MINUTES OF the 11th PEE DEE RIVER BASIN COUNCIL (RBC) MEETING (HYBRID FORMAT) HELD ON APRIL 25th, 2023, at Clemson Pee Dee Research and Education Center, Classroom #240 Darlington, SC 29532

RBC Members Present: Frances McClary, Buddy Richardson, Snipe Allen, Doug Newton, Cynthia Walters, Jeff Steinmetz, Michael Bankert, Cliff Chamblee, Michael Hemingway, Megan Hyman, Bill Wiegand, Jason Gamble, Erik Krueger, John Crutchfield, Jeff Parkey, Tim Brown, Walt Beard, &Hughes Page

Absent: Lindsay Privette (Joseph, Lewis, alternate, present), Cara Schildtknecht, John Rivers, Cricket Adams, Brandon Durant, & Bob Perry

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

Total Attendance: 46

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

   J. D Solomon (the Facilitator) called the meeting to order at 9:00 AM and welcomed members to the 11th Pee Dee RBC meeting. The main objectives of the meeting included ecological flow discussion, surface water scenario review and additional analyses, overview of Edisto strategies and recommendations, potential Pee Dee surface water management strategies, initiation of river basin plan – chapter subcommittees, and first quarter 2023 report card.

   b. Approval of Agenda and March 25th Minutes

   The agenda was unanimously approved. John Crutchfield made a motion to approve minutes and summary documents, which Megan Hyman seconded and were unanimously approved.

2. **Public Comment (JD Solomon)**
   There were no public comments. Also, there were no Agency comments.

3. **Ecological Flow Discussion (Luke Bower, Clemson University)**

   Luke Bower discussed Flow-Fish Richness Relationship. The session's goal was for everyone to understand what these relationships are, what they are not, and how we interpret and use them. He reminded the members of the Pee Dee RBC that the goal of the project was to find informative relationships between flow and specific metrics to show how fish or aquatic organisms are responding. He went further to demonstrate the relationship between species richness and flow. He demonstrated a positive relationship between the daily flow and species richness. Therefore, as you increase flow, we should see an increase in the number of species. He also demonstrated Mean Daily Flow and Changes in Fish

Richness. He discussed how agencies like SCDNR collect data used in the study.

COMMENT
When you say species richness, are you talking about the number of different types of fish or just the number of a specific type of fish?

Luke Bower responded that species richness is more about the number of different species than the abundance of a specific type of fish.
He presented partial dependency plots and described how they are used to create risk ranges - high-risk, medium-risk, and low-risk. Luke noted that we use these relationships to define biological response limits and predict the responses.

Continuing in the presentation, Joe described three major stream classes. The first class is perennial run-off stream which is characterized by moderately stable flow and distinct seasonal extremes. This is the most common stream class. The second class is the stable baseflow stream, which is characterized by high precipitation, sustained high baseflows, and moderately high run-off. The third class, the perennial flashy, is characterized by moderately stable flow with high flow variability.

Using data from the Broad River basin, he walked the members of the Pee Dee RBC through an example of the results of the water modeling scenarios. The model started with the current flow metric (mean daily flow), and the predicted flow, based on four different hydrologic conditions (unimpaired flows, high demand, full demand, and moderate demand). The model highlights the percentage changes for each scenario. Using various maps of Pee Dee River basin strategic nodes, Joe described some study results showing the various risk ranges.

COMMENT
What is the benefit of using the registered users, and not just permitted users in the model?

Joe explained that the registered users' data makes for better comparison and more realistic results. In summary, the study covered 5 strategic nodes, looked at 4 flow metrics and 3 different biotic metrics, and generally predicted very little change.

