

Minutes for GWMP Group Meeting #3

May 16, 2019

Assistance Bureau Chief Jennifer Hughes welcomed the group to our third meeting.

Introduction by Kristy Ellenberg

Attendees Organizations:

- Irrigation/Farming
- Archroma
- Dominion Energy
- Friends of the Edisto
- Water Supply
- Aiken's water group
- Savannah River Site
- SC Department of Natural Resources
- Golf Course Association
- SC Groundwater Association
- Aiken Soil and Water Conservation District
- SC Rural Water Association

Attendees: Jeremy Walther, Laura Bagwell, Nick Rubin, Mike Swearingen, Peter DeLorme, Landy Weathers, Andy Wachob, Alex Tolbert, Richard Tyner, Jeff Lowe, Milton Quattlebaum, Hugo Krispyn (of Aiken County), Ted Millings, Mark Forrester

Phase I Updates: Lance Foxworth

- Made updates based on feedback for each section
- Biggest introduction update: added a 3rd goal: education as part of the GWMP increase awareness of resource, etc.
- Added several more definitions and updated a few others; added a chart based on reasonable use for different permit types to be more specific
- Geopolitical structure: updated figure
- Added "Hydrogeologic Setting" section with aquifer cross-section figures
- Added "Water Budget" section, mostly from 2004 state water plan (DNR)
 - Does not include use, is meant to be a general guideline as a natural system (no actual numbers)

- Will work on clarifying some of the language and adding consumptive use (*should also include treated discharges that are returned to the system*)
 - Includes inflow and outflow, some about aquifer recharge and storage
 - Orangeburg scarp: mentions steeped gradient – this description was pulled directly from the USGS description of the scarp
- Added a figure to “Regional Description” to better describe an isolated aquifer system
- Water level trend plotted with climate impact figure added to the “Regional Description” section to show climate impact on water level
 - Question about number for Dec 2014: is a pumping signal? Could be pumping signal but insufficient data, likely a climate effect. There is a lag to the climate data, so it may not match up 100% - a dip doesn't show up in the standardized index until later (based on 24 months of data)
- Added figure describing land cover using 2011 National Land Cover database; included urban development
 - More irrigated acreage, farmland acreage, irrigated land, and farmland figures
- Any other questions or feedback:
 - What is stress period buffering? We take in all other parameters for reasonable use when determining a permit limit and add in a 20% buffer in case of drought or other outside factors
 - With regards to educating the public, it may be helpful to have in water budget an understanding of where the water is coming from on our consumption, and a percentage of what we're using. If we're only using 1/10 of a percent of what gets into the aquifer, couldn't mentioning this be helpful? We can add in more information about percents. The goal of this section was to show that it is a big system with a lot of water coming in and out, but we can have an effect on what we use. We can add more information on use. Amount entering system and where it is coming from can vary, and is not a static number. We can use the flow model to do a water budget for the area, but it doesn't necessarily give you that much information. What matters more is where you are getting the water. If you take the majority of water from one place (like clustered wells pumping high capacities), it can cause a local problem. The aquifer regionally could be fine, but not at the local level. We can send out the most recent flow model, which includes water budget information. We just need to create a boundary condition for the region.

- Says we need to calm down the public because they are saying that the Edisto is going dry, when the farm is using less than 1% of the water that flows by. If coming from DHEC, can explain what is actually coming happening. The education part of the plan is part of a strategy, getting into the details is after the plan is developed can get into another subgroup to use Clemson to get into the educational aspect.
- Adding in that 3rd goal was the point to elevate it to the discussion, we can get into the details later as part of the strategies, which is a later phase.
- Want more detail on the water budget side of things. Trying to figure out how much is really available. Only so much can be recharged into the aquifer in the first place. Even if we had more precipitation, it would end up with more in the stream and other places. No documented losing streams in the state.
- Definitely include water withdrawals in the water budget.
- Graphic describing recharge areas: should add language that talks about WCUA, especially Aiken and Lexington counties, have extra significance because water needs to be available, but the upper coastal plain is the recharge area for lower areas of the state. What we do or don't do here will or won't be appreciated by those in the coastal areas of the state.
- General reasonable use guidelines: most look like based on some type of industry based standards – allows change, but would like to see some kind of review on those standards. Are these one time things when this gets started, will be updated as standards are improved? Should be reviewed every time review comes up. DHEC is not going to be reviewing standards and we will adapt and adopt them when they are updated – just continue to monitor them. This is a living document that will change as the standards are changed. When doing 5-year evaluation, can describe which standards we are using such as “Clemson extension numbers from X year” for each type of permit
- *Confusing language pg. 16 – make it more clear that land irrigated acreage has increased by 30.3% – say “...agricultural cropland saw an overall 30.3% increase in acreage” *bottom of the page (This was Hugo’s comment)

