RIVANNA
WATER & SEWER AUTHORITY

Board of Directors Meeting

April 23, 2019

2:15pm

RIVANNA WATER & SEWER AUTHORITY
695 Moores Creek Lane | Charlottesville, Virginia 22902-9016
434.977.2970
434.293.8858
www.rivanna.org

BOARD OF DIRECTORS

Regular Meeting of the Board of Directors of the Rivanna Water & Sewer Authority

DATE: **April 23, 2019**

LOCATION: **Conference Room, Administration Building**
695 Moores Creek Lane, Charlottesville, VA

TIME: **2:15 p.m.**

AGENDA

1. ***CALL TO ORDER***

2. ***MINUTES OF PREVIOUS BOARD MEETINGS***
   a. *Minutes of Regular Board Meeting on March 26, 2019*

3. ***RECOGNITION***
   a. *Resolution of Appreciation for Mike Murphy*

4. ***EXECUTIVE DIRECTOR'S REPORT***

5. ***ITEMS FROM THE PUBLIC***

6. ***RESPONSES TO PUBLIC COMMENTS***

7. ***CONSENT AGENDA***
   a. *Staff Report on Finance*
   b. *Staff Report on Ongoing Projects*
   c. *Staff Report on Operations*
   d. *Proposed Additional Holiday: July 5, 2019*
   e. *Approval of Easement Acquisition Services, SRR to RMR Pipeline; ERM & Associates*

8. ***OTHER BUSINESS***
   a. *Presentation: Rivanna Conservation Alliance - Lisa Wittenborn, Program Director and Julia Ela, Operations Director*
   b. *Presentation: Annual Reservoir Report – Andrea Terry, Water Resources Manager*

c. *Presentation: Rivanna Cyber Security – Steven Miller, Information Systems Administrator*

9. OTHER ITEMS FROM BOARD/STAFF NOT ON AGENDA

10. CLOSED MEETING

11. ADJOURNMENT

GUIDELINES FOR PUBLIC COMMENT AT RIVANNA BOARD OF DIRECTORS MEETINGS

If you wish to address the Rivanna Board of Directors during the time allocated for public comment, please raise your hand or stand when the Chairman asks for public comments.

Members of the public requesting to speak will be recognized during the specific time designated on the meeting agenda for "Items From The Public." Each person will be allowed to speak for up to three minutes. When two or more individuals are present from the same group, it is recommended that the group designate a spokesperson to present its comments to the Board and the designated speaker can ask other members of the group to be recognized by raising their hand or standing. Each spokesperson for a group will be allowed to speak for up to five minutes.

During public hearings, the Board will attempt to hear all members of the public who wish to speak on a subject, but it must be recognized that on rare occasion presentations may have to be limited because of time constraints. If a previous speaker has articulated your position, it is recommended that you not fully repeat the comments and instead advise the Board of your agreement. The time allocated for speakers at public hearings are the same as for regular Board meetings, although the Board can allow exceptions at its discretion.

Speakers should keep in mind that Board of Directors meetings are formal proceedings and all comments are recorded on tape. for that reason, speakers are requested to speak from the podium and wait to be recognized by the Chairman. In order to give all speakers proper respect and courtesy, the Board requests that speakers follow the following guidelines:

- Wait at your seat until recognized by the Chairman.
- Come forward and state your full name and address and your organizational affiliation if speaking for a group;
- Address your comments to the Board as a whole;
- State your position clearly and succinctly and give facts and data to support your position;
- Summarize your key points and provide the Board with a written statement, or supporting rationale, when possible;
- If you represent a group, you may ask others at the meeting to be recognized by raising their hand or standing;
- Be respectful and civil in all interactions at Board meetings;
- The Board may ask speakers questions or seek clarification, but recognize that Board meetings are not a forum for public debate; Board Members will not recognize comments made from the audience and ask that members of the audience not interrupt the comments of speakers and remain silent while others are speaking so that other members in the audience can hear the speaker;
- The Board will have the opportunity to address public comments after the public comment session has been closed;
- At the request of the Chairman, the Executive Director may address public comments after the session has been closed as well; and
- As appropriate, staff will research questions by the public and respond through a report back to the Board at the next regular meeting of the full Board. It is suggested that citizens who have questions for the Board or staff submit those questions in advance of the meeting to permit the opportunity for some research before the meeting.

The agendas of Board meetings, and supporting materials, are available from the RWSA Administration office upon request or can be viewed on the Rivanna website(s)

Rev. September 22, 2009

RIVANNA WATER & SEWER AUTHORITY
695 Moores Creek Lane | Charlottesville, Virginia 22902-9016
434.977.2970
434.293.8858
www.rivanna.org

RWSA BOARD OF DIRECTORS
Minutes of Regular Meeting
March 26, 2019

A regular meeting of the Rivanna Water & Sewer Authority (RWSA) Board of Directors was held on Tuesday, March 26, 2019 at 2:15 p.m. in the 2nd floor conference room, Administration Building, 695 Moores Creek Lane, Charlottesville, Virginia.

Board Members Present: Mike Gaffney, Kathy Galvin, Lauren Hildebrand, Mike Murphy, Gary O'Connell, Liz Palmer, and Jeff Richardson (arrived at 3:06 p.m.).

Board Members Absent: None.

Staff Present: Bill Mawyer, Katie McIlwee, David Tungate, Lonnie Wood, Jennifer Whitaker, Bill Morris, Betsy Nemeth, Victoria Fort, Dyon Vega, Scott Schiller, Austin Marrs, Andrea Terry, Rob Haacke.

Also Present: Kurt Krueger, RWSA counsel and members of the public

1. CALL TO ORDER

Mr. Gaffney called the regular meeting of the Board of Directors of the Rivanna Water and Sewer Authority at 2:15 p.m.

2. MINUTES OF PREVIOUS BOARD MEETINGS

a. Minutes of Regular Board Meeting on February 26, 2019
There were no changes to the minutes presented.

Dr. Palmer moved to approve the RWSA Board meeting minutes of February 26, 2019. Ms. Galvin seconded the motion, which passed 5-0. Mr. O'Connell abstained from the vote, as he was not present at the February meeting. Mr. Richardson was absent from the vote.

3. RECOGNITION

There were no recognitions.

4. EXECUTIVE DIRECTOR'S REPORT

Mr. Mawyer recognized new employee Dyon Vega, a civil engineer. He also stated that Rob Haacke, who has been with Rivanna for 27 years, was recently promoted to wastewater manager. Mr. Mawyer stated that Rivanna had also hired two water operators – Jesse Robillard and Carl Terrance.

Mr. Mawyer reported that Safety Manager Liz Coleman recently had four sessions of the "Lockout Tagout" training whereby Rivanna reviewed written procedures on how to safely disconnect and lockout a piece of equipment so that no one can turn it on while someone is working on it. He stated that 17 employees from the City also attended that training.

Mr. Mawyer reported that staff would not be discussing a new corrosion inhibitor for the drinking water system as planned, and would instead be presenting it in the fall. He stated they needed to do some water quality sampling and did not want to start using a new product in the water while that was ongoing. He noted that they would discuss a change from a polyphosphate corrosion inhibitor to an orthophosphate product.

Mr. Mawyer stated that Rivanna had completed about 1,300 feet of the Birdwood waterline and had met with UVA Foundation, VDOT, and the City and County School Staff regarding obtaining the remaining easements for the South Rivanna to Ragged Mountain waterline. He noted that they were also meeting with the private owners along the alignment, including Ingleridge Farm and the Wheaton Center, and would meet with everyone. He stated that Rivanna sent all property owners involved a letter to request permission to survey, and from that they would develop appraisals and make offers to acquire the easements for the waterline.

Mr. Mawyer reported that the RWSA continued to work with UVA on a new 99-year Observatory Water Treatment Plant lease and was making progress on that. He stated that the wholesale meter project in which they were putting 25 meters around the City and County to help measure how much water the localities used was underway, and testing has determined that 4 of the 25 meters were defective. He stated they started calibrating the remaining meters and found 4 more meters that were also defective.

Ms. Galvin asked if they were covered by warranty.

Mr. Mawyer responded that Rivanna terminated the contract with the contractor because he was not making progress, and they would have to explore whether or not there would be reimbursement. He noted that they were working with the meter manufacturer and the supplier, and because of the delays, the project would not be completed by March as planned – with an estimated eight-week timeframe to get the meters, which cost tens of thousands of dollars.

Mr. O'Connell commented that the ACSA appreciated Rivanna making it a priority.

Ms. Galvin stated that they should be able to get all that money back.

Mr. Mawyer emphasized that staff was working hard to try to move this along, with maintenance staff dedicated to try to help at every stage.

Ms. Galvin commented that everyone had worked so hard on the agreement, which was based on the metering, and they needed to be sure that it did the right job. She expressed serious concern that something with that level of expense would be defective.

Mr. Mawyer stated that these were supposed to be "plug and play" devices, and they were trying to sort out what the problem was.

Mr. O'Connell mentioned that they needed about a year of data from the meters, so there was essentially that amount of delay.

Mr. Mawyer reported that the Riverfest event would be held May 11, and Rivanna was participating with the City and others. He stated they were also planning with the Rivanna River Conservation Alliance to do a stream cleanup on April 22. He stated that Rivanna hosted the Northwest Central Virginia Utility Managers meet and greet event, and service authorities from Amherst, Augusta, Culpeper, Harrisonburg, Louisa, and Rockingham had participated – as well as the private Aqua Virginia firm that ran Lake Monticello's water system, and the City and ACSA managers.

Mr. O'Connell commented that it was a good idea for Rivanna to host it, and he thanked Mr. Mawyer.

Mr. Mawyer reported that staff had been doing a lot of things at Crozet Elementary School, with television coverage of a stream buffer plan. He stated that Rivanna had been talking with students from UVA, Greene County High School, etc. He reported that he, Mr. Tungate, and Matt Bussell had attended an America's Water Infrastructure Act (AWIA) seminar the previous week at the University of Richmond regarding resiliency and readiness. He stated that Act was requiring Rivanna to update its Risk and Resiliency Plan. RWSA was recognized at the seminar by the health department as being one of a contributing group that helped VDH develop an algae-bloom manual. Mr. Mawyer noted that they had also heard from a utility in North Carolina that was dealing with some emergency contaminants and how they would add GAC to their filtering to remove those.

Mr. Mawyer stated that he was due to make a quarterly report to City Council and the Board of Supervisors the following week, and he would bring videos showing the South Rivanna and Observatory water treatment plant upgrades.

Mr. O'Connell mentioned that he had showed the videos a the ACSA Board meeting, and the attendees were very impressed.

Mr. Mawyer reported that in April, the RWSA Board would receive a water quality report and Ms. Terry would discuss the reservoir program, raw water quality, and algae – and staff would also present on a cybersecurity program, which had been noted as the number one threat to water infrastructure per the AWIA conference. He stated that in May, the Board would have public hearings on the budget; in June, staff would present on emerging contaminants that needed to be treated for water and wastewater, as well as new regulations.

Ms. Palmer complimented staff working on the Birdwood project, as Bellair residents had a very active homeowners association – and she had only received about two emails regarding the blasting and other work going on.

Mr. Mawyer pointed out the blasting holes shown at Birdwood on pictures provided.

Mr. Mawyer also presented photos of the water flowing over the South Rivanna Dam on March 22 after some significant rains.

Mr. Tungate stated that this was about 1.5 feet over the top of the dam, and on March 21st it had peaked at about 2.7 feet over.

Ms. Galvin asked how high it had gotten during the recent May 31, 2018 floods.

Mr. Tungate responded that it was 7.1 feet over.

Mr. Mawyer reported that Rivanna had sponsored several sports teams as part of its community outreach, including a Crozet soccer team.

5. ITEMS FROM THE PUBLIC

There were no items from the public.

6. RESPONSES TO PUBLIC COMMENTS

There were no responses to public comments.

7. CONSENT AGENDA

a. Staff Report on Finance

b. Staff Report on Ongoing Projects

c. Staff Report on Operations

d. Purchase Order Request and Capital Improvement Plan Amendment – Piney Mountain Tank Rehabilitation

Dr. Palmer moved to approve the Consent Agenda as presented. Ms. Galvin seconded the motion, which passed 6-0. Mr. Richardson was absent from the vote.

8. OTHER BUSINESS

a. Presentation: GAC Performance Update

Mr. Tungate reported that he would provide an update on the granular-activated carbon (GAC) performance to see what the investment had yielded in terms of disinfection byproducts (DBPs) reduction. He stated that South Rivanna had eight 40,000-lb. contactors, or a total of 320,000 pounds – with that facility being the largest and having the most GAC. He stated that Observatory had two 40,000lb contactors, North Rivanna had one contactor with 40,000 lbs., and

Scottsville had two smaller contactors with 6,000 lbs. each; Crozet had two 20,000-lb. contactors.

Mr. Gaffney asked if South Rivanna would have more GAC when it was renovated.

Mr. Tungate responded that the option was available for South Rivanna to expand GAC, but in the plant improvements under design now, it was not slated to be expanded at this point. He confirmed that there was room for five or six additional GAC contactors. Mr. Tungate stated that they had put the contactors in service as they became available and the logic and controls worked. He noted that the first site to have operable GAC contactors was Scottsville in February 2018, and they were still using the original GAC. He stated that GAC contactors were put into service in Crozet on April 23, 2018, and the GAC was replaced in November 2018. He stated that the contactor was put into service in March 2018 at North Rivanna, and it was still in service there; they put the contactors in at South Rivanna in May, and there were eight there so it took about four weeks to fill them with GAC. He stated that the Observatory GAC contactors went into service in August 2018 and were still in service.

Mr. Tungate reported that the GAC was designed to remove DBP precursors from the water, and they were measured by total organic carbon (TOC) – so the more TOC in the finished water, the more DBPs would be formed in the distribution system. He presented a graph that showed the variability of the raw source water, with the average TOC by month and by plant. He stated that Beaver Creek was the most biologically active reservoir and had the highest TOC, with it remaining higher than the other reservoirs consistently. He stated that it was over 9 mg/l in September 2018 at Beaver Creek, with North Rivanna at about 4 mg/l – and that peak indicated that there was a lot of rain and some algae blooms in the fall.

Ms. Galvin asked what DBP was.

Mr. Tungate clarified that it was disinfection byproducts, which covered total trihalomethanes and halo acetic acids. He explained that when RWSA was finished treating the water, the final step was adding chlorine for disinfection before sending it out in the distribution system. They had to have enough chlorine to ensure the quality of water in the distribution system. He noted that the longer the water was in the distribution system, the higher the chlorine residual needed to be, and the more TOC there was in the water – which led to more DBPs.

Mr. Mawyer added that chlorine and organics created the disinfection byproducts.

Dr. Palmer asked if Beaver Creek was high because of farmland drainage.

Mr. Tungate responded that Rivanna had worked with DiNatale Consultants on this, and they believed there was a large amount of phosphorous in the reservoir. He stated that the water sat in the reservoir longer, versus the river flow at South Rivanna and a detention time of just three or four days.

Ms. Terry mentioned that the detention time at Crozet was several months, so what flowed in stayed in.

Mr. O'Connell asked if that caused the algae issue.

Mr. Tungate responded that they were able to address the algae issues, and about 5-7 days after a rain event, they knew there would be an algae bloom if there was warmer weather and sunshine.

