

Upper Savannah River Basin Council

October 11, 2023 Meeting Minutes

RBC Members Present: Jeff Phillips, Melisa Ramey, Scott Willett, Daniel Milam, Mark Warner, Alan Stuart, Jon Batson, Cole Rogers, Carl Price, Jill Miller, John Hains, Tim Hall, Chuck Connolly, Tonya Bonitatibus, Tonya Winbush, Harry Shelley, Katie Hottel, Reagan Osbon, & Mack Beatty

RBC Members Absent: Will Williams, Dan Murph, Billy Owens, & Cheryl Daniels (Eddie Brown, alternate, present)

Planning Team Present: Ashley Reid, John Boyer, Kirk Westphal, Scott Harder, Tom Walker, Joe Koon, Leigh Anne Monroe, Hannah Hartley, Jeff Allen, Alexis Modzelesky, & Taylor Le Moal

Total Present: 42

1. Call the Meeting to Order (Ashley Reid, Facilitator) 12:30–12:40
 - a. Review of Meeting Objectives
 - b. Approval of Agenda
 - Agenda approved – 1st – Chuck Connolly and 2nd – Jeff Phillips
 - c. Approval of September 13th Minutes and Summary
 - Minutes/ summary approved – 1st – Scott Willett and 2nd – Carl Price
 - d. Housekeeping Items
 - Bathroom location

2. Public and Agency Comment Period (Ashley Reid) 12:40–12:45
 - No comments received

3. Review of September RBC Meeting Highlights (Ashley Reid) 12:45–1:00
 - Planning framework overview, surface water law and regulation, developed vision statement, developed goals

4. Land Use, Socioeconomic, and Other Characteristics of the Upper Savannah River Basin (Evan Patrohay, CDM Smith) 1:00-1:15
 - Introduction, go more in depth in chapter 2
 - US river basin land cover
 - Medium intensity development, mixed forest shrub lands are 3 areas with most growth at expense of deciduous forest, herbaceous land and pasture land
 - Mostly woodlands, 14% agricultural land
 - Comparison of US basin and Saluda

- US has more woodlands, less ag, less developed land
 - Comparable in wetlands and shrublands
- Farmlands
 - 28% of US is classified as prime farmland
 - 22% of US classified as farmland of statewide importance
 - 50% not prime farmland
 - Saluda has 10% more prime farmland and 10% less not prime farmland
 - Less farming here because hilly and more big reservoirs
- US counties
 - Have a lot of the majority of counties in it, going to have more confidence in the data
- Major lakes- Jocassee, Keowee, Hartwell, Russell, Thurmond
 - 232 sq miles of lakes
 - National land cover database says 157 square miles, because of how it's defined
- Number of farms with irrigation
 - Statewide significant increase in farms using irrigation
 - US small increase in farms using irrigation
 - Significant increase statewide in number of acres using irrigation, small increase in US
- 2017 Census of Agriculture data
 - Census is voluntary
 - How reliable is the data? One response says they don't put a whole lot of effort in the census
 - 685070 farm operation acres
 - 195302 cropland acres
 - Mostly Anderson
 - 15,951 irrigated acres, mostly Edgefield
 - 2,471 cattle operation, 200 hogs, combined around 1000 chicken operations, mostly Anderson
 - \$461 million in commodity sales
- Value of timber in US vs state
 - US 70% forest. More than Land Cover database says but Land Cover uses satellite, Forestry Commission uses boots on ground
 - Above state average
 - \$49.3 million on the stump, \$104.4 million delivered
- Population change/ density
 - Most population increase in the north of the basin. Anderson, Clemson, Pendleton
 - Population decrease in the south of the basin. Rural areas, especially in Georgia
- Questions
 - McCormick County not listed- McCormick not in original copy of slides – commodity sales due to non-reporting
 - 3 square miles of additional surface water- could be difference in methods

over time

- Could be random error – satellites having more error
- Definition of the Lake – at the state line on the Lake
- CDM Smith team can look at that and double-check
- 2000 acres of difference
- Shrub/ scrub land naturally occurring- not naturally, clearing trees and regrowing (silviculture)