Phase II Draft Data Tables and Figures: Dr. Andrea Hughes

Going over the data the capacity use permit holders report at end of the year – so this is an overview – how we will move forward, look at demand now and what it has been historically

- Table 1: current demand – current number of wells in WCUA
- Table 2: reported water use in MG for 2018 with county totals and % use by county and type use
 - Have a bottom line - # from 4-5 years ago with totals to compare from start of process to now, or even 10 years ago – could be a separate graphic
 - Need to be careful picking a year when not comparing similar climatic years
 - Irrigation can be landscape irrigation, but 99% is for agricultural irrigation; working on grant to improve water use reporting and separating these and having new category
- Figure 1: stacked bar graph – same 2018 water use broken down by month, can see seasonal increase during summer months for irrigation
- Figure 2: 2001-2018 line graph showing how demand has increased through the years (by month)
 - Maybe add labels for years on this graph, describe that darker is more recent
 - Data call-outs on peaks and dips
 - Clarifying that while looking at this data, this is REPORTED USE, not necessarily as much an increase of USE, but increase in REPORTING
 - Some numbers, how much it has increased based on reporting? Can quantify, we can explain why some bumps occur due to droughts, it may not be to that extent, but some are due to outside factors; the amplitude we cannot account for; # where we can show the increases in facilities reporting
 - Benefit: better compliance with regards to reporting, and will be better through time, so data will only improve
 - Legend: flip so 2018 is on top so to mimic the graph; also time to look at data and consider if can reduce number of lines – keep concept and make it less cumbersome
 - Maybe that middle point that is pre-discussion of CU and once stakeholder involvement started, reporting increased
- Figure 3: Historic demand/past use comparison – Population A- area chart, how each line sums together to get total population in WCUA, and thickness of each line is how much population is in each county. B-clustered bar chart – lose detail, and have absolute population in each county. C- line graph, each line representing a county's population
 - Most prefer figure A
 - In final document area chart shows population in total region, while c is absolute population in each county, can include both in final document?

- Figure 4: Historic water use by county – A- area chart, all water use in WCUA as a whole, 2003 and 2013 are wet years, visibly seen on this area chart. B-bar chart, C – line chart
 - Part of uptick is due to increased awareness after 2014, but some is due to land use
 - Drought years are 2007-08, there was some increase in water use due to the drought, but sometimes water use goes back down because at some point there is no point trying to continue to irrigate. When the drought occurs can also effect this.
 - Why is the Aiken line much flatter vs some of the others? If you look at the percentages, the majority is industry and water supply in Aiken, so it won't be as variable. Only 25% of Aiken is irrigation
- Figure 5: Water Use by Use Category – A – area chart, with increase in irrigation from 2014 through 2018. B – bar chart. C – line graph of use over time.
 - Would be helpful to have another chart showing reported users per year and see how reported use has increased since the conversation started, and why irrigation is going up based on more reported users and an explanation of why more reporting users
 - Would not be able to tell if new and/or increased reporting by existing users that were not registered
 - Should do it by # of wells, some users had some wells registered and not all, so showing increased wells that are registered and reporting does increasing
 - Know that there is increased reporting because of conversation – some of the counties such as Lee, Sumter, Kershaw, etc. – they are increasing their reporting also. Even though not facing CUA, is there a spike in reporting from those counties as well? We have asked those that are installing new wells to send in registrations for the rest of their wells, but we have not seen as big of a spike in those counties. The spike we see now is mostly from increased reporting with many farmers using less water.
 - If you have a graph as # of wells and say wow we doubled our wells, which isn't true. Narrative around these graphics is very important. Can show # of users and wells have increased by x. The IR line should level out eventually once we capture most users.
 - Info on type of irrigation is attached to these wells? They give this information, but our database does not track this. The grant will help to better manage the database and include this information.

