Meeting Minutes

Santee River Basin Council Meeting No. 3 (Hybrid Format)

Date:	February 11th, 2025
Time:	9:00 AM
Location:	Old Santee Canal Park's Learning Center (900 Stoney Landing Road, Moncks Corner, Sc 29461)
Prepared by:	CDM Smith
RBC Members Present:	Todd Biegger, Sarah Wiggins, Mike Wooten, Michael Melchers, Brandon Stutts, Riley Egger, John Grego*, Hixon Copp*, Alicia Wilson, Allan Clum, Guinn Wallover (Alternate for Allan Clum), Jason Thompson, David Wielicki
RBC Members Absent:	Jeff Ruble, W.E. Mickey Johnson, Jr.
Planning Team Present:	John Boyer, Kirk Westphal*, Amy Shaw*, Scott Harder, Brooke Czwartacki, Alexis Modzelesky, Joe Koon*, Leigh Anne Monroe*, Hannah Hartley, Megan Marini, Andrew Wachob*, Joseph Koon* **Attended virtually*

1.0 Call To Order and Welcome

The meeting was called to order at 9 am, with Michael Melchers welcoming the RBC members. Michael Melchers stated the meeting objectives and invited the RBC members for approval of the previous minutes and the agenda. The previous meeting minutes were approved by Riley Egger with a second by Alicia Wilson. The agenda was approved by Alicia Wilson with a second by Mike Wooten.

John Boyer mentioned there is a WaterSC meeting on February 20th and the agenda can be found online on the SCDES website.

2.0 Public and Agency Comments

Public comments: There were no public comments.

Agency comments: There were no Agency comments.

3.0 Review of Previous Meeting

John provided quiz-style questions to the RBC as a review some of the information covered during the January RBC meeting. Questions included the vision statement, goals, state average temperature change in the last 120 years, annual average precipitation trends, two questions on the Drought Monitoring Areas, and requirements for drought monitoring plans.

4.0 Groundwater Resources of the Santee River Basin with Brooke Czwartacki

Brooke reviewed the physiographic provinces of the state which include the Blue Ridge, Piedmont, and Coastal Plain. The Santee River Basin is entirely within the Coastal Plain. Unconsolidated sediments begin at the fall line and go as deep as 4,000 feet at the coast in Beaufort County. There are six confined aquifers across the Coastal Plain including the Surficial, Gordon, Crouch Branch, McQueen, Charleston,

and Gramling. Brooke provided graphics to show where the unconfined portions and confined portions of the aquifer are in the Santee River Basin. The Gordon, Crouch Branch, and McQueen all have recharge zones across this river basin while the Charleston and Gramling Aquifers depend on recharge from the overlaying aquifers.

Groundwater data is compiled through a large groundwater monitoring network. There are 24 well sites actively monitored across 5 aquifers in the Santee River basin. Statewide, there are over 180 wells which are part of the monitoring network, and an additional 450 wells used to develop potentiometric maps. There are additionally conductivity sites along the coast to measure saltwater intrusion in the aquifers. A graphic was provided to illustrate the difference between unconfined and confined aquifers.

Brooke reviewed potentiometric maps (water levels) of various aquifers. The maps, which reflect a point in time, show the direction of flow and water level elevations (pressure). The potentiometric maps can be used to identify cones of depression, where areas of groundwater have declined. These typically occur where there is intense pumping since recharge can't keep up with the extraction.

Groundwater use by different sectors was shown for the Santee River Basin such as agriculture, water supply, and industry. Agricultural irrigation accounts for 41 percent of groundwater use in the middle part of the basin. The impact of this usage on groundwater levels and potential strategies for more efficient water use were discussed.

Q: Can you describe what the confining unit is?

A: The confining unit is the clay layer that acts as a cap on top of the aquifer, so we look at each aquifer separately.

Q: Some of the monitoring wells show multiple aquifer colors stacked, are there screens at different elevations or how is that being measured?

