

GMD 5 Model
Technical Advisory Committee Minutes
October 13, 2009

Attendees: Balleau Groundwater, Inc.: Peter Balleau and Dave Ramero; SSPA: Steve Larson; USFWS: Kerry Cordova, Dan Severson, and Rachel Laubhan; GMD 5: Sharon Falk, Darrell Wood, Kevin Schultz, and John Janssen; KDA-DWR: Jeff Lanterman, Lisa Allen, Chris Beightel, Andrew Lyon, Darci Paull, and Tara Lanzrath.

This meeting began with Dave Ramero from Balleau Groundwater highlighting the topics of discussion for this meeting which centered on the baseline future model run and return flows.

Dave began the baseline futures discussion by indicating that the pumping and climate were based on the nearest neighbor bootstrap method, which utilizes 800 months of climate data. The actual data is put into this method where it is reordered into baseline futures. Steve Larson asked about the precipitation sequence and how a particular year's precipitation was linked to pumping. Dave answered that it was a correlation of the amount of water applied after 1990 to the amount of consumptive use that occurred during that time. It was reiterated that historical usage prior to 1990 is determined using LANDSAT imagery to determine the irrigated acres, whereas post 1990 data uses metered data. The future baseline re-sequences crop irrigation requirements (CIR) values and the amount of water applied in the past using the bootstrap method. It was clarified that this is one possible outcome based on climate, and that this method attempts to predict wet and dry periods within the future.

Discussion then took place on the baseline futures graph that was displayed. There was concern that the graph was hard to understand and it was hard to deduce an overall cumulative trend. Questions were asked from Steve about where the water was coming from to satisfy pumping, and it was answered from Balleau Groundwater that the streams and runoff served to recharge the aquifer and the presence of wetlands was noted. It was then asked if wetlands were really that significant a portion of the model area and Dave commented that they were significant and that the eastern half of the model domain in general had higher water tables. Steve commented that he would like to see a table of the water budget, and noted that the model budget would balance. Dave agreed to tabulate the values into a table that went into the making of the graph and will distribute it for review. Steve also requested that the amount of recharge during the baseline scenario be compared to the historical recharge and Dave commented that this would be done and circulated as well.

The next topic of discussion centered on irrigation return flows. Dave summarized the prior expressed concern about using two different methods from post 1990 to present and pre-1990 historical data. Dave indicated that after reviewing the data that they decided to apply variable return flows in the past as well in order to keep the methodology the same between past and present return flow calculations. Andy agreed that using the same methodology made sense and that he agreed that there would be some variation in return flows from year to year. However, he noted that David Barfield's concern was that with the presence of center pivots that return flow values of 30% seemed rather high, and compared values to those used in the Mid-Ark model. Pete asked what data was used for the Mid-Ark model return flows, and noted he was not familiar with this work. Andy noted that these were based on data compiled by the KGS and that they referenced other publications within the work. Andy stated that it was hard for him and the chief engineer to accept that farmers were applying significantly more water than was necessary for their crops.

It was noted that farmers at times do run their center pivots as planned and that at times rain will come, and all of that rain ends up running off into the streams, which can then recharge the aquifer. Steve acknowledged that yes this can happen, but inquired as to how often it does happen. It was noted that the numbers shown were for the whole year and would suggest the farmers would have to be consistently applying significantly more water than needed, which is what is hard for Steve, Andy and others to accept. John Janssen noted that when it rains, there are times when pumping has already occurred and therefore the rain does runoff and serve as recharge, so that the return flow numbers would seem to make sense. Andy pointed out that the return flow numbers were specifically related to irrigation return flows, meaning only water that had been pumped as returning to the groundwater system. He noted that any precipitation received and running off as recharge would be counted as precipitation recharge and is not related to return flows, which are strictly from pumping for irrigation

Based on these concerns, Pete stated that he would like to run this information by Sharon Falk and GMD 5 to see what the farmers are applying and if these numbers make sense to them. He noted that if it was deemed necessary, a change could be made if Sharon and the GMD 5 Board thought the numbers didn't seem right. It was noted by Steve that concerns with the model may be based on a perception problem. If it is thought in general that these return flows are too high and are not possible, it may be perceived that something is wrong with the model, which could cause potential problems in a hearing. Pete commented that he sees the value of looking into a rationale from GMD 5 members and asking them if they feel these return flow values make sense.

The last major topic that came up was a comparison of the net pumping in GMD 5 and in the Mid Ark. There was a graph shown in which the pumping did not match up between the early 1970's and 1990 between these two regions. Steve pointed out that from the standpoint of

running futures from 1990 on, that this prior discrepancy may not matter so much. Dave noted that there were more acres irrigated during this time and also noted lower precipitation values during this time. Therefore, this created higher CIR's for this time period that Dave suggests helps explain this discrepancy and the consequently higher net pumping during this time. Time was given to allow for comments or questions, and everyone agreed to move forward and that quite a lot had been covered thus far.

At this time it was noted by Pete that the model was due at the end of the year, and noted that GMD 5 would like to use this model for management and learning about efficiencies, etc. Steve asked if the scenario they had run was available. It was noted that the particular scenario was not available but that we have the files/baseline future dataset available on the ftp site. The discussion ended with Andy suggesting that we wait for the follow-up items to be circulated before we scheduled a next meeting. Everyone agreed and the meeting was adjourned.

Action Items:

1. Balleau Groundwater will circulate a table of the water budget from the baseline scenario
2. Balleau Groundwater will circulate a comparison of the amount of recharge used during the baseline scenario vs. the amount within historical data and explain the methodology
3. Balleau Groundwater plans on consulting with Sharon Falk and GMD 5 to evaluate their perspectives on the values being used for the return flows