Mr. Mawyer noted that in general, there was higher TOC in warmer weather.

Mr. Tungate stated that the finished water was what was leaving the plant after final disinfection, and the GAC was quite effective at removing TOC levels.

Ms. Galvin asked if there was anything that compared to what it used to be.

Mr. Tungate responded that they had pre-GAC data, but Scottsville had just started in February and that was the first site. He stated that typically there were lower TOCs in late winter and early spring before reservoir water turnover got started. He also noted that at South Rivanna, they had replaced the GAC in early December because the TOC kept going up. He stated that TOC was over nine mg/l in Beaver Creek on average for the month of September, and in comparison they were just over one mg/l after treatment with GAC.

Mr. Gaffney asked what the federal mandate level was for TOC.

Mr. Tungate responded that it was a recommendation to remove at least 50% of TOC, but there was no federal mandate. He stated that this was never Rivanna's issue, as the problem was what happened in the distribution system to DBP levels when the water was chlorinated.

Mr. O'Connell stated that the DBPs were regulated, and if TOC levels were high more disinfection products needed to be used, and therefore the DBPs in the finished water system would also be high.

Mr. Tungate stated that the big change that started the process was Stage 2 DBP Rule, and Stage 1 DBP Rule was a running annual average – so the Crozet system had a running annual average, the urban system had a running annual average, and all the sites in those systems were averaged. He explained that the Stage 2 DBP Rule stated they had to average each individual site, so there were now locational running annual averages. He stated that in Crozet, testing was completed at Brownsville Market, so there was the locational running annual average of the Brownsville Market site and a site at theFox Chase subdivision; in the urban system, they had the Pantops EZ Shop site and alsohad a site at the Old Oaks subdivision in Ivy. He stated that each site had its own locational running annual average,

Ms. Hildebrand asked how many sites there were total.

Mr. Tungate responded that there were about 15-20 sites total.

Mr. Tungate presented the halo acetic acid locational running annual averages, noting the redline maximum contaminant level (MCL) of_60 mg/l as the number they could not exceed. He stated

that even before GAC, from February 2017 to February 2019, the locational running annual average was never over 60 mg/l. He stated that the blueline denoted when GAC went in service, so in August and November of 2018, as well as February 2019, DBP levels dropped. He commented that as they continued to get quarters with GAC-treated water, that locational running annual average would continue the downward trend. He stated that at North Rivanna, the blueline was when the GAC went in service – and comparing May 2017 to May 2018, DBP levels were lower; and August 2017 to August 2018 and November 2017 to November 2018 also saw reductions.

Ms. Galvin asked what the implications of that were and whether they would need to add less chlorine.

Mr. Tungate responded that they were adding slightly less chlorine, and they were seeing higher chlorine residuals in the distribution system instead of DBPs, which was a positive development for Rivanna and for the system – with a better water quality for consumers.

Mr. Mawyer reiterated that the DBPs were lower.

Mr. Tungate stated that higher chlorine residuals in the system provided better protection against pathogens for customers.

Ms. Galvin asked how they determined the locations of the testing sites.

Mr. Tungate responded that the sites were established about 10 years ago, and they were representative sites for the water distribution system. They would expect to get lower chlorine residual levels from sites further from the treatment plant. He stated that Ivy Oaks by Meriwether Lewis School was near the end of the system and was a worst-case scenario testing sites, noting that these sites were approved by the EPA and had to be justified with a distribution system study.

Ms. Hildebrand noted that they had to meet certain criteria.

Mr. Mawyer confirmed this, stating that they wanted to represent some of the potentially worst water quality conditions to ensure that's where you were testing – not the most optimum.

Mr. Tungate stated that Scottsville was a smaller system but had a very dramatic decrease in DBPs between November 2017 and November 2018, when GAC had been in service. He stated that there was a test site in Fluvanna County near Scottsville that was a laundromat.

Mr. O'Connell noted that there were periods in hot weather when TOC was up fairly high.

Mr. Tungate noted that the other component of the DBPs was trihalomethanes, and if a locational running average was over 80 mg/l, this would be a significant problem operationally. He stated that after GAC went in service, there was a downward trend in trihalomethane concentrations in all of the distribution systems – so the investment yielded the intended results.

Mr. O'Connell asked if any other locality in the country was using GAC for this purpose.

Mr. Tungate responded that it was not uncommon, and Cincinnati had the largest GAC treatment system in the country.

Mr. Mawyer commented that it was an expensive system.

Ms. Galvin stated that on "Safe Water Day," she was telling someone recently about constituents saying they were not going to drink the water unless it was safe.

Mr. O'Connell mentioned that GAC also removes other components – in concentrations measured in parts per trillion that were not even being tested in some cases – so they were improving water quality in many ways.

Dr. Palmer stated that it also gave people trust in the water they drank, especially in light of stories in the media.

Mr. Tungate noted that Pepsi, Coors, and Miller were big users of GAC also, as they treated the water they used to brew. He pointed out the decrease in halo acetic acids (HHAs) and trihalomethanes, and in comparing February 2018, when there was no GAC, to February 2019, there was an almost 60% reduction in HAAs in South Rivanna and an almost 80% reduction in Scottsville. He stated that these were significant reductions and this was a proven technology, with the system now reaping the benefits of the investment.

Mr. Tungate stated that the strategy was to put all the water possible through the GAC contactors until February 2019, and at that point they changed their operations for operational optimization. He stated that Rivanna had a discussion internally to optimize the use, as there was a finite life on the GAC in the contactors. He stated that now after seeing three quarters of results, they decided to make the change. He mentioned that they were using powder activated carbon (PAC), and early on in the project they had talked about eliminating it but they were still using it at all five facilities daily.

Ms. Galvin asked what the alternative was.

Mr. Tungate responded that the alternative was to eliminate PAC, and they were using similar activated carbon products but they did not work the same way, as the PAC was added at the head of the plant then settled out. He stated that if they kept all the water going through the vessels 100% of the time, they were on schedule to replace the GAC each twice per year (200%), so with 492K pounds of GAC in the system, it would equal about $1.4 million in operational costs to keep it compliant with their strategy. He stated that going into FY20, their strategy was to replace 125% of the GAC.

Mr. Tungate stated they had discussed at a town hall meeting the opportunity to regenerate the GAC, and they would be trying that going forward. He explained that they take the GAC away to a kiln and reactivate it – and they get about 80% of the GAC media back, then the GAC would be put back in contactors at South Rivanna. He stated that new unused carbon was $1.46 a pound

deliveredand the regenerated carbon was $1.00-$1.10 a pound, so there was a significant opportunity for savings. He stated that the drawback was that Rivanna's used GAC could only be regenerated for use at Rivanna sites and regenerated GAC could not be exchanged among localities, as the potential chemical reactions were uncertain.

Mr. Gaffney asked if it would only be 80% effective.

Mr. Tungate replied that early on in the process, he was under the impression that you would never get as good a performance from the regenerated GAC as the original, but more recent literature going back as far as 2010 stated that wasn't the case. He stated that Cincinnati officials were seeing as good absorption with the reactivated GAC as the new, so Rivanna would be trying regenerated GAC at South Rivanna. He stated that Cincinnati did this so often, they had their own kiln, whereas Rivanna had to send theirs out and it got transported, reactivated, and shelved until it was called for. Mr. Tungate noted that during the regeneration process, you lost 10-15% of the carbon so that was substituted with new carbon – so after five processes, there would be about half new carbon.

Mr. O'Connell asked if it was burned up.

Mr. Tungate stated he asked that question and was informed it was burned it up during regeneration. Regenerating it was another opportunity for us to optimize our operation.

Mr. Murphy asked if the $1.4 million cost for GAC was compared to when no GAC was used and it was the chemical solution.

Mr. Tungate responded that the chemical solution, which is using chloramines, was much more cost-effective.

Mr. O'Connell noted that there were capital costs as well as operational costs.

Dr. Palmer recalled $3 million, but perhaps that was just for the urban system.

Mr. Tungate stated they needed a storage reservoir and some chemical feed equipment for the chloramines, as there were many concerns about ammonia.

Mr. O'Connell mentioned that at the public meetings, people stated it was worth the expense to avoid the use of chloromines, and the bulk of the expenses was operational.

Dr. Palmer stated that during the public meetings, people were saying Rivanna had overestimated the cost of the GAC – but in hindsight, that was not the case.

Mr. Mawyer noted that it had been $29 million for design and construction of the GAC facilities.

Mr. Tungate presented a picture taken by a drone that showed the Crozet system under construction, and the GAC contactor vessels were in the background. He noted the location of

the chemical feed room, which was part of the GAC building, and the location of two sodium hypochlorite tanks.

Dr. Palmer asked how much extra it cost for maintenance of the GAC than what was budgeted, noting that the carbon had to be replaced because of how much rain had occurred.

Mr. Tungate stated that they had seen a big uptick in the TOC numbers on the raw water side, and that had an influence on what they were loading on the GAC vessels. He stated that the system itself did not have any maintenance other than some of the pumps that were involved, and the cost for replacement of the GAC depended on the market because it was a commodity. He noted that the price now was higher than it was in December because utilities were preparing for the May DBP season.

Ms. Galvin asked if it could be purchased while the price was low and stored.

Mr. Mawyer responded that staff was intending to do a public procurement to see what the lowest price was to provide the needed GAC and try to get the best market price – as well as a bid for regeneration – but they had not yet contemplated storing it. He stated that using GAC did create testing work for the laboratories, so one of the reasons for asking for a new chemist was because they were doing over 500 samples per month for the GAC program to monitor what was happening within the contactor vessels.

Ms. Galvin stated she also recalled that there were problems with chemicals and their reactions with the piping network system itself, and they did not have lead problems because they didn't have galvanized piping like they did in D.C. She asked if this led to greater longevity for the distribution system.

Mr. Tungate responded that when they brought the GAC online, the VDH asked them to evaluate the corrosivity of the water before and after GAC – and it was found that the water was not more corrosive after GAC, so it didn't really change the chemistry.

Dr. Palmer recalled that they were told the water chemistry here would work relatively well with chloramines.

Mr. Tungate stated that he did not remember that.

b. Presentation: Proposed FY 2020 – 2024 CIP

Mr. Mawyer reported that he had introduced the CIP to the RWSA Board in February, and there was discussion about bringing back the Ragged Mountain Reservoir to Observatory Treatment Plant pipeline and pump station projects, so staff reshuffled and brought the projects back to where they were in the earlier CIP and pushed some other projects out to keep the rates generally the same.

He stated that the new proposed CIP was $97.2 million, compared to the previous figure of $99.5 million provided in February. He stated there were still 42 projects in the program, with 37 to

complete this year and 5 split between the 2020-2024 CIP versus the 2025-2029 CIP to try to get the costs spread out further.

Mr. Mawyer stated that there were some major projects at Crozet, South Rivanna and Observatory treatment plants; the Sugar Hollow Dam rubber gate, slated to begin this year with replacement next summer; repairs to the South Rivanna Dam gates, which were discussed when they had the drought; the second pipe crossing under the Rivanna River and transmission main on Route 29 North, which would then hook into the new Route 29 Pump Station on Airport Road; a project at the North Rivanna Water Treatment Plant to relocate the lagoon that was flooded when they had the May 31, 2018 storm – with regulators requiring the lagoon to be moved; the Crozet Wastewater Flow Equalization Tank; security enhancements; and Ragged Mountain to Observatory water line and pumping station pulled back into 2022. He stated that this meant that $3.8 million of the total $18 million was funded within the first five years.

Mr. Mawyer presented information on a project first discussed with the Board in February, noting a dotted line on a map showing the new pipe from the Ragged Mountain Reservoir to the Observatory Water Treatment Plant and two older raw water pump stations that would also be replaced. He stated that this was an $18 million project, brought back to 2022 and extended to 2027 for completion. He stated that Rivanna was talking with UVA and VDOT about an alignment to get the pipe to the Observatory Treatment Plant, including easements.

Mr. Mawyer reported that they had already extended Beaver Creek Dam rehabilitation project schedule, with $13 million extended in the second five years, and for the Avon to Pantops water main, $2.7 million was pushed into the second five years. He stated they delayed rehabilitation of the gas storage vessel at Moore's Creek and the Berkley Sewer Pump Station near Albemarle High School. He stated the Berkley was a new project in the CIP, and both projects would start in 2025. He noted that they also deferred an addition to the Rivanna office building for staff space, along with work on biosolids thickeners at the Moores Creek wastewater treatment plant.

Mr. Mawyer reiterated that the proposed CIP for the next five years was $97.2 million. He stated they planned to use about $14 million in cash and $44 million in new debt. He stated that the ratio for the five-year plan would be 85% debt, 15% cash. He presented a payback schedule for the City that looked at 10 years of construction projects, noting that the rate increase would be 3.4% for this year and about 6% for the following four years – which was less than what staff had reported in February. He stated that the ACSA would have a 9% increase this year and would have about 7% each year of the following four years, which were also less than what was originally reported.

Mr. Mawyer summarized that the 2020-2024 CIP was $97.2 million with 37 projects in the five years plus five more projects that would be partially completed in that timeframe and finished in the second five years, representing a $56 million decrease from what the CIP was last year.

Dr. Palmer asked if the 15% cash was typical.

Mr. Wood responded that it was usually about 10%, as policy stipulated, and sometimes they would fall below but this year they were higher.

Mr. Mawyer added that staff would be bringing a cash reserves policy to the Board in late summer or fall, so they would know in the future how much to contribute to offset capital costs.

Mr. Gaffney asked if they had looked out 10 years for the CIP.

Mr. Mawyer replied that they actually projected out 15 years, but the rates were based on the next 10 years, and they were trying to make the rates relatively consistent.

Mr. Wood noted that in 2020, wastewater allocation shifted one percentage point from the City to the ACSA, so the costs based on flow were split 51%/49%, and the shift of 1% amounted to about $110K from the City to the ACSA.

Mr. O'Connell asked if the 15-year program was $250 million.

Mr. Mawyer confirmed this.

Mr. O'Connell stated that this was a big number.

Mr. Wood stated that it was also a 100% increase in assets.

Mr. Murphy asked for confirmation that with the Ragged Mountain to Observatory project, there were no expenses prior to 2022.

Mr. Mawyer responded that there were some, as they would be determining alignment and acquiring easements.

Ms. Galvin stated these were preconstruction costs.

Mr. O'Connell noted that there were those for Birdwood too.

Mr. Murphy stated that for City-owned parcels within the County, they should consider those impacts before committing.

Mr. Mawyer stated that they would get the available easements and go from there, and a lot of those were in VDOT right of ways. He noted that there were three City parcels that may be involved but not too many private parcels.

Mr. Murphy stated that they were also going through the 144 acres just acquired by the City.

Ms. Whitaker confirmed this.

Mr. Mawyer stated that no action was required at this time, and the budgets would be approved in May.

Mr. Krueger pointed out that the debt service for FY20 CIP was built into the operating budget, so the preliminary rates to be approved included all the projects for 2020.

c. Presentation: Proposed FY20 Operating Budget

Mr. Mawyer reported that the proposed FY20 operating budget was $36,167,000 – a $2.9 million or 8.7% increase over FY19, with $1.7 million in operating increase, and GAC representing $900K of that, and a debt service increase of $1.2 million. He stated that this translated to an increasing cost of $491K or 3.4% to the City over FY19, and $1.5 million or a 9% increase to the ACSA over FY19. He noted that Rivanna was using $667K from reserves to help offset expenses in the budget, but this could not be done perpetually, and it was almost all for GAC.