A: These are cluster sites where multiple wells are drilled into multiple formations.

Q: So the Gramling and Charleston aquifers don't have recharge zones, do you look at the relationship of the withdrawal from the above aquifers and make assumptions of how to manage the use?

A: This is where a model comes in handy, and we have information about users and who is pumping from which aquifers. Looking at pre-development and current conditions it appears the Charleston aquifer stays stable.

Q: Is there data on the percentage of water volume and a way to understand how serious the decline is?

A: It is difficult to estimate amount of groundwater available in an aquifer; however groundwater models can help. Models can simulate pumping and potential declines in pressure and head (elevation). They can also help to understand and develop water balance for each aquifer. Once the groundwater model is completed, it will help answer these questions.

5.0 Hydrology 101 with Kirk Westphal

Kirk introduced basic hydrology concepts including the water cycle, stream gauges, hydrographs, flow measurements, and statistical analysis of flow data. There was an emphasis on understanding flow variability and its implications for water resource management. The presentation also covered the

importance of hydrological data in predicting future water availability and planning for climate change impacts.

Important hydrological statistics include 7Q10, median, and mode. 7Q10 refers to the low flow metric of the lowest 7-day average flow in a 10-year period. Median and mean monthly flows are important because they show up in regulations for permitting.

Q: Will minimum flows be guided more by the minimum release from reservoirs or the 7Q10?

A: It will probably be driven more by the minimum in stream flow targets set by the state for new permits. Even though we are not looking at wastewater assimilation it may be beneficial to look at the way the 7Q10 changes in this basin with different management strategies. Different use patterns or demand patterns may change the low flow statistics of the river basin.

6.0 Surface Water Resources with Hannah Hartley

Hannah reviewed the contributing upstream basins and the major waterways and reservoirs within the Santee River basin, including the Congaree River, Lake Marion, Lake Moultrie, Cooper River, Santee River, and Ashley River. There are five major reservoirs in the basin, Weston Lake managed by the U.S. Army Corps of Engineers (USACE), Lake Marion and Lake Moultrie managed by Santee Cooper, and Bushy Park Reservoir and Goose Creek Reservoir managed by Charleston Water System. There are four hydroelectric projects in the basin, the Columbia project run by the City of Columbia, Jeffries Hydroelectric and Santee run by Santee Cooper, and St. Stephen run by the USACE. There are 12 United States Geological Survey (USGS) streamflow sites and 39 additional USGS stage sites in the Santee basin. The average streamflow data was reviewed to illustrate the differences between the natural streamflow and the controlled release streamflow. Flow duration curves for the rivers were also reviewed. Flow in the Santee River is dependent on the upstream Saluda, Broad, and Wateree Rivers and is heavily regulated by large reservoirs. Lake Marion and Moultrie and releases to the Cooper and Santee Rivers govern the basin's hydrology.

Q: What is the extent of the influence of the tidal flows on the rivers?

A: On the Cooper River it goes all the way to the dam, and it is a freshwater push. The Santee has a pretty far push-back as well.

Q: What are the other regulatory agencies for the hydroelectric projects?

A: The Federal Energy Regulatory Commission (FERC) licenses the non-federally regulated projects but does not have jurisdiction over USACE projects. The small hydroelectric projects are exempt from licenses. There are several small hydrolelectric projects in the Saluda and Broad that are not licenses by FERC.

7.0 Water Use in the Santee River Basin with Scott Harder

Scott reviewed the regulations for water withdrawal reporting noting that users withdrawing 3 million gallons per month (MGM) or more must report their water use annually to SCDES. Historical water use data was reviewed from upstream basins as well as the Santee basin. The breakdown by water user sectors indicates the largest usage is from the water supply/utilities sector, with the industrial sector in second. The third largest water user sector is agricultural irrigation. Water withdrawals for power generation was reviewed across the Santee and upstream basins. Surface water is the primary water source in the Santee basin and makes up 94 percent of all water use compared to 6% percent from

groundwater. A look at the different water users indicates a large number of industry users and agricultural users in the basin. It is noted that groundwater use has to be looked at on a county-wide scale rather than just basin-wide scale and analyzed that way. Groundwater is primarily used by agricultural/irrigation users.