5. Water Resources of the Upper Savannah River Basin (Priyanka More, SCDNR) 1:15–1:45

- Introduction
- Savannah Basin
 - 314 miles
 - SC, NC, GA
 - Upper basin dominated by reservoirs
- Physiographic Provinces
 - Blue Ridge Mountains, Piedmont, Coastal Plain
 - Savannah is mostly Piedmont
 - Little bit of groundwater in fractured rock
- Climate
 - Average rainfall from 1991-2020 45-75 inches annually
 - Max rain 73” in 1929, min 31” in 2016, average 50”
- Streamflows
 - Higher baseflow in Blue Ridge/ inner Piedmont, lower Piedmont has less baseflow
- Surface Water Monitoring Network
 - 10 active USGS gaging sites, 6 additional USGS stage sites
 - Measures volumetric discharge in cubic feet per second
 - 2 sites active since 1940s
- Examples: Chattooga River, Stevens Creek
 - 1964 was wettest year on record
 - Monthly fluctuations
 - Chattooga: wet in winter, dry in summer
 - Stevens Creek- same pattern
- Flow duration curve
 - % exceedance- more flow in Chattooga from the mountains than Stevens Creek
- Stevens Creek
 - Minimum flow- 0 cfs, 90% exceedance- 11 cfs, 50%- 85 cfs, mean- 18% daily percent exceedance
 - Challenge- only 1 gage in Stevens Creek, not enough gages. Gages super important. Water affects the people who live there
 - Another gage planned
- Chattooga River
 - Minimum flow- 68 cfs, 90%- 217 cfs, 50% 524 cfs, mean- 37% daily percent exceedance

- Reservoirs- SC
 - 10 reservoirs
 - Used for hydroelectric power, flood control, water supply, recreation, fish/ wildlife management
- Reservoirs- NC/GA
 - 6 reservoirs
 - Used for hydroelectric power, recreation, fish/ wildlife management
- 9 hydroelectric projects in SC
- 6 hydroelectric projects in GA
- 6 FERC hydroelectric projects in SC/ GA
- Savannah Basin water use
 - Active permits and registrations
 - Exclude hydro- 97.4% thermoelectric withdrawals
- Trend plots for surface water withdrawals
- Summary
- Questions
- Thermoelectric- 97.4% is a big number
 - Need more information on that number and use.
 - How much is used, returned, evaporated?
 - Duke should make a presentation
 - Need quantity not just percent
 - Withdrawals v usage
 - USACE should make a presentation – what goes out of Thurmond Lake to the Lower Basin and does it increase over the next 50 years
 - SWAM model for 3 power stations. Urquhart station withdraws 115-218 million gallons per day, withdraws 99.9%. Rainey station withdraws .6-2.1 MGD returns 14-48%, Oconee withdraws 1973-3045 MGD returns 99% useful to double check.

Break

1:45–1:55

6. Saluda River Basin Climatology (Hope Mizell, SCDNR)

1:55–2:20

- State climatology office intro
 - Promote climate and weather awareness
 - Located in a state agency
 - Established in 80s through legislation
- Climate office responsibilities
 - Coordinate and collect weather observations
 - Summarize and disseminate info
 - Perform climate and weather impact assessments
 - Demonstrate value of climate info
 - Conduct climate research
- Temperature