Mr. Mawyer explained that the budget continued to be dominated by debt service, with 47% of the budget being debt service; $8.5 million for personnel costs – salaries and benefits; the General Services costs included professional fees paid to consultants, utility costs, insurance, and permits. He stated that $6.6 million was for Operations and Maintenance, including chemicals for water treatment and GAC, building repairs, equipment repairs, and technology. He stated that Rivanna was debt-heavy with $200 million, with 47% in revenues paid out in debt service.

Ms. Galvin asked at what point they might consider getting staff instead of outside consultants and if 11% for General Services was a typical figure.

Mr. Mawyer responded that only $500K of the $4 million for General Service was for outside consultants.

Ms. Galvin noted that the cost of outside consultants periodically became an issue in the City's budget.

Mr. Mawyer stated that staff had met with him the previous day about wanting a new position, but this would also mean another office, more parking, more vehicles, computers, etc. – so the cost must include all of that. He stated that the way to evaluate it was whether it was a need they had all the time, or only twice a year for a week , and so forth – and they tried to use consultants if it wasn't a typical ongoing need, or a need that required regularly updated training and equipment that didn't make sense to budget.

Mr. Mawyer referenced a graph that showed the split between operating and debt service, with 53% operating and 47% debt service for the last three years consistently. He stated that they were able to accelerate the design, bidding and easement acquisition for the Birdwood waterline project and worked that all out, and thanked Michelle Simpson and George Cheape for managing that process. He stated they also started an instrumentation maintenance and calibration program, with an instrument tech position added in FY19 that has helped get that program launched. He stated that they were also starting the wholesale metering system and maintenance of existing meters in water plants and sewer pipes, and this program ensures that they were calibrated, with dependable information.

Mr. Mawyer stated that the RWSA had helped VDH prepare guidelines to manage harmful algae blooms, and Ms. Terry had led that effort. He noted that Ms. Whitaker had spent a lot of time on

the Route 29 pump station site acquisition with Mr. Krueger and others to decide how much they should pay for it. He added that they had completed the bathymetric/volume studies of the South Rivanna and Ragged Mountain reservoirs, and Ms. Terry would report on that in April. He stated that they finished the Crozet finished water pumping station, which helped pump water from the treatment plant into the distribution system. Mr. Mawyer stated that Ms. Nemeth and her staff have done a good job in recruiting for 19 positions since July 1, 2018.

Mr. Mawyer reported that they had about $275 million capital assets facilities, which included the five reservoirs, and there were six water treatment plants, wastewater plants, pump stations, and miles of pipe – as well as storm water management with the Lickinghole Creek Basin to diversify Rivanna's portfolio. He noted that they would do a bathymetric study of that basin in FY20.

Dr. Palmer asked when the Lickinghole Creek Basin would be dredged.

Mr. Mawyer responded that it would be informed by the bathymetric study and would have similar considerations as South Rivanna did.

Dr. Palmer commented that it was smaller but there were still people downstream who would be interested in the outcome of that study.

Ms. Whitaker stated that there was sediment coming in from upstream that was fairly significant, and she did not think the sediment in the basin was coming out from the dam as it was likely sediment being carried from upstream to downstream.

Ms. Galvin asked if this was being exacerbated by the excessive rain.

Dr. Palmer noted that the creek had changed its course a bit further down.

Mr. Mawyer noted that the facility was set up as a regional storm water retention area, so it was doing its job but required regular maintenance.

Dr. Palmer stated that she couldn't recall how Rivanna was charged with retaining a storm water retention area.

Ms. Whitaker stated that they owned and operated dams and thus seemed like a good candidate to own and operate a dam that removed sediments from the South Fork, as she recalled.

Mr. Mawyer stated that some budget drivers included replacement of the GAC at $900K and professional services for permits and study at $500K. He noted that the AWIA of 2018 required all utilities to do a risk and resiliency assessment, which was due in March 2020, and an emergency plan. He stated that Rivanna staff had done a study with a consultant a year or two ago and had a large part of the risk and resiliency assessment already completed but needed to fill in some gaps.

Mr. Mawyer noted that this was on the heels of the September 2001 bioterrorism act in New York, and the EPA had required all utilities to do a vulnerability assessment for bioterrorism. He stated that the EPA was now updating this to include more than just bioterrorism, as it should be for overall risk and resiliency and should consider natural disasters and manmade threats – so it was taking the baseline data but expanding it. He stated that Rivanna was required to complete this by March and certify to the EPA that they had completed it, so they were starting the process now.

Mr. Mawyer reported that Ms. Whitaker's team did annual dam inspections that the Department of Conservation and Recreation required, and even though there was a water withdrawal permit from the South Rivanna Reservoir, they were required to update the permit and submit it by 2022. He stated that the RWSA would get it started around January to update the withdrawal permit, and this was tied to the Community Water Supply Plan. He noted that there was also an internal agreement between the parties that every five years Rivanna would do a wastewater allocation measurement, with meters put in sewer pipes to see where the sewer was coming from in terms of City and ACSA – and costs were allocated based on those findings.

Mr. Mawyer reported that there were personnel costs in terms of staff salary merit increases, health insurance premiums increase, and two additional positions that he would discuss in more detail. He stated that biosolids disposal was a significant cost, and all of the biosolids coming out of the wastewater treatment process were put on a truck and shipped to Waverly, where they were made into compost – and that cost was about $600K annually. He stated that they were also working on maintenance of instruments and meters, and allocation of wastewater costs was also an issue in the current budget because it shifted 1% from the City to the ACSA and changed their contributions to those costs based on the retail wastewater flows as reported by those entities.

Ms. Galvin asked if the increased silt in rivers affected the longevity of the GAC.

Mr. Mawyer responded that there would likely be more organics when the water was turbid, and the filter would get dirty more quickly.

Mr. Mawyer reported that the operating expense increase was $1.7 million, with chemicals proposed to increase $1.1 million – with $900K just for replacing GAC material, which would have amounted to $1.5 million had they decided to replace it all twice. He stated they were still looking for the right mix with hybrid water and still achieve good results with DBP reductions. He stated that personnel merit increases represented about $164K or a 3% increase, with two additional positions: a construction inspector, who would help with the project at the Crozet Water Treatment plant, renovation at the South Rivanna Treatment Plant, and the Observatory Treatment plant, and building the Crozet Flow Equalization tank early in 2020; and a chemist in the laboratory to help with the 500-per-month samples for GAC-related items. He stated that healthcare premium increases were benchmarked at a 2% increase or $29K. He stated that the biosolids increase reflected the current year's costs of more than $600K to get next year's budget closer to actual. Mr. Mawyer stated that the same was true with the Rivanna Pump Station utilities and maintenance cost, now that the facility has been in operation for a year. He stated that other expenses included meter calibration, with an additional 25 meters brought into the program through the wholesale meter project.

Mr. Mawyer explained that the laboratory currently had three positions – Dr. Morris, one chemist, and one lab tech – and the new budget would add a second chemist; there were three inspectors in engineering, and the new budget would add another inspector. He stated they did not only construction inspection but the Miss Utility location projects. He stated that this would take the RWSA from 91 to 93 positions.

Mr. Mawyer reported that debt service was projected to increase $1.2 million to support the Birdwood waterline, Observatory Plant upgrade, South Rivanna Plant upgrade, the Ragged Mountain to Observatory pipe and pump station, the Crozet Water Treatment Plant under construction, Beaver Creek Dam work planned, and the Crozet flow equalization tank under the urban wastewater program, along with other projects in the CIP.

Mr. O'Connell asked for confirmation that debt service was increase $1.2 million and operations increase was $1.7 million.

Mr. Mawyer confirmed this.

Mr. Mawyer reported that the total budget was $36.167 million, an increase of $2.9 million over FY19, with the $1.7 million driven largely by the GAC material at $900K, and $1.2 million for debt service to cover planned projects. He noted that Mr. Wood distributed the costs between the City and ACSA, and there would be just an overall 1.2% increase in the water rate because $667K in reserves was being used to offset the water expenses, which was a cash reserve Rivanna had accumulated in anticipation of GAC being a cost issue.

Ms. Galvin asked if the reserves were replenished by the tap fees.

Mr. Mawyer responded that they were not, although Rivanna did get part of ACSA connection fees to help pay back the Buck Mountain loan.

Mr. O'Connell noted that it only amounted to about $40K.

Mr. Wood stated that the total was about $82K for two years.

Ms. Galvin asked if their connection fees were too low.

Mr. Mawyer clarified that this was just the contribution to RWSA for the connection fees, not the total amount.

Mr. O'Connell noted that the customers reaped the benefits of that.

Mr. O'Connell asked about other budgetary decisions that affected the increases, as at one point they had $1 million a year for GAC replacement.

Mr. Wood explained that they never really had $1 million built into the budget, and they started gradually increasing the expense side of the chemical budget and putting that money into

reserves, and they had built into the budget to reserve $450K; in the urban budget, they had $270K in the chemical budget, and that was based on running the GAC system in a hybrid approach with not all of the raw water passing through the GAC filters. He stated they had discussed last year the possibility of GAC regeneration and not having to change it out as often, so the operating conditions definitely changed but it was never built up to $1 million.

Mr. Mawyer stated that the costs were based on the results from actually having operated the GAC, and they were trying to create a strategy to optimize when DBPs started elevating unacceptably and avoid a diminishing return.

Dr. Palmer noted that it was costing $600K to dispose of the biosolids, and she would like to find out what it would mean to do this at Ivy – even though she knew it was highly controversial – as they were already composting other materials.

Mr. Mawyer responded that Mr. Tungate was working on an assessment of different alternatives for disposal of the biosolids, and that could be one item considered if there were the political will, as they had the technology to do it.

Dr. Palmer commented that Ivy had a lot of land there, and she would just like to know the options – as it would be more environmentally friendly to truck it only as far as Ivy.

Mr. Tungate stated they still disposed about 150 tons of biosolids a week, and he didn't know if the Ivy facility could handle it.

Mr. Mawyer stated that they had also been talking with McGill's at Waverly about bringing compost back, but it was made of biosolids – and if they could bring something back, perhaps it would help the cost.

Ms. Galvin asked who was buying biosolids.

Mr. Mawyer responded that landscaping companies, golf courses, parks, etc. were buying it.

Dr. Palmer stated that a lot of people around here spread biosolids on their farms, which was controversial, and they were selling it before they were trucking it down to Waverly. She asked if it was heat treated.

Mr. Mawyer responded that it was, noting that it needed to be heated to a higher temperature to get it to a class that humans could deal with.

Dr. Palmer stated her understanding was that the Class A was highly sought after.

Mr. Rob Haake responded that when they had the compost yard here, the demand was such that they couldn't keep it onsite – and traffic would be backed up to the gate on Saturdays.

Mr. O'Connell asked if it was sold in bagged form as well at McGill's.

Mr. Tungate responded that they were getting away from bagged form, but there was still some available.

Dr. Palmer stated that Ivy could be a potential site for that.

Dr. Palmer moved to adopt the preliminary rate resolution, which proposed rates for next year that supported the budget, and to set a public hearing on May 28 to adopt the rates. Mr. O'Connell seconded the motion, which passed unanimously (7-0).

Mr. O'Connell thanked staff for their hard work and flexibility in the budget process, as well as efforts to lessen impacts on customers.

9. OTHER ITEMS FROM BOARD/STAFF NOT ON AGENDA

There was none presented.

10. CLOSED MEETING

There was no closed meeting held.

11. ***ADJOURNMENT***

Ms. Galvin moved to adjourn the meeting. Mr. O'Connell seconded the motion, which passed unanimously (7-0).

The RWSA Board adjourned its meeting at 3:37 p.m.

RIVANNA WATER & SEWER AUTHORITY
RIVANNA SOLID WASTE AUTHORITY
BOARD OF DIRECTORS

Joint Resolution of Appreciation for Mike Murphy

WHEREAS, Mr. Murphy has served as a member of the Rivanna Water & Sewer Authority and Solid Waste Authority Boards of Directors since August of 2018; and

WHEREAS, over that same period Mr. Murphy has demonstrated leadership in water and sewer, solid waste and recycling services; and has been a valuable member of the Boards of Directors and a resource to the Authorities; and

WHEREAS, Mr. Murphy's understanding of the water, sewer, solid waste and recycling operations of the City of Charlottesville, the Water & Sewer Authority and the Solid Waste Authority has supported a strategic decision-making process that provided benefits to the customers served by the City of Charlottesville as well as the community as a whole.

WHEREAS, the Water & Sewer Authority and Solid Waste Authority Boards of Directors are most grateful for the professional and personal contributions Mr. Murphy has provided to both Authorities and to the community; and

NOW, THEREFORE, BE IT RESOLVED that the Rivanna Water & Sewer Authority and the Rivanna Solid Waste Authority Boards of Directors recognize, thank, and commend Mr. Murphy for his distinguished service, efforts, and achievements as a member of the Rivanna Water & Sewer Authority and the Rivanna Solid Waste Authority, and present this Resolution as a token of esteem, with their best wishes in his future endeavors.

BE IT FURTHER RESOLVED that this Resolution be entered upon both the permanent Minutes of the Rivanna Water & Sewer Authority and the Rivanna Solid Waste Authority.

Michael Gaffney, Chairman
Jeff Richardson
Kathy Galvin
Liz Palmer
Gary O'Connell
Lauren Hildebrand
Paul Oberdorfer
Trevor Henry

RIVANNA WATER & SEWER AUTHORITY
695 Moores Creek Lane | Charlottesville, Virginia 22902-9016
434.977.2970
434.293.8858
www.rivanna.org

MEMORANDUM

TO: **RIVANNA WATER & SEWER AUTHORITY BOARD OF DIRECTORS**

FROM: **BILL MAWYER, EXECUTIVE DIRECTOR**

SUBJECT: **EXECUTIVE DIRECTOR'S REPORT**

DATE: **APRIL 23, 2019**

STRATEGIC PLAN GOAL: WORKFORCE DEVELOPMENT

Fall Protection Safety Training

Our Safety Manager recently coordinated and hosted 4 sessions to train about 60 of our staff in safe Fall Protection procedures. Instruction was provided by a trainer from PVCC.

Recognitions

The professional qualifications of our staff continue to improve and enhance our services. The following employee has successfully completed the requirements for a higher-level license from the State:

- Thomas Corrice – Wastewater Operator Class 3 License

STRATEGIC PLAN GOAL: ENVIRONMENTAL STEWARDSHIP

Earth Day Cleanup Event

Staff will participate in a stream clean-up with the Rivanna Conservation Alliance on Earth Day, April 22. Staff will be collecting trash along Moores Creek. All trash collected will be sorted for recycling

STRATEGIC PLAN GOAL: OPERATIONAL OPTIMIZATION

Virginia's Draft Phase III Watershed Implementation Plan

The Office of the Virginia Secretary of Natural Resources, through the Department of Environmental Quality (DEQ), recently announced the release of Virginia's Draft Phase III Watershed Implementation Plan for meeting the Chesapeake Bay Total Maximum Daily Load (the Draft Phase III WIP) for public review and comment. Since Virginia is not on

track to meet its 2025 pollution reduction commitments to the EPA, this draft plan will require additional nutrient reductions from wastewater treatment plants to achieve 4 mg/l of TN (total nitrogen) and 0.3 mg/l of TP (total phosphorus) removal in the outgoing, treated wastewater.

