Upper Savannah River Basin Council

December 13, 2023 Meeting Minutes

RBC Members Present: Cole Rogers, Mark Warner, Scott Willett, Alan Stuart, Jon Batson, Danny Milam, Jeff Phillips, Mack Beaty, John Hains, Harry Shelley, Melisa Ramey, Tim Hall, Dan Murph, Billy Owens, Jill Miller, Tonya Winbush, Tonya Bonitatibus, & Chuck Connolly

RBC Members Absent: Carl Price, Reagan Osbon, Cheryl Daniels, Will Williams, Katie Hottel (Erika Hollis, alternate, present)

Planning Team Present: Ashley Reid, Scott Harder, Joe Koon, Tom Walker, Jeff Allen, Alexis Modzelesky, Andy Wachob, Hannah Hartley, & John Boyer

Total Present: 43

1. Call the Meeting to Order (Jill Miller, RBC Chair) 10:00–10:10
    a. Review of Meeting Objectives
        - Attendance check
        - Safety
        - Lunch location
    b. Approval of Agenda
        - Agenda approved – Scott Willett – 1st and Danny Milam – 2nd
    c. Approval of November 8th Minutes and Summary
        - Minutes and summary approved – Dan Murph – 1st and Scott Willett – 2nd
    d. Housekeeping Items
        - Coffee available
        - Online people

2. Public Comment (Ashley Reid) 10:10–10:15
    a. Public Comment Period
        - none
    b. Agency Comment Period
        - none

3. November RBC Meeting Review 10:15–10:20
(Ashley Reid)
    - USGS streamflow monitoring and low-flow statistics
        - USGS/SCDNR/SCDHEC updating flow statistics and making regressions
        - 7Q10
    - Aquatic Resources and fisheries management
    - Ecological flow relationships
    - Groundwater resources
    - Draft Broad River Basin Plan
4. Current Water Use and Demand Methodology 10:20-11:00
(Priyanka More and Alex Pellett, SCDNR)
    - Water withdrawal reporting in SC
        - SCDHEC records water use
        - Require water users that withdraw 3 million gallons or greater to register and report (with exceptions)

- US Basin water withdrawals
    - 99% withdrawals from surface water
    - Planning focused on surface water
- Water withdrawals categories
    - Thermoelectric- 97.4%
    - Water supply, industry, golf course, irrigation, mining also used
    - Exclude energy- water supply 88.5%, industry, golf course, irrigation, mining
- Surface water consumptive use
    - Estimates using SWAM
- US interbasin transfers
    - 22.5 MGD exported, 1.4 MGD imported
- Surface water withdrawals GA
- Historical water withdrawals
    - Data limitations
    - Reported surface water withdrawals (’11-’22).
        - Little trend with power, no trend without power
        - By Categories
- Summary
- Questions
    - Does historical data account for drought?
    - Yes
    - Given the growth there has been, seeing a flat curve is interesting.
    - Didn’t use population data
    - We do have increasing efficiency in dishwashers, clothes washers, etc
    - Can you weather normalize the data to see what the impacts of growth are? Annual averages, good suggestion, currently no except for normalize by rain.
    - Irrigation and water supply are sensitive to weather to see trends
    - Are we taking into account weather? In demands we are not but we should be getting that range in moderate and high demand scenarios
    - Possibly revisit the methods with new Clemson postdoc and research team
- Water demand projections
    - Is it possible to predict the future?
    - Projections are not forecasts
        - Forecasts aim to be accurate, projections aim to be informative
    - Stakeholder input throughout the process
    - Development of methods
    - Stakeholder feedback
    - Technical advisory calls
        - Recommendations
    - Publications
    - Equations
    - Mass balance illustration
    - Detailed model
    - Projections
    - Draft results (not for this basin)
    - Public supply
        - Example
            - Total demand rising
            - All years on one graph

        - County population projections
    - Sectors
        - Manufacturing
        - Agricultural irrigation
    - Possible research projects
- Questions
    - How are you allocating demands in the basin and how are you allocating population growth for GVL from this basin?
    - GVL Water serves those areas and we have a growth rate – weighted growth rate then get the growth rate for the system (net demand) – population – water withdrawals and aggregate it then go back to SWAM – recent years what is the % of aggregate demand "intake portfolio"
    - What is GVL's plan?
    - We did our master plan and can't rely on population but we do population blocks – Lake Keowee doesn't feed the whole county
    - Will the share in 20 years from Lake Keowee be the same?
    - I think so
    - Consumptive use – all GVL water is consumptive in the Upper Savannah?
    - Yes, not returned to the Upper Savannah source
    - SWAM pay attention to conditions?
    - We ran it over long period and it captures that