Presenting the results, Brandon (Clemson University) noted that the Pee Dee River basin is expected to have the most richness and diversity compared to other basins in the State. Baseline results showed 65 species at 94 locations, an average of 12 per site, but some sites featured upwards of 30 species. He displayed various species native to the basin such as Redbreast Sunfish, Notchlip Redhorse, and Blue-spotted Sunfish. He described the replacement by common generalists and invasive species, such as Green Sunfish, White Sucker, and Yellow Bullhead, as the flow regime goes from being a natural flow regime to being a less natural flow regime. He also presented species designated as species of greatest conservation need, such as Thinlip Chub, Santee Chub, and Carolina Daxter. These fish are rare, and many of them only live in this part of the State. Also, there are migratory fish unique to the State, including Striped Bass, Robust Redhorse, and Shortnose Sturgeon.

Highlighting the uniqueness of the study dataset, Brandon noted that the information is based on the best available data and analysis tools and models with compounding statistical uncertainty. The information is applicable to small streams and rivers, which cover almost 87% of the surface water flow in South Carolina. However, the data is not based on information from large rivers and reservoirs. He also cautioned that the information provided was not arbitrary expert advice and should be used with caution, bearing in mind the need for more data to reduce uncertainty, and changing climate and land cover, among other limitations. And finally, the information is primarily about relationships between organisms and flow.

Furthermore, Brandon emphasized areas of future study, including parsing out multiple stressors, future flows ecology relationships, covering large rivers and reservoirs (excluded in the current model), and modeling species-specific flow effects.

COMMENT
Are more species necessarily always good?

Brandon clarified that the focus should be on natural species diversity. It is not always about maximizing species diversity as much as about getting into a natural state of natural river flow species and native species. The model simply provides information to guide those tasked with making recommendations, such as the Pee Dee RBC. However, users must note the assumptions and limitations of the model.

4. **Surface Water Scenario Review and Additional Analyses (John Boyer, CDM Smith)**
John Boyer presented additional analyses on surface water modeling results. He presented a follow-up to the moderate and high demand projections. He reminded the members of the Pee Dee RBC areas about the results in terms of shortages in the planning scenario.
Referring to the Planning framework, John stated that the members of the Pee Dee RBC are supposed to focus water management decisions on the 2070 high-demand scenario results for developing management strategies. The high-demand scenario, modeling covered the whole 93 or 4-year periods of hydrologic record.
The results revealed very infrequent shortages and, for the most part, the Max. Shortage Demand was very small except for Sonoco.

John responded to questions raised by members of the Pee Dee RBC in the March 2023 RBC meeting. He explained the assumptions made for a rerun of the medium and high-demand scenarios, incorporating Lumber River inflows. The results showed that minimum flows are actually going up because, in the North Carolina part of the basin, there is more discharge from groundwater users to service water than there are surface water withdrawals.
Comparing all scenarios to 7Q10 flows, John used the Black Creek gauge example to demonstrate to the members of the Pee Dee RBC an unlikely instance that yields a significant difference between permitted and registered withdrawals. He explained that

comparing all scenarios to the 7Q10 flow, there was no evidence of a significant difference.

John also presented a graph comparing all scenarios during the drought of record (2001 – 2002) using the Lynches River, Black River at Kingstree, Black Creek at Quinby, and the Pee Dee River below Pee Dee, SC records.

He also added operating rules to Lake Robinson to see if the simulated 2070 Sonoco shortage can be eliminated. He noted that Lake Robinson is upstream, where Duke Energy has a facility that pulls out a lot of water upstream and then returns most of that water just downstream. John demonstrated that changing how the model operated Lake Robinson, supports a sustainable level of withdrawal, and eliminates the shortage described in the original model.

For the request to contact surface water users projected to experience shortages to see if they have had water availability issues, Alex Pellet reached out to Golf courses and mining operations. Reports from the mining operations showed that the shortages might be realistic in some sites, but their operations are designed with strategies to use water efficiently depending on their water storage capacity. Golf users in White Plains confirmed that the pond is perfectly adequate. They have never experienced any shortages. Alex noted that some of these small ponds are not included in the Surface Water (SWAM) model. The Florence Golf Course reported that in 2009 their ponds were pumped nearly dry. Since then, they have installed a well to augment the pond and established a strategy to manage fluctuations by focusing on 25% of their turf and restoring the remaining sections when there is adequate water.