- Other categories besides IR – were all the other categories more like industry and no spike because they are more regulated than the IR. WS are so highly regulated (as is IN) so long term, is it better reporting and data in general. IR also went up due to crop insurance and loans and other incentives. Wanted to include in the early section irrigated acreage. Gives better increases in what we are seeing/what is actual growth in agricultural land. We are irrigating 3x more and less water, for drought tolerant crops and drip irrigation etc. This is where the education is an important point.
- More data for irrigators: water use per acre – we don't have the data for that – as we go forward, we should be able to and how more efficient irrigation methods are coming through
- To tease out how much is new vs. actually new or should go down due to improvements in irrigations – can see if some farms use x amount of water and it is either static or has gone down due to methods? Would have to pick on specific farms, but know that Walther's is using 60% less than Clemson's recommendation. Different crops use different amounts of water. Look at crops grown that year and precipitation that year.
- Can say a specific well used x amount of water and it has gone down.
- Can plot historic water use for each well, but will be several pages, will not always watering the same crop on the same well each year, and many other factors make that not very helpful.
- Why these 7 counties – they are connected hydrogeologically, and the plan is looking at the whole county level, then when we get to the permitting, that will be looking at the individual wells.
- Figure 6 – Water use by use category for each county (2001-2018) (in ppt – Orangeburg) A – area chart, B – bar chart, C – line graph. Area chart is preferred.

Plan for next meeting– the Department will have draft language that goes along with all the data and figures at least a week before next meeting so the workgroup can review and have comments ready.

- Map Plot 1 –too quick for me to remember what it was, was of the Waccamaw area
- Map Plot 2 – Waccamaw wells plotted based on aquifer
- Plot 3 – pot map including use type and amount of water use (based on size of bubble)
- Plot 4 – all wells that exist in Western Cap Use Area with 2014 equipotential lines for Middendorf aquifer, and all same color because don't know where they are screened

- Envision having well screen, but not for this particular plan, should be in the 5 year evaluation
- Equipotential lines – show the pressure that the water is under in the confined aquifer is, so which way the water is flowing (sort of water level, but based on pressure)
- Probably only need this information if there is a cone of depression in this plan. We have no regional cones of depression in this area, which is typical. Would not expect to see them. The ones in the Waccamaw, the transmissivity of aquifer is lower, so the geology dictates that there would be. In the Western, they wouldn't be as prevalent. They are collected every 3 years by DNR, good resource for use. They are snapshots, take all these water levels over 2-4 week period in November, so not necessarily capturing seasonal pumping.
- Why are wells at the coast less productive than upper coastal plain, these will be more productive? If you put in a well, where would the water rise in the well. The numbers show it will be x above sea level, which may be y below land area.
- By county don't show him much – had considered including by county in the Appendix, and just focus on total capacity use area.
 - Some people may want to know what their county is or has in it. The 5 year report will have county level data.

10:30 – 10 minute break

Review of Western Capacity Use Area Groundwater Management Strategies: Alex Butler

- Brief reminder of the 5 management strategies that are in the other Capacity Use Area plans and the main points behind them:
- #1 Identify Areas where Leveling and/or Reduction in Pumping is Appropriate
 - Basically look for areas where we should curtail pumping and move it to other aquifers and other types of things
 - Reduction of groundwater in areas of concentrated pumping
 - Selective curtailment or reduction
 - Conjunctive use of aquifers
 - Construction and use of observation or monitoring wells
 - Abandonment of wells that are connecting aquifers
 - Prohibit the hydraulic connection of aquifers that could result in deterioration of water quality in a freshwater aquifer

- Implement practical methods to conserve and protect the resource
- Other necessary and appropriate control or abatement techniques as are technically feasible
- #2 Review of Permit Applications Based on Demonstrated Reasonable Use
 - Currently have SOP how to determine reasonable use for new wells, and for existing wells look at historic use and reasonableness criteria; as we get more info, we refine the process
 - Provide documentation that water use is beneficial
 - Describe the applications for which water is being withdrawn and quantities utilized in each application
 - Identify aquifers currently utilized and hydrogeologic factors
 - Identify alternate water sources
 - Identify reasonable and appropriate conservation methods or practices that *minimize current water use *typo in plan – maximize use of the water while minimizing the waste – will clarify
 - Identify any anticipated adverse effects on other GW withdrawers
 - Concern about how we keep our area distinct from other CUAs, when they are dependent on our water resources because we are the recharge area. Is Charleston using updip water – just saying they can use the state’s water for this amount of time – we know that the water takes time to get to the downdip areas. Each CUA is a local plan, but utilizing them as statewide resource. We are focused on Western being aware that pressure needs to be maintained here so that it can exist further downdip
- #3 Establish a Comprehensive Groundwater Monitoring Program
 - Partnership with DNR b/c they monitor the statewide program, the western has a pretty good network of wells (thanks to SRS) big clusters in Lexington, Orangeburg, etc. Identify areas where we want to put monitoring wells in the future. The department will continue to work with DNR to build the network
- #4 Establish a Conservation Educational Plan for the General Public and Existing Groundwater Withdrawers
 - Partner with Clemson and other stakeholders – where we are lacking in other areas
 - Get the data out
- #5 Regulation and Planning
 - Identify parts of regulation that need to change or be updated

