MINUTES OF THE 10th PEE DEE RIVER BASIN COUNCIL (RBC) MEETING (HYBRID FORMAT) HELD ON MARCH 28th, 2023, at Clemson Pee Dee Research and Education Center, Classroom #240 Darlington, SC 29532

RBC Members Present: Frances McClary, Buddy Richardson, John Crutchfield, Megan Hyman, Walt Beard, Snipe Allen, John Rivers, Jason Gamble, Cliff Chamblee, Michael Hemingway, Michael Bankert, Brandon Durant, Doug Newton, Bob Perry, Eric Krueger, Cynthia Walters, Hughes Page, Bill Wiegand, Lindsay Privette, and Jeff Parkey

Absent: Cara Schildtknecht (Debra Buffkin, alternate, present), Cricket Adams, Tim Brown, and Jeff Steinmetz

Planning Team Present: JD Solomon, John Boyer, Scott Harder, Andy Wachob, Alexis Modzelesky, Leigh Anne Monroe, Hannah Hartley, Thomas Walker, Jeff Allen, and Chikezie Isiguzo.

Total Attendance: 46

1. **Call the Meeting to Order (Buddy Richardson, Chair of RBC)**
   a. Review of Meeting Objectives

   J. D Solomon (the Facilitator) called the meeting to order at 9:02 AM and welcomed members to the 10th Pee Dee RBC meeting. He highlighted the main objectives of the meeting, which included reviewing Pee Dee water demand projections, initial results of the Pee Dee surface water model, Flow-Ecology Relationships, the recommended Pee Dee Flow-Ecology Relationships for the Pee Dee Basin, Pee Dee River Basin Agriculture Overview, and Irrigation Research and Extension at Edisto REC.

   b. Approval of Agenda and February 28th Minutes

   The agenda was unanimously approved. Michael Hemingway made a motion to approve minutes and summary documents, which Eric Krueger seconded and the minutes and summary were unanimously approved.

2. **Public Comment (JD Solomon)**

   There were no public comments. Also, there were no Agency comments.

3. **Review of Pee Dee Water Demand Projections (Alex Pellett, CDM Smith)**

   Alex Pellett reviewed the Pee Dee Water Demand Projections. For surface water, he presented the historical demand results, projected high demand scenario, and projected moderate demand scenario. There was evidence of a decline in Golf users' historical water demand, while mining and thermoelectric have been stable. Also, the historical water demand of agricultural, manufacturing, and water supply users showed consistent historical patterns.

   The 2070 water demand projections showed some increase in the water demand of agricultural, manufacturing, and water supply users. The agricultural use water demand was

expected to increase by about 50% compared to 2022 figures from 200 million gallons per month of moderate use to about 300 million gallons per month. Manufacturing demand is expected to increase from 2000 million gallons per month in 2022 to about 3000 million gallons per month of water use of moderate demand in 2070. The model did not factor in the possibility of the industries getting more efficient with water use over time.
Alex discussed the high-growth scenario for groundwater in the Pee Dee Basin. He explained some differences between groundwater modeling and surface water modeling. One of the differences is that the high-demand scenario for groundwater would be lower than for surface water. For agricultural use, groundwater modeling is a bit more complicated, requiring modeling a well (where it is expected that groundwater pumping will occur), unlike the surface water model that relies on sub-basin areas.

COMMENT
When you talk about looking at the extension of the number of wells, did you take into account the economic cost?

Alex Pallet explained that the team does not have the technical resources to go into the details required to achieve that level of depth. Consequently, future studies may incorporate economic studies also. Furthermore, he highlighted the models' assumptions and limitations, guiding the member of the public on how best to use the models' results, focusing more on issues, such as mitigation strategies, rather than on economic predictions.

COMMENT
Are we here for the regulatory part to send our recommendation to the General Assembly for regulation, or are we here to send our recommendation to the General Assembly as possible solutions?

We are here for solutions. The RBC is not a regulatory body. The models are not solutions but a means to understand water demand. The RBC reports can influence policy directions and legislation.
In conclusion, Alex Pallet committed to communicating any improvements in the model with the members of the Pee Dee RBC.

4. **Pee Dee Basin Surface Water Model - Initial Results (John Boyer, CDM Smith)**
John Boyer continued with the surface water modeling results. Highlighting the high water demand scenario in surface water demand, John explained that the model applied future demand projections from past hydrology (from 1929 until current date). He also explained the boundary conditions, the collaboration with North Carolina to obtain relevant data from the layers within North Carolina, and how the flows coming from North Carolina are being treated. For example, for the Lumber River, current use scenario inflows were used for the Moderate and High Demand Scenarios.
John also showed the members of the RBC the rerun results of the Permitted and Registered Scenario. The rerun was necessary because of a recent registration called Oaklyn Plantation on Black Creek, near the confluence with the Pee Dee River, not in the previous permit and

registered model scenario. The registration applied for and awarded was about 177 million gallons per day. There's currently no water use there. He pointed out that it is highly unlikely that the application was for actual water use and drew the attention of the members of the RBC that they may be interested in such unintended policy consequences. It was pointed out that this type of registration was possible because there are no reasonable use criteria in the registration process.

COMMENT
I would love to see this river basin council recommend that holding a water registration without the intention of use is a potential gap, unforeseen and unpredicted, but a gap nonetheless, and that it has led to an exploitation of the rules, and I don't think that that is good for anyone.