Furthermore, Alex clarified that in some instances, the shortages reported in the model are regulatory shortages and do not necessarily result in real shortages. Finally, Alex highlighted that from reaching out to irrigators for information, he observed a need for the Pee Dee RBC to design a communication strategy that engenders trust among all stakeholders in the basin. Also, another way to build trust is when we do our demand projections for the future, we don't assign them to particular irrigators, we assign them to the sub watershed.

In conclusion, John Boyer invited the Pee Dee RBC to mention additional scenarios it would like to see modeled. He asked if the RBC would like to see how often simulated flows under each scenario drop below Minimum Recommended Instream Flows (MIFs). He also asked if there is a need to establish Surface Water Condition at any location or one or more Reaches of Interest. These areas will form the subject of conversation in subsequent engagement with the members of Pee Dee RBC.

5. **Overview of Edisto Strategies and Recommendations (John Bower, CDM Smith)**
John Bower presented an overview of surface and groundwater management strategies from the experience of Edisto RBC. He highlighted the drivers for selecting the surface water management strategies, including the potential infrequent agricultural shortages in smaller stream reaches, the projected high demand scenario shortage for Aiken and Charleston

during the drought of record (2002) conditions, and the low streamflow which may occur in all parts of the basin during severe and extreme drought regardless of upstream withdrawals.
Speaking about the surface water management goals, he stated that the first goal of the Edisto RBC is to improve resilience, especially under extreme drought conditions. What is the solution to that? The solution was to find some alternative large supply options.
The second goal, which is highlighted in the planning framework for every basin, is to promote a water conservation ethic. To achieve this goal, the Edisto RBC identified base and appropriate demand-side strategies that reduced water demand.
And then the third one is to identify a baseline strategy, to better meet minimum flow requirements during severe and extreme drought conditions. To achieve this goal, they developed a low-flow management strategy. He explained that the Edisto RBC also considered surface water consumptive use by sector, seeking opportunities that would guide their strategy.

The driver for selecting groundwater management strategies in the Edisto River basin includes areas where the water levels are predicted to drop below the top of the Crouch and McQueen Branch aquifers. The Edisto RBC looked at demand and supply side strategies to select from the portfolio of water management strategies. Some examples of demand-side strategies include municipal conservation, Agriculture/Irrigation conservation, industrial conservation, and Thermoelectric conservation. The supply-side strategies include new/increased storage, water reclamation, conjunctive use, conveyance, and desalination. John listed examples of practices (demand and supply side) that the Edisto RBC considered in their planning process.

Furthermore, the Edisto RBC considered existing water management strategies deployed in the Basin. On the demand side, the identified practices deployed by Walther farms to manage its water consumption, while on the supply side, they identified practices by the City of Orangeburg that built-in resilience to manage shortages in their water supply system by identifying alternative sources. Also, the city of Aiken did the same thing by building resilience to its water supplies, using both groundwater and water from Shaw Creek.

John discussed Dominion Energy as it provides a good example of conjunctive use. It is moving from 100% groundwater use to a combination of surface water and groundwater by 2028. Eventually, it will be using 90% of surface water and only 10% groundwater. During low flow conditions, they can switch over and use groundwater almost exclusively as they have been in the past, so they have flexibility in their system.

He explained the criteria used by Edisto RBC to evaluate the water management strategies. They include effectiveness, reliability (especially during draught), permitting/regulatory (including inter-basin) impacts, socioeconomic impacts, water quality impacts and consideration, and constructability. He listed and discussed the portfolio of demand and supply side strategies adopted by Edisto RBC in order of priority, as well as low flow management strategy. Finally, John presented some examples of the Edisto RBC recommendations.