Our preliminary assessment of these new and more stringent requirements indicate we are currently meeting the TN requirement, but may need to use additional chemicals to meet the TP requirement. We will continue to monitor these draft requirements, and the impact they may have on our operating budget.

New Virginia Legislation

Senate Bill 1554: Freedom of Information Act (FOIA); Civil Penalties Provides that in addition to any penalties imposed under FOIA, (i) if a court finds that any officer, employee, or member of a public body failed to provide public records to a requester in accordance with the provisions of FOIA because such officer, employee, or member of a public body altered or destroyed the requested public records with the intention of avoiding the provisions of FOIA prior to the expiration of the applicable record retention period set pursuant to the Virginia Public Records Act, the court may impose upon such officer, employee, or member in his individual capacity a civil penalty of up to $100 per record altered or destroyed and (ii) if a court finds that a member of a public body voted to certify a closed meeting and at the time of such certification an attorney representing the body was present and such certification was not in accordance with the requirements of FOIA, the court may impose on the public body a civil penalty of up to $1,000.

STRATEGIC PLAN GOAL: INFRASTRUCTURE AND MASTER PLANNING

Birdwood Water Line

Pipe installation is ongoing, with 3500 of 6100 LF completed. Staff is participating with UVAF staff in a monthly project update meeting with the residents of the Bellair subdivision.

South Rivanna to Ragged Mountain Water Line

Meetings are in progress with the UVA Foundation, VDOT, City staff and Albemarle School Board staff about locations for the water line easements. We have also been in contact with private property owners along the alignment, and anticipate making offers to acquire easements in late May.

Observatory Water Treatment Plant Lease

Meetings are underway with UVA staff to finalize updated lease and easement documents. Our goal is to complete these documents and obtain signatures this summer.

STRATEGIC PLAN GOAL: COMMUNICATION AND COLLABORATION

Community Outreach

Andrea Terry, Water Resources Manager, and Bethany Houchens, Water Quality Specialist, joined with Rivanna Conservation Alliance, Crozet Elementary School 5th grade students and Western Albemarle Environmental Academy students to plant buffer trees along Parrot Branch in Crozet. This project was organized by RCA and will help to protect the water quality of Beaver Creek Reservoir, as Parrott Branch is a tributary to the Reservoir.

Andrea led a discussion with students from Brian Richter's "Water Sustainability" class from UVA at the Ragged Mountain Reservoir. The students then went to the Observatory Water Treatment Plant for a tour with Wayne Barnes, Assistant Water Manager.

A group of students from Wester Albemarle High School's Environmental Sciences Academy toured Beaver Creek Dam and the Moores Creek facility. Wayne Barnes and Rob Haacke, Wastewater Manager, lead the tours.

Andrea and Katie McIlwee, Communications Manager, attended an Earth Day Festival at Hollymead Elementary School.

Dave Tungate, Director of Operations, provided a tour of the South Rivanna Water Treatment Plant to a group of students from the Wild Rock School.

Bill Mawyer, Executive Director, and staff will be providing an update to the Albemarle County Service Authority (ACSA) Board on May 16, 2019 and to the Crozet Community Advisory Committee (CCAC) on June 12, 2019.

RIVANNA WATER & SEWER AUTHORITY
695 Moores Creek Lane | Charlottesville, Virginia 22902-9016
434.977.2970
434.293.8858
www.rivanna.org

MEMORANDUM

TO: **RIVANNA WATER & SEWER AUTHORITY BOARD OF DIRECTORS**

FROM: **LONNIE WOOD, DIRECTOR OF FINANCE AND ADMINISTRATION**

REVIEWED: **BILL MAWYER, EXECUTIVE DIRECTOR**

SUBJECT: **MARCH MONTHLY FINANCIAL SUMMARY – FY 2019**

DATE: **APRIL 23, 2019**

Urban Water flow and rate revenues are 5% under budget estimates for the first nine months of this fiscal year, and Urban Wastewater flow and rate revenues are 42% over budget. Revenues and expenses are summarized in the table below:

	Urban Water	Urban Wastewater	Total Other Rate Centers	Total Authority
Operations				
Revenues	$ 5,088,242	$ 8,219,228	$ 1,625,637	$ 14,933,107
Expenses	(5,926,456)	(6,348,977)	(1,666,886)	(13,942,319)
Surplus (deficit)	$ (838,214)	$ 1,870,251	$ (41,249)	$ 990,788
Debt Service				
Revenues	$ 4,858,724	$ 6,551,177	$ 877,356	$ 12,287,257
Expenses	(4,807,051)	(6,463,269)	(872,976)	(12,143,296)
Surplus (deficit)	$ 51,673	$ 87,908	$ 4,380	$ 143,961
Total				
Revenues	$ 9,946,966	$ 14,770,405	$ 2,502,993	$ 27,220,364
Expenses	(10,733,507)	(12,812,246)	(2,539,862)	(26,085,615)
Surplus (deficit)	$ (786,541)	$ 1,958,159	$ (36,869)	$ 1,134,749

Despite overall operating revenues being $2.17 million higher than budget estimates, operating expenses are running $1.3 million over budget as well resulting in a net surplus of $990,000 for the operating category. This is mostly related to the significant amount of flow resulting from record amounts of rainfall and the related revenues from Urban Wastewater, as noted above. Overall, debt service revenues are higher than projected due to interest earnings being greater related to the rising interest rate environment causing a net surplus of $144,000 for the debt service category.

A. Professional Services (Urban Water, Scottsville Water, Urban Wastewater – pages 2, 4, 5) – The Urban Water rate center incurred some unbudgeted expenditures for Engineering and Technical Services related to safe yield modeling. This rate center has also spent

$30,000 more than the annual budget for legal fees related to the Observatory plant lease. Scottsville Water has exceeded the prorated budget for work done for Engineering and Technical Services for the Red Hill Community Water System, but ACSA is being billed for these costs. Urban Wastewater paid $45,900 for an analysis of the Moores Creek AWRRF Cogeneration System that was not budgeted.

B. Other Services & Charges (Urban Water, Scottsville Water, Urban Wastewater, Engineering – pages 2, 4, 5, 11) – Urban Water and Urban Wastewater are over budget on the cost of hauling biosolids to Waverly, Virginia to be composted. Urban Wastewater is also over budget on odor control costs for the Crozet Interceptor/Pump Stations, and utilities are running high. Scottsville Water is over budget on laboratory analysis fees. The Engineering department is over budget due to late posting of an ACSA invoice for modeling services for the quarter in June 2018.

C. Equipment Purchases (Urban Water, Scottsville Water – pages 2, 4) – Scottsville Water spent $50,000 in October for the unbudgeted purchase of a replacement flocculator. Urban Water is $182,000 over the prorated budget in this category, primarily due to replacing a finished water pump at the South Rivanna plant and a high service pump at North Rivanna.

D. Operations & Maintenance (Urban Water, Crozet Water, Urban Wastewater, Glenmore Wastewater, Lab, Maintenance, Engineering – pages 2-5, 9-11) – Urban Water paid about $200,000 for last June's North Rivanna Waterline emergency repairs. Urban Water has spent $368,000 more than the prorated budget for chemicals, related to underbudgeting for GAC chemical purchases. Chemical cost overages for algae treatments of the Beaver Creek Reservoir and for the purchase of GAC chemicals are the main reasons Crozet Water is $137,000 over budget in the Operations & Maintenance expense category. Urban Wastewater is $87,000 over the prorated budget for chemical purchases related to the significant flows for the year, and Glenmore Wastewater went over the prorated budget on pump repairs. Urban Wastewater has spent over $118,000 to replace UV bulbs at the Moores Creek plant and $154,000 in March for a Moores Creek stream bank repair. The January payment to renew annual service contracts for instrumentation pushed Urban Wastewater over its annual budget for instrumentation costs by $29,000 and the Lab department by $5,000. The Lab, Maintenance and Engineering departments are over the prorated budget on vehicle and equipment repairs.

E. Communications (Urban Water – page 2) – Urban Water's telephone and data service charges are running higher than estimated.

F. Information Technology (Administration – page 8) – The Administration department made an unbudgeted purchase of OCR software in March.

Attachments

Rivanna Water & Sewer Authority
Monthly Financial Statements - March 2019
Fiscal Year 2019

Consolidated
Revenues and Expenses Summary

Operating Budget vs. Actual

	Notes	*Budget FY 2019*	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Revenues						
Operations Rate Revenue		$ 16,387,174	$ 12,290,381	$ 14,308,463	$ 2,018,083	16.42%
Lease Revenue		100,000	75,000	71,754	(3,246)	-4.33%
Admin., Maint. & Engineering Revenue		462,000	346,500	369,280	22,780	6.57%
Other Revenues		528,084	396,063	515,834	119,771	30.24%
Interest Allocation		28,050	21,038	37,055	16,018	76.14%
Total Operating Revenues		**$ 17,505,308**	**$ 13,128,981**	**$ 15,302,387**	**$ 2,173,406**	**16.55%**
Expenses						
Personnel Cost		$ 8,429,784	$ 6,204,679	$ 5,825,417	$ 379,262	6.11%
Professional Services	**A**	710,250	532,688	702,090	(169,403)	-31.80%
Other Services & Charges	**B**	2,814,735	2,111,051	2,483,724	(372,673)	-17.65%
Communications	**E**	143,105	107,329	124,054	(16,725)	-15.58%
Information Technology	**F**	341,450	256,088	281,410	(25,323)	-9.89%
Supplies		43,920	32,940	35,774	(2,834)	-8.60%
Operations & Maintenance	**D**	3,719,660	2,789,745	3,724,691	(934,946)	-33.51%
Equipment Purchases	**C**	459,400	344,550	502,189	(157,639)	-45.75%
Depreciation		843,000	632,250	632,250	-	0.00%
Reserve Transfers		-	-	-	-	
Total Operating Expenses		**$ 17,505,304**	**$ 13,011,319**	**$ 14,311,600**	**$ (1,300,281)**	**-9.99%**
Operating Surplus/(Deficit)		**$ 4**	**$ 117,662**	**$ 990,787**		

Debt Service Budget vs. Actual

Revenues						
Debt Service Rate Revenue		$ 14,852,531	$ 11,139,398	$ 11,139,390	$ (8)	0.00%
Use of Reserves for 2016 Bond DS		300,000	225,000	225,000	-	0.00%
Septage Receiving Support - County		109,440	82,080	109,441	27,361	33.33%
Buck Mountain Surcharge		118,600	88,950	110,300	21,350	24.00%
Buck Mountain Lease Revenue		1,600	1,200	-	(1,200)	-100.00%
Trust Fund Interest		46,400	34,800	131,262	96,462	277.19%
Reserve Fund Interest		344,000	258,000	571,864	313,864	121.65%
Total Debt Service Revenues		**$ 15,772,571**	**$ 11,829,428**	**$ 12,287,258**	**$ 457,829**	**3.87%**
Debt Service Costs						
Total Principal & Interest		$ 12,295,400	$ 9,221,550	$ 9,221,550	$ -	0.00%
Reserve Additions-Interest		344,000	258,000	571,864	(313,864)	-121.65%
Debt Service Ratio Charge		725,000	543,750	543,750	-	0.00%
Reserve Additions-CIP Growth		2,408,175	1,806,131	1,806,131	-	0.00%
Total Debt Service Costs		**$ 15,772,575**	**$ 11,829,431**	**$ 12,143,296**	**$ (313,864)**	**-2.65%**
Debt Service Surplus/(Deficit)		**$ (4)**	**$ (3)**	**$ 143,962**		

Summary

Total Revenues	$ 33,277,879	$ 24,958,409	$ 27,589,645	$ 2,631,236	10.54%
Total Expenses	33,277,879	24,840,751	26,454,896	(1,614,145)	-6.50%
Surplus/(Deficit)	**$ 0**	**$ 117,659**	**$ 1,134,749**		

Rivanna Water & Sewer Authority
Monthly Financial Statements - March 2019

Urban Water Rate Center
Revenues and Expenses Summary

	Notes	*Budget FY 2019*	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Operating Budget vs. Actual						
Revenues						
Operations Rate Revenue		$ 7,034,788	$ 5,276,091	$ 4,991,519	$ (284,572)	-5.39%
Lease Revenue		70,000	52,500	50,663	(1,837)	-3.50%
Miscellaneous		-	-	30,316	30,316	
Interest Allocation		12,000	9,000	15,743	6,743	74.93%
Total Operating Revenues		**$ 7,116,788**	**$ 5,337,591**	**$ 5,088,242**	**$ (249,349)**	**-4.67%**
Expenses						
Personnel Cost		$ 1,903,779	$ 1,402,975	$ 1,309,344	$ 93,632	6.67%
Professional Services	**A**	329,250	246,938	441,378	(194,440)	-78.74%
Other Services & Charges	**B**	582,700	437,025	461,858	(24,833)	-5.68%
Communications	**E**	64,200	48,150	59,212	(11,062)	-22.97%
Information Technology		65,300	48,975	39,675	9,300	18.99%
Supplies		5,000	3,750	6,300	(2,550)	-67.99%
Operations & Maintenance	**D**	1,570,660	1,177,995	1,619,596	(441,601)	-37.49%
Equipment Purchases	**C**	106,600	79,950	262,056	(182,106)	-227.78%
Depreciation		300,000	225,000	225,000	-	0.00%
Reserve Transfers		-	-	-	-	
Subtotal Before Allocations		$ 4,927,489	$ 3,670,758	$ 4,424,418	$ (753,660)	-20.53%
Allocation of Support Departments		2,189,298	1,614,430	1,502,038	112,391	6.96%
Total Operating Expenses		**$ 7,116,787**	**$ 5,285,187**	**$ 5,926,456**	**$ (641,269)**	**-12.13%**
Operating Surplus/(Deficit)		**$ 1**	**$ 52,404**	**$ (838,214)**		
Debt Service Budget vs. Actual						
Revenues						
Debt Service Rate Revenue		$ 5,863,271	$ 4,397,453	$ 4,397,454	$ 1	0.00%
Trust Fund Interest		18,000	13,500	45,023	31,523	233.50%
Reserve Fund Interest		184,000	138,000	305,947	167,947	121.70%
Buck Mountain Surcharge		118,600	88,950	110,300	21,350	24.00%
Lease Revenue		1,600	1,200	-	(1,200)	-100.00%
Total Debt Service Revenues		**$ 6,185,471**	**$ 4,639,103**	**$ 4,858,724**	**$ 219,621**	**4.73%**
Debt Service Costs						
Total Principal & Interest		$ 4,190,796	$ 3,143,097	$ 3,143,097	$ -	0.00%
Reserve Additions-Interest		184,000	138,000	305,947	(167,947)	-121.70%
Debt Service Ratio Charge		400,000	300,000	300,000	-	0.00%
Reserve Additions-CIP Growth		1,410,675	1,058,006	1,058,006	-	0.00%
Total Debt Service Costs		**$ 6,185,471**	**$ 4,639,103**	**$ 4,807,051**	**$ (167,947)**	**-3.62%**
Debt Service Surplus/(Deficit)		**$ -**	**$ -**	**$ 51,674**		