- SC has warmed 1 degree F over past 120 years. Less than global
 - Variability in monthly temperature
- Walhalla and Anderson Airport
 - Walhalla temperature less than Anderson. Average 59.6 degrees
 - Anderson average 61.8 degrees
 - Similar trends
 - Minimum temperatures at Anderson 3-4.5 degrees higher than Walhalla
- State 30 year normal for basin and states
- Trend of maximum temperature for the long-term stations
 - 2 stations in basin have significant increasing trends for all seasons
- Trend of minimum temperature for long term for stations
 - 1 station has significant increasing trend, 1 station has significant decreasing trend for all seasons except winter
- Number of days maximum temp above 95 degrees from all long-term stations
 - Not as high as we experienced in 30s-50s
- Number of days minimum temp above 75 degrees from all long-term stations
 - Hotter now, not cooling off as much at night
- Observed and projected temperature changes
 - Projected with higher emissions- 8 degrees higher or greater by 2100
 - Projected with lower emissions- 2-4 degrees higher by 2100
- Precipitation
 - Driest year- 1954, wettest- 1964
 - No trend in annual precipitation for state but extreme rainfall has increased recently
 - Wettest month on average for state is July, driest November, September has widest range
 - Walhalla and Anderson
 - Walhalla has higher average, 60.8 inches
 - Anderson average is 45.8 inches
 - Walhalla receives 1-1.5 inches more rain than Anderson
 - Wide range in amount of rain from upper (63-88") to lower (42-45") part of basin
- Trend of precipitation
 - No statistically significant change for spring, fall, winter. Statistically significant decrease for summer
- Extreme rainfall
 - Rainfall from 2015 historic rainfall. Didn't impact this basin that much.
 - 17% of the state experienced the 1% probability rainfall
 - Matthew, Florence
 - No part of this basin experienced Flood, Matthew, Florence
- Stations in Pee Dee Basin
 - No other time in history had that many basins experienced a 1000 year event at the same time
- Stations in Savannah River
 - Haven't experienced that severe of rain, it could happen

- Tornados
 - Not having more tornados over time, Doppler radar improved detection, social media and communication improving recognition of lower end events
 - Most likely to get tornados in spring, tropical cyclones cause spike in September
 - In this basin most likely to get smaller storms
- Tropical cyclones
 - Hits coast but this area gets remnants
 - SC ranks 5 in where hurricanes hit the most
 - 80% chance of being impacted by a tropical system each year (state)
 - US: 31 storms tracked into basin, only 8 tropical storms
- Visit website
- Questions
 - 100 year of daily rainfall no trend- nothing jumps out
 - Anderson/ Greenville hasn't been tested with big rainstorm in a long time, lots of runoff could increase stream flows in a short time
 - Maximum probability event not included- those values are used mostly for dams. Dams designed way over beyond what's needed. No work to update numbers. Updating 1000/ 500/ 100 year event numbers
 - 1 of 12 states that do not have a network of automated weather stations. Do have volunteers who check 1 time a day. Proposed putting 1 station per county. \$20000+ per station, \$5 million total
 - Co-Op network- volunteer weather observers monitored by National Weather Service. Lots of people can't commit to every day. Have community collaboration to supplement the coop observers
 - Can't get funding because climate has been politicized?- a lot of political tension with climate. State climatologists losing job because politics. Political pressure decreasing because there are changes that can't be explained
 - Can commercial airports help?- have 3 primary automated weather stations at Greenville, Columbia, Charleston. Smaller airports have some hourly airports. They could be recording, just not getting entered. Talk to SC Aeronautics Group.

7. South Carolina Drought Response Act (Elliot Wickham, SCDNR)

2:20–2:45

- How people define drought
 - Dry
 - Not enough rain that can be recuperated from future rainfall
 - Different types of drought
 - Conceptual and operational definitions
- Past droughts in SC
 - Palmer Drought Severity Index
 - Periods of dry and wet conditions
 - Notable droughts