Break *11:00–11:10*

5. Duke Energy Operations in the Upper Savannah 11:10–11:35
(Ed Bruce, Duke Energy)
    - Keowee-Toxaway Energy Complex
        - Location
        - Station capacity
            - Total is 25% of Duke Energy Carolinas generating capacity
        - Hydro projects
        - Project operations
            - FERC license, low inflow protocol, USACE/ SEPA
            - Normal operations range
            - Low inflow protocol triggers/ parameters
            - Drought plan levels/ triggers
        - Keowee-Toxaway Drought Management Advisory Group
        - New operating agreement
        - Oconee Nuclear Station Water Use
            - Physics
            - Estimated water consumption rate: December: 22.7 MGD, January: 24.4 MGD.
            - Estimated natural evaporation from reservoirs
        - Questions
            - 1400 MW how long burn?
            - 15 hours or so and we don't do it often
            - Recharge rate?
            - 17 hours due to pumping time

        - Did conditions change?
        - Solar made it change
        - What's the temperature?
        - Don't know the delta temp
        - Less consumptive than a cooling tower
        - That's correct
        - Why open system move from closed?
        - Massive amount of water it can pinge fish. Those systems don't get permitted after the 80's
        - How are evaporation numbers calculated?
        - Consultant used Clemson pan data, modeling work, inches lost per month
        - Change in temperature is negative for the river system. What is temperature delta?
        - Probably less than 5 degrees which gets lost in releases to Hartwell
        - Why once through is no longer allowed anymore?
        - We haven't had fish kills – difference in discharge to Lake vs a river
        - John Boyer question from RBC Chat (see below)
        - Solar: when sun goes down, impacts energy production to production at night and will be totally flipped with increased solar
        - Less need for base load?
        - Never replace Oconee Nuclear – what tech will replace that?
        - Accommodating growth – Duke connected to the grid will we bring in energy from elsewhere?
        - Potentially expanding Bad Creek – we want to produce here and not purchase
        - Less oriented to population but getting rid of fossil fuel generation and replace with non-carbon generation
        - Just wondering if you're moving energy between regions – what market (power) are you in?
        - PJM I believe
        - This basin the power thing will likely be similar to what we have now - Oconee will retire in the 2050's not sure what's coming after that
        - Integrated water resource plan was filed recently – clustered with batteries, solar, etc
6. Friends of Lake Keowee Society Overview, Mission, and Accomplishments 11:35–11:50 (Dr. John Hains, RBC Member)
    - FOLKS created in 1993, part of LWASC (no longer exists)
        - Maybe people here restart it?
    - 30th anniversary
    - Why did we organize? To become a stakeholder
    - Advocacy, Conservation, Education
        - Not political
        - Advocacy- stakeholder, boating safety
        - Conservation- water testing, lake sweeps, Island Keepers, habitat enhancement, shoreline stabilization, planting native plants
        - Education- magazine, scholarships, community outreach, fun events
        - Questions
            - Have some experience in Limnology?
            - I do

- Can you comment on temperature differences?
- In the summertime remove cold water warm it up in the system and discharge is close to temp of the surface of the lake in summer – sometimes it is cooler than the surface temp – can see the water dive in winter time it is in reverse
- Catch fish go to the warmer temp
- No effect reading required to keep in a range
- What's the are in acres to see temp difference?
- Duke is discharging warmer water into Hartwell
- Doesn't mix but it is stratified
- Stratification is a natural process
- Oconee tends to destratify
- 20 – 30% difference between cooling tower and once through
- Consistent increase warm temp on the Pickens side – on Seneca side 4-5 degrees different
- In winter time warm water will flow over Keowee side and upper end of Lake Hartwell

7. Highlights of Georgia's Savannah-Upper Ogeechee Regional Water Plan (Ashley Reid) 11:50–12:10
    - Moved to next meeting
8. Upcoming Meeting Schedule and Topics (Ashley Reid) 12:10–12:15

Lunch then Depart for Lake Jocassee Dam and Hydro Facility tour 12:15–12:45

Jill Miller won't be at the January meeting – Jen Barrington will be there in her place as alternate

Meeting adjourned: 12:14 pm

Minutes: Taylor Le Moal and Tom Walker
Approved: 1/10/24

RBC Chat:
10:04:11 From Thomas Walker to Everyone:
going to get started here in a min or so
10:04:21 From John Boyer to Everyone:
Reacted to "going to get started..." with 👍
11:03:34 From Thomas Walker to Everyone:
10 min break
11:43:12 From Tonya B to Everyone:
Increasing the temp of the system that far upstream absolutely has a negative impact, which is why 1 through cooling isn't allowed anymore
11:45:28 From John Boyer to Everyone:
Do Bad Creek and Jocassee pumped storage follow typically follow a routine operating schedule... pumping up at night and generating during the day, or has the pattern switched in the past decade due to increased solar power availability?
12:09:02 From Tonya B to Everyone:
DO is very temp dependent. Reducing cold water into a lake that is heated in the summer means less room for the fish.
12:09:37 From Tonya B to Everyone:

Agreed to that last statement. We aren't focused on water quality so it just is.

12:15:12 From Thomas Walker to Everyone:

meeting adjourned