Scott Harder noted that compared to the Edisto River basin, the surface water conditions in the Pee Dee River are looking good. Therefore, when we are approaching, how we develop water management strategies, what we need to be thinking about for this particular basin is how can we enhance or protect our future water supplies. He encouraged the members of the Pee Dee RBC to consider the peculiarities of the basin and come up with implementable strategies.

COMMENTS

Were there any comments from the public on the draft Edisto River basin plan?

John confirmed that there were 4 comments submitted, one of them by an Edisto RBC and PPAC member, and then 3 other comments. So, the members of the Edisto RBC will discuss the comments in their next meeting coming up on April 26, 2023. He invited the members of the Pee Dee RBC to learn from the experiences of the Edisto RBC.

6. **Potential Pee Dee Surface Water Management Strategies (J.D. Solomon)**

J. D. Solomon noted that the first task is for the RBC to come up with an implementable plan. He indicated that the members of the Pee Dee RBC have a great opportunity to leverage the process and water management strategies developed by the Edisto RBC.

COMMENT
Whose responsibility is it to implement the River Basin Plan, the RBC?

Scott Harder stated that the DNR has some responsibility in the implementation of the River Basin Plan. Using the example of the Edisto RBC, while there are recommendations that the DNR can work on directly, there are other recommendations that will require the help of the RBC. The RBC will continue to meet at the implementation stage, but not as frequently as during the Plan development stage.

7. **Initiation of River Basin Plan – Chapter Subcommittees (J. D. Solomon)**

J. D. Solomon proposed 3 subcommittees made up of 3 members of the Pee Dee RBC to start working on the first 3 chapters of the River Basin Plan. Each subcommittee will work on a Chapter and present a draft to the RBC subsequently**.** He informed the members that the major writing of the report will be done by a designated consultant, Matt Lindburg. The members of the subcommittees would probably have a kickoff call between this meeting and the next meeting, also to talk about what the roles of the consultant will be – to help draft the plan and finish the plan. The Plan is expected to be a product of the Pee Dee RBC.

The composition of the subcommittees are as follows:

Chapter One – Introduction: Cynthia Walters - Chair, Megan Hyman – Member, Frances McClary -Member

Chapter Two – Description of the Pee Dee River Basin: John Crutchfield – Chair, Hughes

Page – Member, Jason Gamble – Member

Chapter Three – Water Resources of the Pee Dee River Basin: Jeff Steinmetz – Chair, Eric Krueger – Member, Michael Hemingway – Member, Walt Beard - Member

J. D. Solomon noted that there may need to be a separate communications and outreach subcommittee as the work of the Pee Dee RBC progresses. In addition, he reminded all the members of the Pee Dee RBC of their responsibility to communicate with their interest groups and immediate communities about the Pee Dee RBC.

8. **First Quarter 2023 Report Card (JD Solomon)**
   J. D. Solomon presented the first quarter 2023 report card, which showed that members of the Pee Dee RBC participated in the meetings and activities of the RBC. Also, the report card indicated that the members participated actively, and objectives were achieved in each meeting. Decisions were made by consensus, and there was regular communication among members of the Pee Dee RBC. He also noted that timelines were affected by factors beyond the control of the Pee Dee RBC, such as waiting for the running of models and provision of relevant data.

9. **Closing Comments (Buddy and JD Solomon)**
   The next meeting will feature a presentation from Thomas Hunter (McCall Farms) about agriculture and canning and a review of groundwater in the Pee Dee Basin in addition to a field trip. The members of the RBC proceed from its usual meeting venue at Clemson Pee Dee Research and Education Center, Darlington, SC, to Neil Baxley's farm in Marion County (Mullins, SC) to tour the technologies and systems related to water management, including the irrigation system. Discussions about the subcommittees will continue in the next meeting.
   The next meeting will be held on May 23rd, 2023, at Clemson Pee Dee Research and Education Center, Classroom #240 Darlington, SC 29532 followed by a field trip.

Minutes: Chikezie Isiguzo and Tom Walker
Approved: 5/23/23