Rate Center Summary

Total Revenues	$ 13,302,259	$ 9,976,694	$ 9,946,966	$ (29,728)	-0.30%
Total Expenses	13,302,258	9,924,291	10,733,507	(809,217)	-8.15%
Surplus/(Deficit)	**$ 1**	**$ 52,404**	**$ (786,541)**		
Costs per 1000 Gallons	2.09		2.46		
Thousand Gallons Treated	3,397,700	2,548,275	2,411,362	(136,913)	-5.37%
or					
Flow (MGD)	9.309		8.801		

Rivanna Water & Sewer Authority
Monthly Financial Statements - March 2019

Crozet Water Rate Center
Revenues and Expenses Summary

	Notes	*Budget FY 2019*	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Operating Budget vs. Actual						
Revenues						
Operations Rate Revenue		$ 957,384	$ 718,038	$ 718,038	$ -	0.00%
Lease Revenues		30,000	22,500	21,091	(1,409)	-6.26%
Interest Allocation		1,700	1,275	2,226	951	74.62%
Total Operating Revenues		**$ 989,084**	**$ 741,813**	**$ 741,356**	**$ (457)**	**-0.06%**
Expenses						
Personnel Cost		$ 288,389	$ 212,543	$ 197,809	$ 14,734	6.93%
Professional Services		30,000	22,500	2,175	20,325	90.33%
Other Services & Charges		126,960	95,220	96,223	(1,003)	-1.05%
Communications		4,450	3,338	4,520	(1,182)	-35.43%
Information Technology		14,200	10,650	360	10,290	96.62%
Supplies		620	465	1,082	(617)	-132.58%
Operations & Maintenance	D	261,150	195,863	333,053	(137,190)	-70.04%
Equipment Purchases		26,450	19,838	9,299	10,539	53.13%
Depreciation		30,000	22,500	22,500	-	0.00%
Reserve Transfers		-	-	-	-	
Subtotal Before Allocations		$ 782,219	$ 582,915	$ 667,020	$ (84,105)	-14.43%
Allocation of Support Departments		206,863	152,551	141,971	10,580	6.94%
Total Operating Expenses		**$ 989,082**	**$ 735,466**	**$ 808,991**	**$ (73,524)**	**-10.00%**
Operating Surplus/(Deficit)		**$ 2**	**$ 6,347**	**$ (67,635)**		
Debt Service Budget vs. Actual						
Revenues						
Debt Service Rate Revenue		$ 995,568	$ 746,676	$ 746,676	$ -	0.00%
Trust Fund Interest		1,800	1,350	4,594	3,244	240.31%
Reserve Fund Interest		6,700	5,025	11,379	6,354	126.45%
Total Debt Service Revenues		**$ 1,004,068**	**$ 753,051**	**$ 762,649**	**$ 9,598**	**1.27%**
Debt Service Costs						
Total Principal & Interest		$ 426,071	$ 319,553	$ 319,553	$ -	0.00%
Reserve Additions-Interest		6,700	5,025	11,379	(6,354)	-126.45%
Reserve Additions-CIP Growth		571,300	428,475	428,475	-	0.00%
Total Debt Service Costs		**$ 1,004,071**	**$ 753,053**	**$ 759,407**	**$ (6,354)**	**-0.84%**
Debt Service Surplus/(Deficit)		**$ (3)**	**$ (2)**	**$ 3,242**		
Rate Center Summary						
Total Revenues		$ 1,993,152	$ 1,494,864	$ 1,504,005	$ 9,141	0.61%
Total Expenses		1,993,153	1,488,520	1,568,398	(79,878)	-5.37%
Surplus/(Deficit)		**$ (1)**	**$ 6,344**	**$ (64,393)**		
Costs per 1000 Gallons		5.02		5.36		
Thousand Gallons Treated		196,946	147,710	150,962	3,253	2.20%
Flow (MGD)		0.540		0.551		

Rivanna Water & Sewer Authority
Monthly Financial Statements - March 2019

Scottsville Water Rate Center
Revenues and Expenses Summary

	Notes	*Budget FY 2019*	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Operating Budget vs. Actual						
Revenues						
Operations Rate Revenue		$ 443,328	$ 332,496	$ 332,496	$ -	0.00%
Red Hill		-	-	43,362	$ 43,362	
Interest Allocation		750	563	999	437	77.68%
Total Operating Revenues		**$ 444,078**	**$ 333,059**	**$ 376,857**	**$ 43,799**	**13.15%**
Expenses						
Personnel Cost		$ 153,885	$ 113,428	$ 104,358	$ 9,071	8.00%
Professional Services	A	20,000	15,000	26,440	(11,440)	-76.27%
Other Services & Charges	B	28,680	21,510	30,369	(8,859)	-41.19%
Communications		3,210	2,408	3,390	(983)	-40.82%
Information Technology		7,000	5,250	7,066	(1,816)	-34.59%
Supplies		750	563	-	563	100.00%
Operations & Maintenance		66,570	49,928	54,896	(4,969)	-9.95%
Equipment Purchases	C	14,000	10,500	59,954	(49,454)	-470.99%
Depreciation		20,000	15,000	15,000	(0)	0.00%
Reserve Transfers		-	-	-	-	
Subtotal Before Allocations		$ 314,095	$ 233,586	$ 301,474	$ (67,889)	-29.06%
Allocation of Support Departments		129,988	95,874	89,260	6,614	6.90%
Total Operating Expenses		**$ 444,083**	**$ 329,460**	**$ 390,734**	**$ (61,274)**	**-18.60%**
Operating Surplus/(Deficit)		**$ (5)**	**$ 3,599**	**$ (13,877)**		
Debt Service Budget vs. Actual						
Revenues						
Debt Service Rate Revenue		$ 129,280	$ 96,960	$ 96,957	$ (3)	0.00%
Trust Fund Interest		400	300	1,313	1,013	337.54%
Reserve Fund Interest		3,300	2,475	5,695	3,220	130.11%
Total Debt Service Revenues		**$ 132,980**	**$ 99,735**	**$ 103,965**	**$ 4,230**	**4.24%**
Debt Service Costs						
Total Principal & Interest		$ 129,680	$ 97,260	$ 97,260	$ -	0.00%
Reserve Additions-Interest		3,300	2,475	5,695	(3,220)	
Reserve Additions-CIP Growth		-	-	-	-	
Total Debt Service Costs		**$ 132,980**	**$ 99,735**	**$ 102,955**	**$ (3,220)**	**-3.23%**
Debt Service Surplus/(Deficit)		**$ -**	**$ -**	**$ 1,010**		
Rate Center Summary						
Total Revenues		$ 577,058	$ 432,794	$ 480,822	$ 48,029	11.10%
Total Expenses		577,063	429,195	493,689	(64,494)	-15.03%
Surplus/(Deficit)		**$ (5)**	**$ 3,599**	**$ (12,867)**		
Costs per 1000 Gallons		23.70		32.92		
Thousand Gallons Treated		18,738	14,054	11,868	(2,186)	-15.55%
or						
Flow (MGD)		0.051		0.043		

Rivanna Water & Sewer Authority
Monthly Financial Statements - March 2019

Urban Wastewater Rate Center
Revenues and Expenses Summary

Operating Budget vs. Actual

	Notes	Budget FY 2019	Budget Year-to-Date	Actual Year-to-Date	Budget vs. Actual	Variance Percentage
Revenues						
Operations Rate Revenue		$ 7,277,082	$ 5,457,812	$ 7,760,466	$ 2,302,655	42.19%
Stone Robinson WWTP		28,084	21,063	16,783	(4,280)	-20.32%
Septage Acceptance		410,000	307,500	320,422	12,922	4.20%
Nutrient Credits		90,000	67,500	104,060	36,560	54.16%
Miscellaneous Revenue		-	-	891	891	
Interest Allocation		12,500	9,375	16,606	7,231	77.13%
Total Operating Revenues		**$ 7,817,666**	**$ 5,863,250**	**$ 8,219,228**	**$ 2,355,979**	**40.18%**
Expenses						
Personnel Cost		$ 1,282,792	$ 944,760	$ 892,506	$ 52,254	5.53%
Professional Services	A	54,000	40,500	62,170	(21,670)	-53.51%
Other Services & Charges	B	1,816,225	1,362,169	1,726,958	(364,789)	-26.78%
Communications		10,430	7,823	9,010	(1,187)	-15.18%
Information Technology		57,250	42,938	47,874	(4,936)	-11.50%
Supplies		2,700	2,025	919	1,106	54.60%
Operations & Maintenance	D	1,408,900	1,056,675	1,397,569	(340,894)	-32.26%
Equipment Purchases		74,500	55,875	46,089	9,786	17.51%
Depreciation		470,000	352,500	352,500	(0)	0.00%
Reserve Transfers		-	-	-	-	
Subtotal Before Allocations		$ 5,176,797	$ 3,865,264	$ 4,535,595	$ (670,331)	-17.34%
Allocation of Support Departments		2,640,868	1,947,612	1,813,382	134,229	6.89%
Total Operating Expenses		**$ 7,817,665**	**$ 5,812,875**	**$ 6,348,977**	**$ (536,102)**	**-9.22%**
Operating Surplus/(Deficit)		**$ 1**	**$ 50,374**	**$ 1,870,251**		

Debt Service Budget vs. Actual

Revenues						
Debt Service Rate Revenue		$ 7,854,820	$ 5,891,115	$ 5,891,112	$ (3)	0.00%
Use of Reserves for 2016 Bond DS		300,000	225,000	225,000	-	0.00%
Septage Receiving Support - County		109,440	82,080	109,441	27,361	33.33%
Trust Fund Interest		26,200	19,650	80,201	60,551	308.15%
Reserve Fund Interest		148,000	111,000	245,423	134,423	121.10%
Total Debt Service Revenues		**$ 8,438,460**	**$ 6,328,845**	**$ 6,551,177**	**$ 222,332**	**3.51%**
Debt Service Costs						
Total Principal & Interest		$ 7,539,261	$ 5,654,446	$ 5,654,446	$ -	0.00%
Reserve Additions-Interest		148,000	111,000	245,423	(134,423)	-121.10%
Debt Service Ratio Charge		325,000	243,750	243,750	-	0.00%
Reserve Additions-CIP Growth		426,200	319,650	319,650	-	0.00%
Total Debt Service Costs		**$ 8,438,461**	**$ 6,328,846**	**$ 6,463,269**	**$ (134,423)**	**-2.12%**
Debt Service Surplus/(Deficit)		**$ (1)**	**$ (1)**	**$ 87,908**		

Rate Center Summary

Total Revenues	$ 16,256,126	$ 12,192,095	$ 14,770,406	$ 2,578,311	21.15%
Total Expenses	16,256,126	12,141,721	12,812,246	(670,525)	-5.52%
Surplus/(Deficit)	**$ (0)**	**$ 50,373**	**$ 1,958,159**		
Costs per 1000 Gallons	2.31		1.76		
Thousand Gallons Treated	3,390,400	2,542,800	3,616,247	1,073,447	42.22%
or					
Flow (MGD)	9.289		13.198		

Rivanna Water & Sewer Authority
Monthly Financial Statements - March 2019

Glenmore Wastewater Rate Center
Revenues and Expenses Summary

	Notes	*Budget FY 2019*	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Operating Budget vs. Actual						
Revenues						
Operations Rate Revenue		$ 372,720	$ 279,540	$ 279,540	$ -	0.00%
Interest Allocation		600	450	814	364	80.93%
Total Operating Revenues		**$ 373,320**	**$ 279,990**	**$ 280,354**	**$ 364**	**0.13%**
Expenses						
Personnel Cost		$ 94,490	$ 69,592	$ 65,994	$ 3,598	5.17%
Professional Services		3,000	2,250	-	2,250	
Other Services & Charges		39,510	29,633	26,338	3,294	11.12%
Communications		2,600	1,950	2,350	(400)	-20.49%
Information Technology		3,350	2,513	-	2,513	100.00%
Supplies		100	75	-	75	100.00%
Operations & Maintenance	D	121,450	91,088	96,446	(5,358)	-5.88%
Equipment Purchases		2,900	2,175	1,800	375	17.24%
Depreciation		5,000	3,750	3,750	0	0.00%
Subtotal Before Allocations		$ 272,400	$ 203,024	$ 196,677	$ 6,347	3.13%
Allocation of Support Departments		100,915	74,449	69,183	5,266	7.07%
Total Operating Expenses		**$ 373,315**	**$ 277,473**	**$ 265,860**	**$ 11,613**	**4.19%**
Operating Surplus/(Deficit)		**$ 5**	**$ 2,517**	**$ 14,494**		
Debt Service Budget vs. Actual						
Revenues						
Debt Service Rate Revenue		$ 1,586	$ 1,190	$ 1,188	$ (2)	-0.13%
Trust Fund Interest		-	-	-	-	
Reserve Fund Interest		1,000	750	1,716	966	128.75%
Total Debt Service Revenues		**$ 2,586**	**$ 1,940**	**$ 2,904**	**$ (2)**	**-0.08%**
Debt Service Costs						
Total Principal & Interest		$ 1,586	$ 1,190	$ 1,190	$ -	0.00%
Reserve Additions-Interest		1,000	750	1,716	(966)	-128.75%
Total Debt Service Costs		**$ 2,586**	**$ 1,940**	**$ 2,905**	**$ (966)**	**-49.79%**
Debt Service Surplus/(Deficit)		**$ -**	**$ -**	**$ (2)**		
Rate Center Summary						
Total Revenues		$ 375,906	$ 281,930	$ 283,258	$ 1,328	0.47%
Total Expenses		375,901	279,413	268,765	10,648	3.81%
Surplus/(Deficit)		**$ 5**	**$ 2,517**	**$ 14,493**		
Costs per 1000 Gallons		8.60		6.33		
Thousand Gallons Treated		43,412	32,559	42,032	9,473	**29.09%**
or						
Flow (MGD)		0.119		0.153		

Rivanna Water & Sewer Authority
Monthly Financial Statements - March 2019

Scottsville Wastewater Rate Center
Revenues and Expenses Summary

	Budget FY 2019	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Notes					
Revenues					
Operations Rate Revenue	$ 301,872	$ 226,404	$ 226,404	$ -	0.00%
Interest Allocation	500	375	666	291	77.58%
Total Operating Revenues	**$ 302,372**	**$ 226,779**	**$ 227,070**	**$ 291**	**0.13%**
Expenses					
Personnel Cost	$ 94,515	$ 69,611	$ 65,994	$ 3,617	5.20%
Professional Services	2,000	1,500	-	1,500	100.00%
Other Services & Charges	28,400	21,300	16,249	5,051	23.71%
Communications	2,630	1,973	2,960	(988)	-50.08%
Information Technology	2,350	1,763	-	1,763	100.00%
Supplies	100	75	446	(371)	-494.01%
Operations & Maintenance	57,850	43,388	35,740	7,647	17.63%
Equipment Purchases	3,200	2,400	2,450	(50)	-2.08%
Depreciation	18,000	13,500	13,500	-	0.00%
Subtotal Before Allocations	$ 209,045	$ 155,508	$ 137,339	$ 18,169	11.68%
Allocation of Support Departments	93,328	68,849	63,962	4,887	7.10%
Total Operating Expenses	**$ 302,372**	**$ 224,357**	**$ 201,301**	**$ 23,056**	**10.28%**
Operating Surplus/(Deficit)	**$ (0)**	**$ 2,422**	**$ 25,769**		