- Percent coverage
- US covers 3 climate divisions- Mountains, Northwest, Central West
- State PDSI vs Northwest PDSI
 - Similar but not exactly the same
- State percent coverage vs Savannah percent coverage
 - Similar but not the same
- Drought monitoring and response
 - SC Drought Response Program
 - SC Drought Response Act
 - Why: manage state water for all SC
 - Who: State Climatology Office, statewide members, local members
 - We're in West Drought Management Area
 - How: multiple indicators and indices to monitor drought
- Drought conditions and response
 - 4 levels of drought: incipient, moderate, severe, extreme
 - SCDNR, SCO, DRC, state/ federal agencies monitor conditions
 - Incipient: review drought plans and ordinances
 - Others: implement drought plans and ordinances. DRC may recommend water conservation
 - As drought conditions and impacts become severe, response actions increase accordingly
 - Severe/ extreme: increase monitoring and communications, local notices for water use restrictions, Governor may request water conservation, assist with managing impacts
 - Emergency operations: citizens losing access to water, public health and safety threatened, State Emergency Response Team is activated
- Appendix 10 of State Emergency Operating Plan
 - Identifies State level actions to provide relief beyond what Drought Committee can do
- Components of SC Drought Response Program
 - Public water suppliers- only required for public, not private. Implement drought response ordinances
 - Local level drought plan
 - Drought Response Act requires a plan, doesn't require updating
 - Many plans have not been updated since 2003
 - Should be a part of the basin plan to update
 - Broad RBC has, Pee Dee and Saluda will probably do
- Mount Pleasant Waterworks- updated May 2020
 - Drought levels, triggers, goals, actions and who's responsible
 - Other areas haven't updated their plans in a long time
- Updating local level drought plans
 - If they have updated it, email it
 - If not, when was it updated, is info still the same, are violation fees effective, will they notify DNR?
- Drought tabletop exercise
 - Identify breaking points

- Improve awareness of people involved
 - US Drought Monitor vs SC Drought Response Committee
 - Doing the same thing. Monitor drought
 - USDM: federal agency leads, other federal and state agencies, weekly product, federal disaster declarations and loans for agriculture
 - SC DRC: 5 state agencies, local stakeholder participants, meets as needed, determine essential water use recommendations
 - Different drought indicators
 - Website: scdrought.com
 - Questions
 - More extreme rainfall impacts on droughts vs regular rain- it depends. Not good to have severe rainfall for agriculture. May not show up if it just measures amount of rain per month
 - Does it make sense to have Savannah River in same Drought Management Area?- over 300 miles long?
 - Define normal for last 30 years, is that going to change how drought is defined in the future?- push for long term stations, get different point of view of data, no one data point to tell you what you need
 - No one can predict the future, shouldn't just rely on data- looking at past hydrology to better inform future planning
 - Next drought response meeting Tuesday, can sit in virtually
8. Upcoming Meeting Schedule and Topics (Ashley Reid) 2:45–3:00
- Next meeting: November 8th
 - Topics: flow monitoring, aquatic resources, flow ecological health relationships, Savannah- Upper Ogeechee water plan overview, groundwater resources
 - Elect chair and vice chair- have to be in different interest groups
 - Want to nominate someone, let Ashley or Tom know by email or phone call prior to the meeting
 - Vote by hand
 - Nominees need to talk to the group about why they want to be chair
 - For December, have Duke, USACE come in to talk about their operations
 - Location hasn't been decided. Potentially go back to Starr Iva location

Meeting adjourned: 3:33 PM

Minutes: Taylor Le Moal and Tom Walker

Approved: 11/8/2023

RBC Chat:


12:29:42 From Thomas Walker To Everyone:

we'll get started in a few minutes, trying to get everything set up. almost there

12:33:24 From Thomas Walker To Everyone:

a few tour members have yet to arrive so we're going to give them another 5 minutes

12:36:05 From John Boyer To Everyone:

Reacted to "a few tour members h..." with 

12:37:49 From Thomas Walker To Everyone:

also we are in a very large room so speakers voices should be good to hear but other comments might be harder to hear well

13:48:35 From John Boyer To Everyone:

In the SWAM model, based on monthly withdrawals and discharges reported to DHEC and input from the energy companies, the Urquart Station withdrawals between 115 and 218 MGD and returns 99.9% of the surface water they withdraw; the Rainey Station withdraws between 0.6 to 2.1 MGD and returns between 14% and 48% depending on the month; and Oconee withdrawals between 1,973 to 3,045 MGD and returns 99%.

13:50:29 From Thomas Walker To Everyone:

thanks john

13:50:57 From Thomas Walker To Everyone:

break until 2

14:29:36 From John Boyer To Everyone:

Can Hope talk briefly about their hope to build a Mesonet in South Carolina?

14:30:39 From Thomas Walker To Everyone:

sure

15:33:46 From Thomas Walker To Everyone:

mtg adjourned