John Boyer explained that based on historical hydrology data (1929-2018) and applying 2070 projected demands, which assume high population and economic growth (High Demand Scenario), the six agriculture, mining, and golf course surface water users with projected shortages are on first and second order tributaries to larger streams. Also, they are the most upstream (registered or permitted) surface water users on the reach where they withdraw water.

Furthermore, John invited the members of the Pee Dee RBC to consider if they:
Would like to revise or add to the list of strategic nodes, i.e., evaluate flows at different points in the basin?
Would like to see how often simulated flows under each scenario drop below the Minimum Recommended Instream Flows (MIF)?

Scott Harder summarized the 1988 inflow study and MIF regulations in South Carolina. He noted that although the requirements do not apply to any current users in the Pee Dee basin, the members should take note of the requirements.

In conclusion, John noted that potential next steps include continuing the review of the preliminary modeling scenario results, incorporate estimated Lumber river inflows from Moderate and High demand projections, add operating rules to Lake Robinson to see if the Sonoco shortage in Prestwood Lake can be eliminated, and select locations to apply flow-ecology metrics then evaluate them using SWAM model daily timestep results for each planning scenario.

5. **Flow-Ecology Relationships (Dr. Luke Bower, Dr. Joe Mruzek, Clemson University, and Eric Krueger, The Nature Conservancy)**
Dr. Luke Bower, Dr. Joe Mruzek, and Eric Krueger introduced the Ecological flows model. Luke highlighted sustainability as one of the reasons for the Pee Dee RBC, with the objective of sustaining all designated uses, whether recreational uses, agriculture, industry, or public water uses. He highlighted the importance of organisms in the streams in river monitoring, a process known as Bio-assessment. A diverse biota is a healthy ecosystem and can be measured by species richness (the number of species) and Shannon's diversity which accounts for the percentages of the species. These measures are monitored under

conditions such as low, high, and mean annual flow, as well as other factors. Furthermore, he discussed the framework for the SC ecological flow study and a summary of the results and provided the studies used for the exercise.

They talked about how to monitor the ecological flow, build a hydrologic foundation of streamflow and biological data, classify natural river types, determine flow-ecology relationships associated with each river type, and recommend water flow standards to achieve river condition goals. One of the major findings highlighted from ecological flow studies was that all flow regimes are important and that a single flow standard for the state would be inadequate. Hence, the need for the members of the Pee Dee RBC to understand the peculiarities of the Pee Dee basin.

Also, they explained how ecological flow monitoring could be used in the Pee Dee basin and which metrics are relevant to the basin. They proposed incorporation of 5 flow-ecology metrics as performance measures: Mean Daily Flow; Base Flow; Duration of Low Flow; Frequency of Low Flow; and Timing of Low Flow. Adopting these metrics would enable the members of the Pee Dee basin to evaluate the actual impact on the basin's health and compare multiple scenarios quickly. Furthermore, they recommended evaluating the performance of water use scenarios on stream and river health and using them in a risk management context.
The members of the Pee Dee RBC confirmed their desire to see the results of the study specific to the Pee Dee basin.

6. **Pee Dee River Basin Agriculture Overview (Dr. Nathan Smith, Clemson University)**
Dr. Nathan Smith presented an overview of agriculture in South Carolina and narrowed it down to the Pee Dee River basin. He noted that the major row crops irrigated in SC are corn, cotton, soybean, and peanut. Compared to the other major crops, corn needs the most water per season, followed by peanuts, soybean, and cotton. He described the relationship between agricultural produce distribution at the county level in Pee Dee Basin. Nathan explained the results of studies on financial efficiency per crop (non-irrigation budget), Pee Dee River basin Farmers to Farm service agency certified crop acres which showed that 21% of corn acres were irrigated and 79% of corn acres were non-irrigated, while 9% of cotton acres were irrigated and 91% of cotton acres were non-irrigated.

7. **Irrigation Research and Extension at Edisto REC (Dr. Kendall Kirk, Clemson University)**
Dr. Kendall Kirk introduced the Irrigation Research and Extension work at the Edisto REC and stated that extension agents have been building tools to help farmers be better stewards of the land and its resources. He expressed that farmers are among our best stewards of the land and its resources. Consequently, the institution tries to give them tools to take advantage of the technologies they might not have otherwise. Kendall highlighted some tools and programs such as Center Pivot Mapping Software, Drip Fertigation Calculator, Center Pivot Fertigation Calculator, Watermark Soil Moisture Calculator, and Center Pivot Irrigation Testing Extension Program.
In summary, some innovations improve irrigation outcomes by reducing water use. Others

make fertilizer and pesticide applications more efficient, provide data for planning and optimal decision-making,

COMMENT
Is there a trend for farmers to adopt irrigation?

Kendall explained that although he did not have accurate figures, the researchers observed that more and more farmers are moving to irrigation.

COMMENT
How much is the observed adoption a function of the technology and the costs?

Kendall confirmed that the technology, cost savings, yield, and information and knowledge offered by extension service officers contribute to adoption.

COMMENT
Is there some financial assistance to encourage adoption?

Yes, there is. Some farmers take advantage of EQIP (NRCS) upgrades.

8. **Closing Comments (Jason and JD Solomon)**
   The next meeting will feature a continuation of the results from the SWAM model, Hydrologic flows, and a review of the quarterly performance report of the Pee Dee RBC. The proposed field trip for the Pee Dee RBC members is proposed to be held in May 2023 at a local farming operation.
   The next meeting will be held on April 25th, 2023, at Clemson Pee Dee Research and Education Center, Classroom #240 Darlington, SC 29532

Minutes: Chikezie Isiguzo and Tom Walker

Approved: 4/25/23