Groundwater Availability Assessment
Technical Advisory Committee Meeting
July 30, 2018
U.S. Geological Survey
720 Gracern Road
Columbia, SC 29210

AGENDA

1. Status Report on the Hydrogeologic Framework – Joe Gellici (DNR)
2. Hydrogeology of the Myrtle Beach Area – Joe Gellici (DNR)
3. Status Report on the Groundwater Recharge Model – Bruce Campbell (USGS)
4. Status Report on the Groundwater Flow Model – Bruce Campbell (USGS)
5. Discussion – What Constitutes Negative Impacts of Overpumping
6. Discussion – Other topics

MEETING NOTES

1. Status Report on the Hydrogeologic Framework – Joe Gellici (DNR)

   - *Joe gave a presentation on the status of the hydrogeologic framework. Structure-contour maps, isopach maps, and transmissive thickness maps are being done in ArcMap. Most of the structure contour maps for the aquifers are complete. Joe hopes to have all of the maps done by the next meeting. Hydrogeologic sections are being done in Illustrator. A new software package "Strater" is being tested for the cross sections. Joe hopes to have the sections done by January.*

2. Hydrogeology of the Myrtle Beach Area – Joe Gellici (DNR)

   - *Joe gave a presentation on the hydrogeology of the Myrtle Beach area. There are four aquifers in the area – Crouch Branch, McQueen Branch, Charleston, and Gramling. Grand Strand Water and Sewer complete their injection wells in the Crouch Branch, McQueen Branch and Charleston aquifers. A permit for a new ASR injection well is pending. Regulations state that an injection well cannot be constructed in multiple aquifers. DHEC must rule on this permit in the near future.*

- *Kelley asked if there have been any negative impacts from completing the injections wells in multiple aquifers.*
  Alex and Joe – No, not that we know of.

- *Joe stated that ASR (aquifer storage and recovery) is an important water management strategy in the State and would like to have a detailed discussion about these systems at one of our upcoming meetings.*

3. Status Report on the Groundwater Recharge Model – Bruce Campbell (USGS)

   - *Bruce gave a status report on the groundwater recharge model. Future land-use changes are being simulated and will be incorporated into the model to see if recharge rates are affected. Output from global climate models will also be included in the modeling effort.*

4. Status Report on the Groundwater Flow Model – Bruce Campbell (USGS)

   - *Bruce indicated that a detailed groundwater flow model of Chesterfield County was done several years ago, which can be used in the water planning process, and that a detailed flow model of Aiken County is currently being done by the USGS.*

   - *Bruce indicated that baseflows for the smaller streams in Chesterfield County account for up to 80% of the streamflow.*

   - *Bruce and Charlie stated that almost all of the public supply water in Chesterfield County is groundwater that is being supplied by Alligator Rural Water Co. (with the exception of the Town of Cheraw, which is supplied by the Pee Dee River).*

   - *Bruce reviewed some of the output from the groundwater flow model including the simulated regional cones of depression near Savannah and Mt. Pleasant, and statewide simulated water levels in the surficial and Crouch Branch aquifers.*

   - *Bruce indicated that he still hasn't been able to simulate the cone of depression in the Georgetown area. Water level data collected last month demonstrations that the cone is present year round. Alex indicated that DHEC is investigating the source of water use in the area.*

5. Discussion – What Constitutes Negative Impacts of Overpumping

- *The question posed is: How low can aquifer levels go without causing unacceptable negative impacts? Joe indicated that trigger levels for aquifers were proposed in the 1998 State Water Plan, but they were somewhat arbitrary (150 ft for both the Middendorf and Black Creek aquifers, and 75 ft for the Floridan). Here is an excerpt from the 1998 South Carolina Water Plan:*

  > "Trigger Level" is defined as the minimum water level allowed in an aquifer before the processes to 1) declare a Capacity Use Area is automatically initiated or 2) initiate a water shortage procedure. The Trigger Level is used herein as a water level decline equal to 150 ft below the predevelopment level of an aquifer as determined by Aucott and Speiran (1985); except for the Floridan aquifer system, in which the Trigger level is a decline of 75 ft below the predevelopment level or to mean sea-level, whichever is the least decline (see Figures 26-29).

- *Clay indicated that we probably shouldn't take aquifer levels below the top of the confining unit of the aquifer that is being pumped.*

- *Adem indicated that environmental impacts from overpumping have to be evaluated and considered.*

- *Joe indicated that water quality must also be considered, not just total dissolved solids and chlorides, but other constituents as well.*

- *Kelley, Clay and Ray indicated that water quality is tested on a regular basis.*

- *Bruce suggested that we consult with Jim Landmeyer (USGS) who specializes in geochemistry.*

- *Bruce mentioned that bromide is a constituent that can be used to indicate changes in water quality.*

- *Joe indicated that Texas establishes "desired future conditions" for some of their aquifers. An example was given that the desired future condition is to have 50% of the aquifer's volume of water remaining after 50 years. Joe indicated that modelers then determine what the annual modeled groundwater availability is for that aquifer so that 50% will still be available after 50 years.*

- *Alex indicated that this process might not work in South Carolina owing to the complexity of the groundwater system.*

6. Discussion – Other topics

- *Bruce will ask Dave Nelms, a USGS expert on subsidence, to give a presentation to the group on subsidence. Alex suggested that Mr. Nelms also speak to the groundwater management TAC in Charleston.*

- *Bruce asked that members review the 2010 groundwater flow model report for discussion at our next meeting (available on our webpage:* Campbell, B.G., and Coes, A.L., eds., 2010, Groundwater availability in the Atlantic Coastal Plain of North and South Carolina: U.S. Geological Survey Professional Paper 1773, 241 p., 7 pls.)

- *Please let me know if you would like to have a particular topic be included on the agenda for our next meeting in August.*

12 Attendees

Name	Affiliation	Email
Alex Butler	DHEC - Columbia	butlerap@dhec.sc.gov
Bruce Campbell	USGS - Columbia	bcampbell@usgs.gov
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Visit the webpage at: http://www.dnr.sc.gov/water/waterplan/groundwater.html