Operating Budget vs. Actual

Debt Service Budget vs. Actual

Revenues					
Debt Service Rate Revenue	$ 8,006	$ 6,005	$ 6,003	$ (2)	-0.02%
Trust Fund Interest	-	-	131	131	
Reserve Fund Interest	1,000	750	1,704	954	127.18%
Total Debt Service Revenues	**$ 9,006**	**$ 6,755**	**$ 7,838**	**$ 1,084**	**16.04%**
Debt Service Costs					
Total Principal & Interest	$ 8,006	$ 6,005	$ 6,005	$ -	0.00%
Reserve Additions-Interest	1,000	750	1,704	(954)	
Estimated New Principal & Interest	-	-	-	-	
Total Debt Service Costs	**$ 9,006**	**$ 6,755**	**$ 7,708**	**$ (954)**	**-14.12%**
Debt Service Surplus/(Deficit)	**$ -**	**$ -**	**$ 130**		

Rate Center Summary

Total Revenues	$ 311,378	$ 233,534	$ 234,908	$ 1,375	0.59%
Total Expenses	311,378	231,112	209,010	22,102	9.56%
Surplus/(Deficit)	**$ (0)**	**$ 2,422**	**$ 25,899**		
Costs per 1000 Gallons	15.14		8.25		
Thousand Gallons Treated	19,966	14,975	24,390	9,416	**62.88%**
or					
Flow (MGD)	0.055		0.089		

Rivanna Water & Sewer Authority
Monthly Financial Statements - March 2019

Administration

Operating Budget vs. Actual

	Notes	*Budget FY 2019*	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Revenues						
Payment for Services SWA		$ 460,000	$ 345,000	$ 345,000	$ (0)	0.00%
Miscellaneous Revenue		2,000	1,500	7,898	6,398	426.50%
Total Operating Revenues		**$ 462,000**	**$ 346,500**	**$ 352,897**	**$ 6,397**	**1.85%**
Expenses						
Personnel Cost		$ 1,796,150	$ 1,320,223	$ 1,272,306	$ 47,917	3.63%
Professional Services		228,000	171,000	158,289	12,711	7.43%
Other Services & Charges		140,980	105,735	74,859	30,876	29.20%
Communications		20,280	15,210	15,949	(739)	-4.86%
Information Technology	**F**	138,500	103,875	151,297	(47,422)	-45.65%
Supplies		21,000	15,750	18,554	(2,804)	-17.81%
Operations & Maintenance		60,400	45,300	31,713	13,587	29.99%
Equipment Purchases		27,500	20,625	9,689	10,936	53.02%
Depreciation		-	-	-	-	
Total Operating Expenses		**$ 2,432,810**	**$ 1,797,718**	**$ 1,732,657**	**$ 65,061**	**3.62%**

Department Summary

Net Costs Allocable to Rate Centers		**$ (1,970,810)**	**$ (1,451,218)**	**$ (1,379,760)**	**$ (71,459)**	**4.92%**
Allocations to the Rate Centers						
Urban Water	44.00%	**$ 867,157**	**$ 638,536**	**$ 607,094**	**$ 31,442**	
Crozet Water	4.00%	**$ 78,832**	**58,049**	**55,190**	**2,858**	
Scottsville Water	2.00%	**$ 39,416**	**29,024**	**27,595**	**1,429**	
Urban Wastewater	48.00%	**$ 945,989**	**696,585**	**662,285**	**34,300**	
Glenmore Wastewater	1.00%	**$ 19,708**	**14,512**	**13,798**	**715**	
Scottsville Wastewater	1.00%	**$ 19,708**	**14,512**	**13,798**	**715**	
	100.00%	**$ 1,970,810**	**$ 1,451,218**	**$ 1,379,760**	**$ 71,459**	

Rivanna Water & Sewer Authority
Monthly Financial Statements - March 2019

Maintenance

Operating Budget vs. Actual

	Notes	*Budget FY 2019*	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Revenues						
Miscellaneous Revenue		-	-	2,137	2,137	
Total Operating Revenues		**$ -**	**$ -**	**$ 2,137**	**$ 2,137**	
Expenses						
Personnel Cost		$ 1,304,247	$ 959,965	$ 869,470	$ 90,495	9.43%
Professional Services		-	-	-	-	
Other Services & Charges		17,500	13,125	13,390	(265)	-2.02%
Communications		17,325	12,994	14,574	(1,581)	-12.17%
Information Technology		6,500	4,875	3,025	1,850	37.95%
Supplies		2,000	1,500	361	1,139	75.96%
Operations & Maintenance	D	64,300	48,225	63,401	(15,176)	-31.47%
Equipment Purchases		105,650	79,238	82,167	(2,930)	-3.70%
Depreciation		-	-	-	-	
Total Operating Expenses		**$ 1,517,522**	**$ 1,119,921**	**$ 1,046,389**	**$ 73,533**	**6.57%**

Department Summary

Net Costs Allocable to Rate Centers		**$ (1,517,522)**	**$ (1,119,921)**	**$ (1,044,252)**	**$ (71,396)**	**6.38%**
Allocations to the Rate Centers						
Urban Water	30.00%	**$ 455,256**	**$ 335,976**	**$ 313,276**	**$ 22,701**	
Crozet Water	3.50%	**53,113**	**39,197**	**36,549**	**2,648**	
Scottsville Water	3.50%	**53,113**	**39,197**	**36,549**	**2,648**	
Urban Wastewater	56.50%	**857,400**	**632,756**	**590,002**	**42,753**	
Glenmore Wastewater	3.50%	**53,113**	**39,197**	**36,549**	**2,648**	
Scottsville Wastewater	3.00%	**45,526**	**33,598**	**31,328**	**2,270**	
	100.00%	**$ 1,517,522**	**$ 1,119,921**	**$ 1,044,252**	**$ 75,670**	

Rivanna Water & Sewer Authority
Monthly Financial Statements - March 2019

Laboratory

Operating Budget vs. Actual

	Notes	*Budget FY 2019*	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Revenues						
N/A						
Expenses						
Personnel Cost		$ 301,100	$ 221,586	$ 211,760	$ 9,825	4.43%
Professional Services		-	-	-	-	
Other Services & Charges		14,230	10,673	1,815	8,858	83.00%
Communications		800	600	1,665	(1,065)	
Information Technology		2,500	1,875	-	1,875	100.00%
Supplies		2,150	1,613	926	687	42.59%
Operations & Maintenance	D	53,500	40,125	57,624	(17,499)	-43.61%
Equipment Purchases		72,100	54,075	11,218	42,857	79.25%
Depreciation		-	-	-	-	
Total Operating Expenses		**$ 446,380**	**$ 330,546**	**$ 285,007**	**$ 45,539**	**13.78%**

Department Summary

Net Costs Allocable to Rate Centers	**$ (446,380)**	**$ (330,546)**	**$ (285,007)**	**$ (45,539)**	**13.78%**
Allocations to the Rate Centers					
Urban Water 44.00%	**$ 196,407**	**$ 145,440**	**$ 125,403**	**$ 20,037**	
Crozet Water 4.00%	**17,855**	**13,222**	**11,400**	**1,822**	
Scottsville Water 2.00%	**8,928**	**6,611**	**5,700**	**911**	
Urban Wastewater 47.00%	**209,799**	**155,356**	**133,953**	**21,403**	
Glenmore Wastewater 1.50%	**6,696**	**4,958**	**4,275**	**683**	
Scottsville Wastewater 1.50%	**6,696**	**4,958**	**4,275**	**683**	
100.00%	**$ 446,380**	**$ 330,546**	**$ 285,007**	**$ 45,539**	

Rivanna Water & Sewer Authority
Monthly Financial Statements - March 2019

Engineering

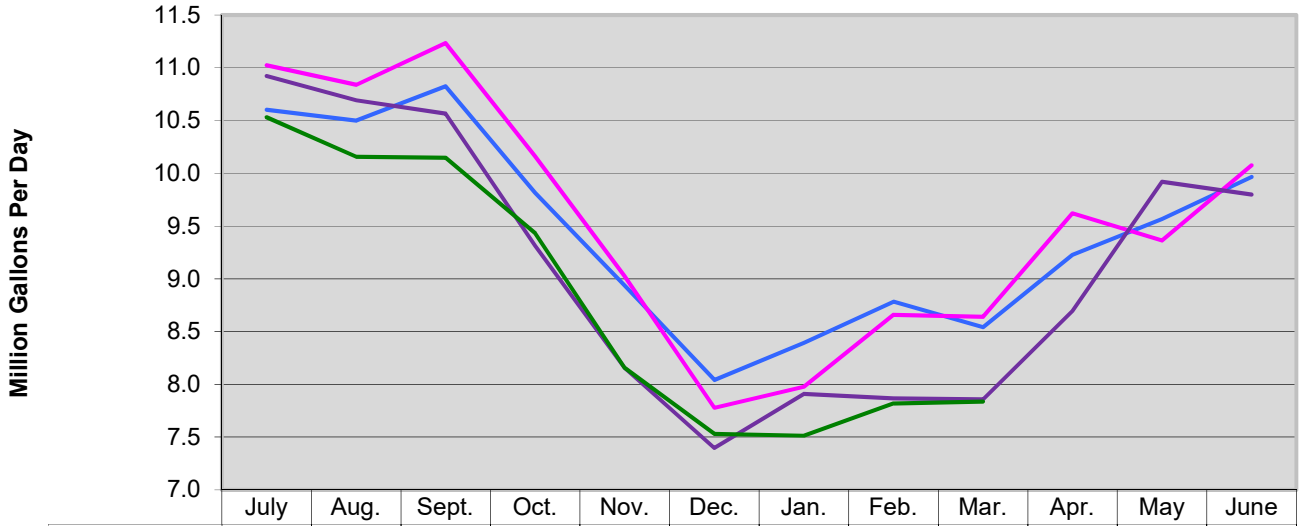
Operating Budget vs. Actual

		Budget FY 2019	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Revenues						
Payment for Services SWA		$ -	$ -	$ 14,246	$ 14,246	
Total Operating Revenues		**$ -**	**$ -**	**$ 14,246**	**$ 14,246**	
Expenses						
Personnel Cost		$ 1,210,438	$ 889,997	$ 835,878	$ 54,119	6.08%
Professional Services		44,000	33,000	11,637	21,363	64.74%
Other Services & Charges	**B**	19,550	14,663	35,664	(21,002)	-143.24%
Communications		17,180	12,885	10,424	2,461	19.10%
Information Technology		44,500	33,375	32,113	1,262	3.78%
Supplies		9,500	7,125	7,188	(63)	-0.88%
Operations & Maintenance		54,880	41,160	34,653	6,507	15.81%
Equipment Purchases		26,500	19,875	17,466	2,409	12.12%
Depreciation & Capital Reserve Transfers		-	-	-	-	
Total Operating Expenses		**$ 1,426,548**	**$ 1,052,079**	**$ 985,024**	**$ 67,056**	**6.37%**

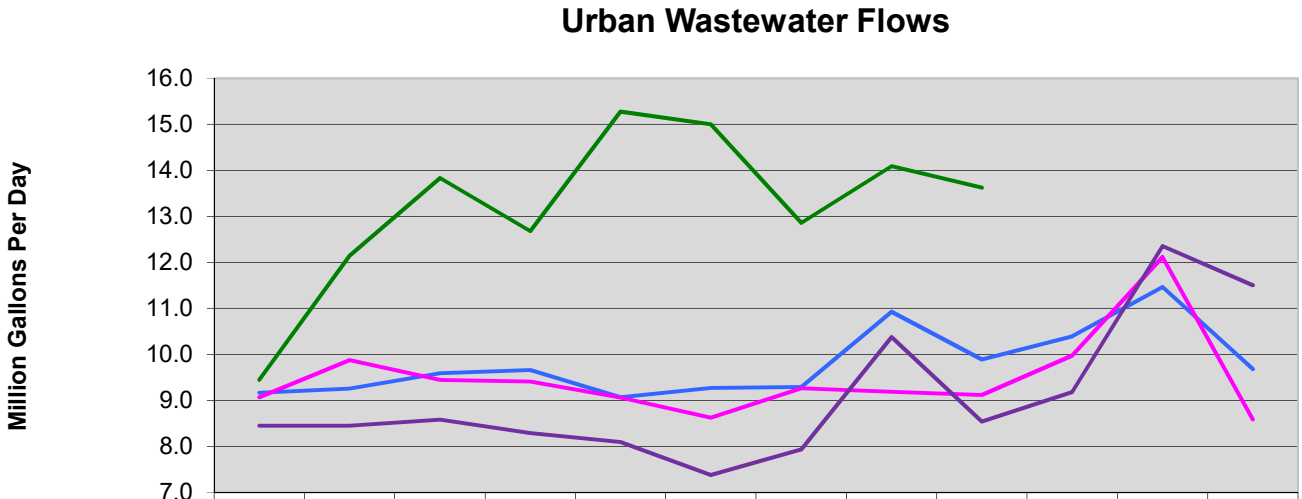
Department Summary

Net Costs Allocable to Rate Centers		**$ (1,426,548)**	**$ (1,052,079)**	**$ (970,778)**	**$ (52,810)**	**5.02%**
Allocations to the Rate Centers						
Urban Water	47.00%	**$ 670,477**	**$ 494,477**	**$ 456,266**	**$ 38,212**	
Crozet Water	4.00%	**57,062**	**42,083**	**38,831**	**3,252**	
Scottsville Water	2.00%	**28,531**	**21,042**	**19,416**	**1,626**	
Urban Wastewater	44.00%	**627,681**	**462,915**	**427,142**	**35,773**	
Glenmore Wastewater	1.50%	**21,398**	**15,781**	**14,562**	**1,220**	
Scottsville Wastewater	1.50%	**21,398**	**15,781**	**14,562**	**1,220**	
	100.00%	**$ 1,426,548**	**$ 1,052,079**	**$ 970,778**	**$ 81,302**	

Rivanna Water and Sewer Authority
Flow Graphs



	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
5 YR AVG.	10.60	10.50	10.83	9.82	8.94	8.04	8.39	8.78	8.54	9.23	9.57	9.97
FY 2017	11.02	10.84	11.23	10.16	9.02	7.78	7.98	8.66	8.64	9.62	9.36	10.07
FY 2018	10.92	10.69	10.57	9.31	8.16	7.40	7.91	7.87	7.86	8.70	9.92	9.80
FY 2019	10.53	10.16	10.15	9.43	8.16	7.53	7.51	7.82	7.84			



	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
5 YR AVG	9.17	9.26	9.59	9.66	9.07	9.27	9.29	10.93	9.89	10.39	11.47	9.68
FY 2017	9.07	9.87	9.45	9.41	9.06	8.62	9.26	9.19	9.12	9.97	12.12	8.59
FY 2018	8.45	8.45	8.59	8.29	8.10	7.38	7.94	10.38	8.54	9.18	12.36	11.50
FY 2019	9.45	12.14	13.83	12.68	15.28	15.00	12.86	14.09	13.62			

RIVANNA WATER & SEWER AUTHORITY
695 Moores Creek Lane | Charlottesville, Virginia 22902-9016
434.977.2970
434.293.8858
www.rivanna.org

MEMORANDUM

TO: **RIVANNA WATER & SEWER AUTHORITY BOARD OF DIRECTORS**

FROM: **JENNIFER WHITAKER, DIRECTOR OF ENGINEERING & MAINTENANCE**

REVIEWED BY: **BILL MAWYER, EXECUTIVE DIRECTOR**

SUBJECT: **STATUS REPORT: ONGOING PROJECTS**

DATE: **APRIL 23, 2019**

This memorandum reports on the status of the following Capital Projects as well as other significant operating, maintenance and planning projects.