- Updates with state water plan – stay involved with this process being headed by SC DNR
- Another broad strategy to be added or more parts added to the existing strategies?

Table exercise – talk with table groups to add things to plans, are there components where you have questions or want more data, etc. Are they appropriate for area, do they need to be changed, updated, etc.

In first couple strategies, the Department uses the terms **unreasonable** and **reasonable**. At times it is meaning to refer to matrix for reasonable use for permitting, and other times it is not clear. If we are to continue using those words, they need to be defined. If this falls on workgroup, it must be decided – what are the things that would make it recognizable that the use is reasonable or not? Also the terms **unacceptable** and **sustainable use** were left open.

[30 minute discussion period]

Notes from groups on each strategy

#1 – Identify Areas where Leveling and/or Reduction in Pumping is Appropriate

- No specific comments were discussed for this strategy during sharing.

#2 – Review of Permit Applications Based on Demonstrated Reasonable Use

- This description is too restrictive b/c permits are reviewed on a number of criteria, not just demonstrated reasonable use
- This does not supersede how we must review the permit based on regulation, this is being used on a larger context not just at the start of reviewing a permit
- Looking at aquifer conditions, this is part of strategy 1
- Back to chart – looking at best management practices and industry standards

#3 – Establish a Comprehensive Groundwater Monitoring Program

- No specific comments were discussed for this strategy during sharing.

#4 – Establish a Conservation Educational Plan for the General Public and Existing Groundwater Withdrawers

- Make sure we are educating not only the public on water conservation but also the stakeholders that have permits

#5 – Regulation and Planning

- Does this need to be a strategy because we thought this was the point of the whole document?
- One where they had least to say – important that any sort of regulatory framework be agile and flexible enough to respond to change when there is one, and we are here because planning is important (seems self referential)
- When originally looking at it ('04), wanted this strategy because it would be a continual process and was something they wanted in there. If might be more fluff than actual could be taken out. To make sure not stagnant. Can make the strategy title different. Want regulation that is flexible, maybe it is to make the strategy to *have* flexible regulation – look at alternative language to how we look at it
- Important to recognize the state water plan and ability to have coordination and cooperation with that and the model
- CUA and drought response act and state water plan and other programs work together and how they fall together
- Is state water plan something we need to look at when issuing permit, is this the level we need to be at?
- Plan is required by law to be implemented by law. State water plan is directed to be built by DNR, and it is a plan that is until it is implemented, has no regulatory authority. We have to do the plan by law, but the state water plan has no regulatory authority. Don't want them across purposes either. There is another regime out there that is making recommendations.
- Maybe expand on it and what else is there.

#6 – Extra (purple card comments)

- Can't we all just get along?
- Methods for continued stakeholder engagement – email notice to those that want to about pending permit decisions or public notices, TAC (Trident), etc.
- Talking about notification to other permit holders within a mile, what about those that don't have a permit – list people that want to be on a list even if not part of the program
- Have list on the website – listed for 30 days
- How fluid is modification process – if saw you needed an increase, make sure that avenue is open. Permits can be modified any time during 5-yr permit cycle. If backed up where you immediately need more water than you thought, can issue temporary permit for 180 days while we evaluate full permit modification if need that short-term amount during that process.

Looking at the 5-year aquifer evaluation report, then going down to the individual permit decision, needs to be consistent while going through the plan and evaluation, so try not to be too in the weeds in the broad plan at the beginning

Take info from table top discussion and add to strategies, as well as the narrative around data that was presented. We are close to a first full draft. All word edits are requested. All comments try to get back within next week so we can incorporate for next meeting. Try to have first full cut draft for next meeting and more detail on strategies.

Any changes to minutes will be made, and have link for those that want to make comments is listed on webpage for those that are not here. We have had none from outside the group at this point.