current model inputs appear conservative for several parameters and modeled water levels do not match higher actual measured levels. This suggests some sources of inflow might be under-estimated potentially resulting in "missing water".
2. Reassessment of irrigation (i.e., AG + REC + septic leach field seepage) return flow estimates, and impact on basin-wide sustainable yield. Timing of the return flow to the water table should also be reevaluated.	Rationale, see #1 above. Recent USGS studies in California indicate that the volume of return flows can, and do, vary considerably due to site specific conditions. Therefore, these flows may be higher than currently estimated for the basin. Further, because of the history of sustained application of water to the land surface in the basin (i.e., AG and REC irrigation and septic leach field seepage), it is also reasonable to assume that recharge from return flows would be ongoing for several years, even if the application of water were to cease or be temporarily interrupted. Therefore, in the coming years (after GSP implementation), the basin may benefit from increased return flows from historic and current irrigation and other water application practices. Additional study and refinement of this component of the water budget is recommended in the first five year period after GSP implementation.
3. Reassessment of a range for basin-wide specific yield (i.e., soil texture) and estimate of specific yield for individual management areas.	To quote the USGS BVHM; "*Heterogeneity, lateral and vertical variation in sediment texture and related hydrogeologic properties affects the direction and rate of groundwater flow as well as the magnitude and distribution of aquifer-system storativity*." As such, it is one of the most important factors in any hydrogeologic model and is likely the dominant storage related parameter in the valley. Current estimates of this factor appear low when compared to the described sediments.
4. Assessment/update of management area water budgets, including management area recharge and inter-management area underflow.	Knowledge of management area-specific water budgets, recharge, and inter-management area underflow are foundational to long-term adaptive management of the basin at large and the economic and sustainability planning efforts of all key stake holders including the BWD. If the basin is to be adaptively managed in management areas (i.e., defined groundwater management areas under SGMA), the management areas should first be hydrogeologically defined and the basis for such definition articulated. The hydrologic relationship between these management

areas needs to be investigated and understood to determine how pumping or conservation in one area influences the others (if at all).

5. Refinement of model, including updated pumping and calibration (to post-2010 water levels).

   Rationale, see #1 above. Also includes "key" hydrographs for six points (two per area and GW change maps for 2025, 2035, and 2040 for comparison to the 2015 map, etc.).

6. Assessment of updated model accuracy (potential margin of error) and confirm calibration.

   Contemporaneously recalibrate the model and determine the potential margin of error upon completion of any update(s).

7. Smaller grid, possible re-layering, and re-discretization of hydraulic parameters.

   The current model cell grid is reportedly approximately 92 acres per square cell (i.e., ~2,000 feet X 2,000 feet). This means, for that entire 92-acre area of the basin, the hydrologic properties are assumed to be essentially uniform within each layer. This results in the model cells sometimes containing significantly contrasting hydrogeologic properties within a single cell, especially along any internal management area boundaries that may be proposed (e.g., North, Central and South management areas). A smaller grid size would help refine the usefulness of the model for assessing the aquifer characteristics of specific management areas, and by extrapolation, the basin at large. Similarly, reassessment of the current three-layer aquifer in the current model and possible refinement to include additional aquifer layers, if supported by the data, could increase the accuracy of the model.

8. Evaluation of enhanced recharge options.

   Evaluate the feasibility of percolation basins or other best management practices and approaches to increase natural recharge.

   Note: Depending on the specific items selected for implementation and their respective sequencing some economy of effort and cost may be realized.