Under Construction

1. Birdwood Raw Water Main
2. Crozet Water Treatment Plant Expansion
3. Wholesale Water Master Metering
4. Sugar Hollow Reservoir to Ragged Mountain Reservoir Transfer Flow Meter
5. Interceptor Sewer & Manhole Repair
6. Valve Repair – Replacement (Phase 2)
7. Piney Mountain Tank Rehabilitation
8. Urgent and Emergency Repairs

Design and Bidding

9. Observatory Water Treatment Plant Expansion
10. South Rivanna Water Treatment Plant Improvements
11. Ragged Mountain Reservoir to Observatory Water Treatment Plant Raw Water Line and Raw Water Pump Station
12. Crozet Flow Equalization Tank
13. Beaver Creek Dam Alterations
14. Beaver Creek Raw Water Pump Station
15. Crozet Interceptor Pump Station Rebuilds
16. Buck's Elbow & Crozet Waterball Tank Painting
17. MCAWRRF Digester Sludge Storage Improvements
18. MCAWRRF Aluminum Slide Gate Replacements
19. Glenmore Secondary Clarifier Coating

20. Sugar Hollow Dam – Rubber Crest Gate Replacement and Intake Tower Repairs
21. Scottsville WTP – Finished Water Metering Improvements
22. South Rivanna Dam – Gate Repairs
23. Moores Creek Wetland Hydrology Improvements

Planning and Studies

24. Avon to Pantops Water Main (on hold until completion of the Urban Water Master Plan)
25. South Fork Rivanna Reservoir to Ragged Mountain Reservoir Water Line Right-of-Way
26. Urban Water Demand and Safe Yield Study
27. Urban Finished Water Infrastructure Master Plan
28. South Rivanna River Crossing and North Rivanna Transmission Main
29. Route 29 Pump Station
30. South Rivanna Hydropower Plant Decommissioning
31. Security Enhancements
32. Upper Schenks Branch Interceptor, Phase II
33. Asset Management Plan

O&M Related Projects

34. NRWTP Raw Metering Improvements
35. NRWTP Sludge Lagoon Study and Needs Assessment
36. MCAWRRF Cogeneration System Analysis
37. SRWTP Future Site Development Analysis

1. Birdwood Raw Water Main

Design Engineer:	Michael Baker International (Baker)
Construction Contractor:	E.C. Pace (Roanoke)
Construction Start:	November 2018
Percent Complete:	50%
Base Construction Contract + Change Orders to Date = Current Value:	$2,593,726
Expected Completion:	October 2019
Total Capital Project Budget:	$4,000,000

Current Status:

A Notice to Proceed was issued to the contractor on November 26, 2018. The project is progressing well, and approximately 3,500 feet of pipe has been installed.

History:

RWSA and the UVA Foundation decided to expedite construction of the portion of the 36-inch raw water main through the Birdwood property. This would enable pipeline work to proceed just ahead of the golf course reconstruction project to prevent subsequent disruption to the property and adjacent

neighbors, as well as increased water line construction costs. The golf course reconstruction project started in November 2018. Our work includes installation of approximately 6,100 linear feet of 36-inch raw water main along the eastern property boundary of the golf course.

2. <u>Crozet Water Treatment Plant Expansion</u>

Design Engineer:	Short Elliot Hendrickson (SEH)
Construction Contractor:	Orders Construction Co. (WVA)
Construction Start:	December 2018
Percent Completion:	6%
Base Construction Contract + Change Order to Date = Current Value:	$7,170,000- $285,000 = $6,885,000
Expected Completion Date:	December 2020
Total Capital Project Budget:	$8,500,000

<u>Current Status</u>:

A Notice to Proceed was issued on December 13, 2018 and the contractor mobilized on February 26, 2019. Electrical work and required site demolition activities have begun as they worked towards completion of their first contract milestone.

<u>History</u>:

This project was created to increase the supply capacity of the existing Crozet WTP by modernizing plant systems. The goal was to not drastically increase the plant footprint in regard to the existing filter plant, flocculation tanks, and sedimentation basins. By modernizing the outdated equipment within these treatment systems, the plant discharge capacity will be improved by approximately 100% (from 1 to 2 mgd). SEH completed a Preliminary Engineering Report (PER); watershed data collection; raw water jar testing; pilot scale testing, as well as preliminary and final design.

3. <u>Wholesale Water Master Metering</u>

Design Engineer:	Michael Baker International (Baker)
Construction Contractor:	Linco, Inc.
Construction Start:	January 2016
Percent Complete:	97%
Base Construction Contract + Change Orders to Date = Current Value:	$2,228,254 - $284,104.24 = $1,944,149.76
Expected Completion Date:	July 2019
Total Capital Project Budget:	$3,200,000

<u>Current Status</u>:

Three water treatment plant flow meters, and all 25 distribution system flow meters have been installed. Of those 25 meters, 23 are currently functional and 2 are experiencing reporting errors due to hardware or other issues. Our consultant, meter representatives and staff are continuing to troubleshoot these issues. Three nonfunctioning meters will be replaced, and were ordered in February. Delivery of these replacement meters is expected in mid-May. Calibration of the functional metering

sites was performed in early March and revealed multiple sites out of calibration. Staff is working to resolve these calibration issues both internally and through review by our consultant and meter representatives of site conditions and calibration methods. Four of these sites may require replacement meters if other factors cannot be identified that are contributing to the inaccuracy of meter readings. These replacement meters have also been ordered and are expected to be delivered in mid-June. Staff hopes to have a fully functioning metering system by the end of July 2019, if no additional unforeseen issues arise.

History:

In January 2012, a Water Cost Allocation Agreement was signed by the City of Charlottesville (City) and ACSA designating how the two agencies would share in the financing of the New Ragged Mountain Dam project. Within the agreement is a general provision developed by the ACSA and City to enhance measurement of the water usage by each of the distribution agencies.

The Board authorized staff in August of 2012 to enter into an agreement with Michael Baker International, Inc. (Baker) to complete an engineering study on metering plan alternatives. Baker's study identified several alternatives for a metering plan based on combinations of metering and estimating methodologies. Based on feedback from ACSA, the City, and RWSA, Baker recommended a Jurisdictional Approach which included installation of water meters at 34 locations at the City/County corporate boundary and at each of the three urban water treatment plants at an estimated cost of $6.4 million. At its September 2013 meeting, the RWSA Board of Directors requested staff to proceed with the Jurisdictional Coverage Approach. In February 2014, the Board of Directors authorized Baker to complete preliminary and final design for the project and to provide bid-phase services. The final design includes construction of 25 metering systems in underground vaults and required acquisition of twenty (20) permanent water line easements and one (1) permanent access easement.

In May 2018, a final version of the *Wholesale Metering Administration and Implementation Policy* was completed and forwarded to the ACSA and the City. RWSA terminated the construction contract with Linco, Inc. on April 2, 2018 and is coordinating the remaining work in-house.

4. Sugar Hollow to Ragged Mountain Reservoir Transfer Flow Meter

Design Engineer:	Michael Baker International (Baker)
Construction Contractor:	G.L. Howard
Construction Start:	October 2018
Percent Complete	90%
Base Construction Contract + Change Orders to Date = Current Value:	$354,905
Expected Completion:	April 2019
Total Capital Project Budget:	$383,241

Current Status:

All onsite above-ground structures, including the Gatekeeper's House, existing sheds, Chlorine Contact Building, and existing Meter House, have been demolished. Improvements to the Sugar Hollow to Ragged Mountain Reservoir transfer line have been completed, which include the

replacement of a 90+ year old gate valve, and installation of a new flow meter and automated control valve. Electrical work is ongoing at the site, but the Sugar Hollow to Ragged Mountain Reservoir transfer line is available for use if needed. The electrical subcontractor has completed all work necessary to facilitate the new electrical service for the flow meter and automated control valve, and Dominion Energy anticipates energizing the new service during the week of April 8, 2019. Once electrical work has been completed by the subcontractor, the construction contractor will return to complete site restoration. In addition, RWSA Information Systems staff will perform programming to ensure that the flow meter is functional, and the automated control valve is operational in RWSA's SCADA system.

History:

RWSA staff has worked with the design engineers to complete plan and profile design drawings for this project. The project will include installation of a flow meter on the 18-inch diameter Sugar Hollow Reservoir discharge pipe and a control valve that can be operated remotely through the Observatory WTP SCADA system. The control valve will modulate the amount of flow being transferred between the two reservoirs, the flow meter will record data, and staff will be able to remotely monitor the data through the SCADA system. Additional work has been added to this project including replacement of an existing, original gate valve at the site, demolition of four existing small utility structures and sheds that have not been used in many years, demolition of the existing Gatekeeper's House, and a separate control valve vault that will optimize the accuracy of the new flow meter by creating adequate separation distance between the meter and modulating control valve. The structures to be demolished and removed have been inspected and tested for asbestos containing materials and lead based paint. As a result, there will be some special abatement work required. Several long lead items were purchased by the contractor as a result of the initial Work Authorization. A subsequent Work Authorization covering the purchase of all remaining materials, construction and demolition was issued to the contractor on September 28, 2018.

The Notice to Proceed (NTP) was issued to the contractor on October 1, 2018. A Demolition Permit was issued for the Sugar Hollow Gatekeeper's House by Albemarle County during the week of November 12, 2018. Demolition of the Sugar Hollow Gatekeeper's House began during the week of November 26, 2018 and was completed during the week of December 3, 2018. All other site demolition was completed by the week of January 14, 2019. Installation of the new gate valve was completed on February 5, 2019. Installation of the flow meter and automated control valve was completed during the week of February 18, 2019.

5. Interceptor Sewer and Manhole Repair

Design Engineer:	Frazier Engineering
Construction Contractor:	IPR Northeast
Construction Start:	November 2017
Percent Complete:	20%
Base Construction Contract + Change Orders to Date = Current Value:	$1,244,337.19
Expected Completion:	2020
Total Capital Project Budget:	$1,941,000

Current Status:

Frazier Engineering continues to conduct condition assessment activities and has reviewed CCTV results from investigation activities performed by IPR Northeast. The results from these investigations and previous investigations are being compiled into an initial construction work authorization for rehabilitation work on portions of the Crozet and Morey Creek Interceptor. Some additional CCTV work will also be performed following the cleaning of certain sections of the interceptor system. The contractor anticipates mobilizing in April to begin this work. Additional investigation and rehabilitation work will follow after the initial round of CCTV investigations.

History:

Results from sewer flow monitoring and modeling under the Comprehensive Sanitary Sewer Study provided awareness to specific inflow and infiltration (I&I) concerns in the collection system and resulted in strengthened commitments from the City, ACSA and RWSA to continue professional engineering services to aid in the rehabilitation and repair of the sewer collection system. Engineering services will be used for sewer infrastructure condition assessments and the development of a sewer rehabilitation bid package for the procurement of a contractor to perform the recommended rehabilitation work.

6. Valve Repair – Replacement (Phase 2)

Design Engineer:	N/A
Construction Contractor:	Garney Construction
Construction Start:	April 2019
Percent Complete:	0%
Base Construction Contract + Change Orders to Date = Current Value:	$767,823.00
Expected Completion:	October 2019
Total Capital Project Budget:	$882,914

Current Status:

RWSA Engineering staff is performing submittal review in preparation for construction. The Contractor anticipates mobilizing during the week of April 22, 2019 and starting construction during the week of April 29, 2019.

History:

Isolation valves are critical for normal operation of the water distribution system and timely emergency response to water main breaks. Staff continuously reviews results from an ongoing Valve Exercising and Condition Assessment Program. This project will replace the highest-priority valves that are identified during the condition assessment as not operable and not repairable. In addition, valves that are identified in the condition assessment as being inoperable and repairable will be repaired as a part of the project. Phase 1 of the Valve Repair-Replacement Project replaced several inoperable and unrepairable valves in the North Rivanna Finished Water System. Phase 2 will continue replacing inoperable and unrepairable valves in the North Rivanna Finished Water System, but it will also replace (and potentially repair) valves on the South Rivanna, Crozet, Pantops, and Southern Loop Finished Water Systems. Once all specified valves have been repaired/replaced in Phase 2, the focus will shift to replacing older isolation valves in subsequent phases. Numerous valves

in the North Rivanna and South Rivanna Finished Water Systems are 50+ years old and replacing these valves will enhance the resiliency and reliability of the two systems.

A Request for Bids (RFB) was issued on November 6, 2018. A Pre-Bid Conference was held on November 19, 2018. The first (and only) Addendum was issued on November 30, 2018. RWSA staff opened bids for the project on December 11, 2018, and Garney Companies, Inc. was the apparent low bidder ($843,460). The RWSA Board of Directors approved the bid award recommendation and Capital Improvement Plan Budget Amendment on January 22, 2019. A Notice of Award was sent to Garney Companies, Inc. on February 6, 2019. A Pre-Construction Conference was held with the Contractor, VDOT, ACSA, and RWSA on March 11, 2019.

7. <u>Piney Mountain Tank Rehabilitation</u>

Design Engineer:	Johnson, Mirmiran & Thompson (JMT)
Construction Contractor:	Utility Service Co, Inc.
Construction Start:	April 2019
Percent Complete:	0%
Base Construction Contract + Change Orders to Date = Current Value:	$251,700 + $12,585 = $264,285
Expected Completion:	July 2019
Total Capital Project Budget:	$570,000

<u>Current Status</u>:

Coordination for the upcoming shutdown is ongoing between RWSA and ACSA, and the tank is expected to be taken offline during the week of April 15, 2019 for a construction start during the week of April 22, 2019.

This project will require a shutdown of the tank for approximately three months. Due to unforeseen complications with an extended tank shutdown and other ongoing construction activities in the North Rivanna Water System in spring of 2018, construction of the Piney Mountain Tank repairs was postponed to spring of 2019. Utility Service Co., Inc will remain the general contractor for this project.

<u>History</u>:

The 700,000 gallon Piney Mountain Tank serves the North Rivanna pressure zone. A routine inspection of the Piney Mountain Tank in April of 2012 revealed several deformed roof rafters, indicating the potential for structural deficiency. An in-depth structural inspection was performed in May of 2013 and a list of recommended roof repairs provided. This project includes consultant services for design and bidding of necessary roof repairs and other ancillary items, as well as construction, construction administration, and inspection services. Long term plans for the Rt. 29 service area include the modification or elimination of this facility. The current recommended improvements are needed in order to maintain the existing tank in service for at least the next 10 years.

The project was advertised for bid on November 28, 2017 and bids were opened on January 9, 2018. At its January 2018 meeting, the RWSA Board of Directors approved staff's recommendation of award to Utility Service Co., Inc., the apparent low bidder on the project. The RWSA Board of Directors approved an amendment to the Capital Improvement Plan Budget at its March 2019 meeting.