Q: How is water used at nuclear power plants? Is it nonconsumptive?

A: Some plants have once-through water use that goes back out, but closed cycle cooling tower systems get a lot of evaporative cooling and consumptive use is higher.

8.0 Methods for Evaluating Water Availability with Scott Harder

Scott explained that there is a formal approach described in the Water Planning Framework to determine when and where demand exceeds supply under varying scenarios, and water strategies may be effective in reducing or eliminating shortages. Definitions and examples of important terms were provided including physically available surface water supply, surface water condition, surface water supply, surface water shortage, and reach of interest. The reservoir safe yield analysis will be important for this basin because of the presence of Lake Marion and Lake Moultrie. Performance measures should be developed to assess the performance of a proposed water management strategy. Strategic nodes will be important points in the basin to evaluate the cumulative impacts of water management strategies for a model scenario. At least four scenarios be reviewed by the RBC: (1) current surface water use, (2) permitted and registered water use, (3) moderate water-demand projection, and (4) high water-demand projection. The scenarios focus on differences in water demand rather than water supply. The SWAM model will be used to evaluate each surface water management strategy.

9.0 Introduction to the Surface Water Quality Model with John Boyer

John mentioned he will be providing a training opportunity for RBC members to become familiar with the SWAM model. The model is like a checkbook which accounts for water withdrawals, return flows (wastewater discharges), and and reservoir storage and evaporation. The Santee River basin model is currently being updated. The model will be used to assess current supply availability, assess demand scenarios, assess the impacts of a full allocation scenario, evaluate drought management plans, and evaluate and prioritize water management strategies. John reviewed the layout of the model, what data are used as inputs to the model, and how the inputs and outputs are displayed. There are several factors that contribute to uncertainty including ungagged portions of the waterway and the assumption of stationary climate conditions.

Q: Do wastewater treatment plants appear in the model?

A: They are not explicitly listed but are accounted for within the municipal water user object.

Q: Is the Ashley River included in the model?

A: No, the Ashley River and the Bushy Park Reservoir are not included in model. There are no withdrawals on the Ashley River. The ability to model the Bushy Park reservoir is limited by lack of storage volume information.

Q: The model is showing users that are currently permitted and reporting, does it account for users that haven’t reported recently or maybe have become inactive?

A: When we update the model, we check with SCDES for those situations and make sure permits are up to date and are active, inactive permits are removed from the model, permitted entities that may not be withdrawing will just have a zero withdrawal.

Q: How are minimum stream flows assessed using the model?

A: We have the ability to evaluate the frequency of time flows in each scenario drop below the minimum instream flows as defined by the 20/30/40 rule as well as the 7Q10.

Q: How are we ensuring the water ecology is preserved?

A: We work with Clemson and USGS to look at the fish data from DNR and macroinvertebrate data that DES has collected over the last 40 years and they've come up with relationships to flow durations and magnitude. But in this basin it isn't likely we will do that because those relationships between flow and ecology have only been established in wadable streams so not the rivers in this basin. We will need to determine how we want to measure and ensure the ecology is protected such as establishing a surface water condition.

10.0 Conclusions and Upcoming Schedule

The next meeting will be held on March 11th, 2025, at the Jefferies Hydroelectric Station. The agenda for next month's meeting will include a discussion of Santee Cooper operations, Charleston Water System overview, and water demand projections. There are a variety of topics that will be provided as virtual webinars outside of the scheduled meetings due to the shorter timeframe for planning in this river basin. These virtual webinars will be recorded for those who can't make it.