8. Urgent and Emergency Repairs

Staff is currently working on several urgent repairs within the water and wastewater systems as listed below:

Project No.	Project Description	Approx. Cost
2019-02	UWL-ARV-25 and UWL-040 Repair	$250,000
2019-01	Pantops Water Line River Bank Repair	$170,000
2017-03	Crozet Sewer Force Main Air Release Valve Repair	$135,000
2018-01	Rivanna Interceptor – RVI-MH-32 Erosion Repair	$50,000
2018-06	South Rivanna Dam Apron and River Bank Repairs	$200,000

- UWL-ARV-25 and UWL-040 Repair

  On March 14th RWSA was notified of a leak coming from UWL-ARV-25, located approximately at the intersection of 7th Street NW and 8th Street NW. In order to repair the air release valve, surrounding isolation valves were closed with assistance from City personnel. We were not able to get all of the pressure off the line, but it was reduced enough to perform the repair. In the process of closing valves for the repair of the air release valve, UWL-040 became stuck in the closed position. This is the main valve that isolates the Urban Water Line from the City distribution system and it is located in West Main Street. In order to evaluate the issues with the valve, excavation work was performed to determine if the valve needed to be replaced or simply repaired. Unfortunately, the valve needed to be replaced and a line stop on one of the City water lines was necessary to completely remove pressure from that location. These repairs were declared emergencies and UWL-ARV-25 was replaced on March 15th and UWL-040 was finally replaced on April 4th. Road restoration work on 7th Street NW and 8th Street NW is underway.

- Pantops Water Line River Bank Repair

  RWSA was made aware by a local resident of an eroded section of the river bank along the Rivanna River that has exposed a section of the Pantops water line. This eroded section is near a previously repaired section of the river bank. RWSA personnel visited the site and the Maintenance department quickly reinforced the area with sand bags. This issue was identified as an emergency and an on-call contractor was contacted to begin to mobilize and prep the area for the repair. Prior to beginning repair activities, permits were required by the U.S. Army Corps of Engineers and the Virginia Marine Resources Commission. Those permits have been obtained and repair work commenced on April 15th.

- Crozet Sewer Force Main Air Release Valve Repair

  During routine inspections of the sewer force main, the Maintenance Department identified that the saddle for one of the air release valves was loose and needed to be repaired. Due to the profile of the force main however, it is not possible to dewater the force main and take pressure off the pipe at this location without the installation of line stops. As a result, a contractor was contacted to begin development of a method to address the issue and a site meeting was conducted. The contractor has provided estimated pricing and a work authorization is being developed.

Coordination with the property owner is underway and this repair will be scheduled sequentially with the Rivanna Interceptor manhole repair this spring/summer as work is completed on the Pantops Water Line repair.

- Rivanna Interceptor – RVI-MH-32 Erosion Repair

  During routine inspections of the Rivanna Interceptor, the Maintenance Department observed some significant erosion around RVI-MH-32, located near Meadow Creek Golf Course. A site meeting was held with the contractor and the City of Charlottesville to confirm the cause of the erosion and determine the preferred method of repair, as the repair will impact a section of the Rivanna Trail. The contractor has provided estimated pricing and a work authorization is being developed. This repair will be scheduled sequentially with the Crozet Sewer Force Main repair this spring/summer as work is completed on the Pantops Water Line repair.

- South Rivanna Dam Apron and River Bank Repairs

  Intense rainfall between May 30-31, 2018 resulted in extensive flooding throughout Charlottesville and parts of Albemarle County, with flows over the South Fork Rivanna Dam reaching more than 7 feet over the spillway crest at its peak. Staff has inspected the dam and abutments to determine the extent of damage resulting from the extreme flooding. Although there is no discernible damage to the dam itself, staff found erosion damage to the north downstream river bank and substantial displacement of large stone downstream of the dam to form a rock dam and pool below the north apron. Additionally, some damage to concrete structures on both aprons was noted, including possible creation of voids beneath the concrete and loss of concrete joint filler. Repairs to the river bank and removal of the rock dam will take place in spring of 2019 under RWSA's on-call construction contract. Repairs to the north and south concrete aprons will be designed by Schnabel Engineering and those services will be procured separately from the on-call contract.

9. Observatory Water Treatment Plant Expansion

Design Engineer:	Short Elliot Hendrickson, Inc. (SEH)
Project Start:	October 2017
Project Status:	50% Design
Construction Start:	December 2019
Completion:	2023
Approved Capital Budget:	$18,630,000
Current Project Estimate:	$19,700,000

Current Status:

A project kickoff meeting with staff was held on November 14, 2018 and 30% design documents were provided in February. A Value Engineering Workshop took place the week of April 8th and a memo summarizing the results is being completed. Any agreed upon results will be incorporated into the project. Design documents will be completed by June 2019 with the intent of advertising the project for bids in September 2019.

History:

This project will consider the design and costs for upgrading the plant systems to achieve a consistent 7.7 MGD plant capacity, as well as consider the costs involved with upgrading the plant to 10 or 12

MGD capacity. Much of the Observatory Water Treatment Plant is original to the 1953 construction. In an effort to better understand the needed future improvements, a Condition Assessment Report was completed by SEH in October of 2013. The approved Capital Improvement Plan project was based on the findings from this report. A portion of this project was expedited in order to repair and replace old, existing equipment that was not functional. The flocculator systems have been replaced and upgraded as part of the Drinking Water Activated Carbon and WTP Improvements project (GAC). The second flocculator system was started up in May 2017, and both systems are currently in full service. The PER has been finalized, as well as a Work Authorization with the design engineer for design, bidding and construction administration services.

10. <u>South Rivanna Water Treatment Plant Improvements</u>

Design Engineer:	Short Elliot Hendrickson (SEH)
Project Start:	October 2017
Project Status:	50% Design
Construction Start:	December 2019
Completion:	December 2022
Approved Capital Budget:	$7,500,000
Current Project Estimate:	$15,000,000

<u>Current Status:</u>

A project kickoff meeting with staff was held on November 13, 2018 and 30% design documents were provided in February. A Value Engineering Workshop took place the week of April 8th and a memo summarizing the results is being completed. Any agreed upon results will be incorporated into the project. Design documents will be completed by June 2019 with the intent of advertising the project for bids in September 2019. Project scope and budget have increased to address treatment system and building needs identified during the PER phase.

<u>History:</u>

The South Rivanna Water Treatment Plant is currently undergoing significant upgrades as part of the Granular Activated Carbon Project. Several other significant needs have also been identified and have been assembled into a single project. The projects herein include: expansion of the coagulant storage facilities; installation of additional filters to meet firm capacity needs; the addition of a second variable frequency drive at the Raw Water Pump Station; the relocation for the electrical gear from a sub terrain location at the Sludge Pumping Station; a new building on site for additional office, lab, control room and storage space; improvements to storm sewers to accept allowable WTP discharges; and the construction of a new metal building to cover the existing liquid lime feed piping and tanks.

The scope of this project will not increase plant treatment capacity. The PER has been finalized, as well as a Work Authorization with the design engineer for design, bidding and construction administration services.

11. <u>Ragged Mountain Reservoir to Observatory Water Treatment Plant Raw Water Line and Raw Water Pump Station</u>

Design Engineer:	Michael Baker International (Baker)
Project Start:	August 2018

Project Status:	Prelim Engineering in Progress
Construction Start:	2022
Completion:	2026
Approved Capital Budget:	$6,526,000
Current Project Estimate:	$18,000,000

Current Status:

A Work Authorization was executed in December 2018 with Michael Baker International for the raw water line routing study, preliminary design, plat creation and the easement acquisition process for this portion of the project. A site evaluation study to recommend a location for the raw water pipe and pump station has been completed and is currently under review.

History:

Raw water is transferred from the Ragged Mountain Reservoir (RMR) to the Observatory Water Treatment Plant by way of two 18-inch cast iron pipelines, which have been in service for more than 110 and 70 years, respectively. The increased frequency of emergency repairs and expanded maintenance requirements are one impetus for replacing these pipelines. The proposed water line will be able to reliably transfer water to the expanded Observatory plant, which may eventually have the capacity to treat 10 million gallons per day (mgd). The new pipeline is expected to be constructed of 36-inch ductile iron and will approximately 14,000 feet in length. The opportunity to integrate the Observatory WTP raw water supply line with the proposed South Rivanna Reservoir to RMR raw water main project is currently being investigated as part of the approved 50-year Community Water Supply Plan.

The RMR to Observatory WTP raw water pump station is planned to replace the existing Stadium Road and Royal pump stations, which have exceeded their design lives or will require significant upgrades with the Observatory WTP expansion. The pump station will pump up to 10 million gallons per day (mgd) of raw water to the Observatory WTP. Integration of the new pump station with the planned South Rivanna Reservoir (SRR) to RMR pipeline is being considered in the interest of improved operational and cost efficiencies. An integrated pump station would also include the capacity to transfer up to 16 mgd of raw water from RMR back to the SRR WTP.

12. Crozet Flow Equalization Tank

Design Engineer:	Schnabel Engineering
Project Start:	October 2016
Project Status:	50% Design
Construction Start:	December 2019
Completion:	2021
Approved Capital Budget:	$3,300,000
Current Project Estimate:	$4,860,000

Current Status:

A geotechnical analysis and report, field survey work, and existing pump station evaluation have all been completed as part of the design process. Design documents will be completed by June 2019.

History:

A 2016 update to the 2006 model was completed which evaluated the I&I reduction goals previously established and future capital project needs. Based on the results of that study, it was determined that the Crozet Interceptor system and namely the existing Crozet Pump Stations (1 through 4) have adequate capacity to handle the 2015 peak wet weather flow from the Crozet Service Area during a two-year storm. However, as projected growth in the service area occurs, peak wet weather flows in the area under the storm conditions established in the updated model will begin to exceed the firm capacities of the pump stations by 2025. Additional I&I reductions in order to reduce flows enough to not exceed the pump station firm capacities are not feasible and as a result, the construction of a flow equalization tank was identified as the best method to alleviate wet weather capacity issues.

While the study indicates that capacity should not be an issue until 2025, a flow equalization tank would also provide a significant benefit to the maintenance of the Crozet Pumping Station system which currently lacks system storage necessary to allow adequate time to perform repairs on the pumps and the associated force mains while the system is down. As a result, it is important to progress into the siting study for the flow equalization tank to ensure that it can be constructed in time for the 2025 flow targets but also to facilitate less complicated and more thorough maintenance on the system that has not been possible previously.

Greeley and Hansen completed a siting study to determine the location for the flow equalization tank based on the results of the comprehensive model update. The results of the siting study were reviewed with ACSA and a final tank location was determined.

A work authorization with Schnabel Engineering was finalized and a Project Kick-off Meeting was held on July 12, 2018. A data collection period has begun which includes a wetlands investigation of the project site and a topographic survey of the site has also been completed. An inspection of the existing Pump Station No. 4 is scheduled for September 20, 2018 where information on the control and electrical systems will be gathered.

13. Beaver Creek Dam Alterations

Design Engineer:	Schnabel Engineering
Project Start:	February 2018
Project Status:	5% Design
Construction Start:	2023
Completion:	2026
Approved Capital Budget:	$8,830,000
Current Project Estimate:	$15,000,000

Current Status:

A Preliminary Engineering Report has been completed for the selected design alternative. Final design of the dam improvements is underway.

History:

RWSA operates the Beaver Creek Dam and reservoir as the sole raw water supply for the Crozet Area. In 2011, an analysis of the Dam Breach inundation areas and changes to Virginia Department of

Conservation and Recreation (DCR) *Impounding Structures Regulations* prompted a change in hazard classification of the dam from Significant to High Hazard. This change in hazard classification requires that the capacity of the spillway be increased. This CIP project includes investigation, preliminary design, public outreach, permitting, easement acquisition, final design, and construction of the anticipated modifications. Work for this project will be coordinated with the new relocated raw water pump station and intake and a reservoir oxygenation system project.

Schnabel Engineering developed three alternatives for upgrading the capacity of the Beaver Creek Dam Spillway in 2012. Following the adoption of a new Probable Maximum Precipitation (PMP) Study on December 9, 2015 and the release of DCR guidelines for implementing the PMP study in March of 2016, RWSA determined it would proceed with an updated alternatives analysis and Preliminary Engineering Report for upgrading the dam spillway. In 2017, RWSA entered into a term contract with Schnabel Engineering for dam-related engineering services. The design work for this project is being completed under Schnabel's term contract.

Following the completion of an updated alternatives analysis by Schnabel Engineering, staff met with members of Albemarle County and ACSA staff to discuss the preferred alternative. It was determined that staff would proceed with design of a labyrinth spillway and chute through the existing dam with a bridge to allow Browns Gap Turnpike to cross over the new spillway.

14. <u>Beaver Creek Raw Water Pump Station and Intake</u>

Design Engineer:	Hazen & Sawyer
Project Start:	August 2018
Project Status:	Work Authorization Under Negotiation
Construction Start:	2023
Completion:	2026
Approved Capital Budget:	$6,100,000
Current Project Estimate:	$8,000,000

<u>Current Status</u>:

Staff has negotiated a scope and fee with Hazen and Sawyer for site selection work for the new Raw Water Pump Station and permitting for the Pump Station, Intake, and Beaver Creek Dam Upgrades and work is expected to begin this month on these two efforts.

<u>History</u>:

The Drinking Water Infrastructure Plan for the Crozet water service area, developed by Hazen and Sawyer, recommends installation of a new Raw Water Pump Station and Intake at the Beaver Creek Dam in order to meet new minimum instream flow requirements and provide adequate raw water pumping capacity to serve the growing Crozet community for the next 50 years. The pump station will be moved out of its existing location at the toe of the dam to a new location, to be determined during design. The new intake structure will include enhanced controls to allow for access to the best quality water at any given time.

15. Crozet Interceptor Pump Station Rebuilds

Design Engineer:	TBD
Project Start:	July 2018
Project Status:	25% Design
Construction Start:	2019
Completion:	2023
Total Capital Project Budget:	$525,000

Current Status:

The Maintenance Department has begun pump replacement work associated with this overall project. Staff is reviewing the overall scope of work for the project and will be coordinating other items with the Maintenance Department regarding schedule and preferred equipment and materials. Work will be performed via quote packages and the need for consultant assistance is being determined.

History:

The Crozet Interceptor Pump Stations were constructed in the 1980's and many of the components are still original. The project will include the replacement of pumps and valves at Pump Station No. 2 in order to improve pumping capabilities at this location and provide spare parts for the pumps at Pump Station No. 1. This work will also include roof replacements at all four pump stations, siding replacement for the wet well enclosure at Pump Station No. 3, and installation of a new water well at Pump Station No. 3. Components of this project will be coordinated and timed to properly coincide with the Crozet Flow Equalization Tank project.

16. Buck's Elbow & Crozet Waterball Tank Painting

Design Engineer:	TBD
Project Start:	Summer 2019
Project Status:	Work Authorization Under Negotiation
Construction Start:	Spring 2021
Completion:	Summer 2021
Approved Capital Budget:	$1,200,000
Current Project Estimate:	$1,340,000

Current Status:

Following selection of a consultant to complete the work, staff will begin negotiation of the first work authorization for design services for this project. Construction for this project is scheduled to begin in Spring 2021, following completion of the Crozet WTP Expansion in late 2020.

History:

The two million-gallon Bucks Elbow Ground Storage Tank provides finished water storage for the Crozet Area while the 50,000 gallon Crozet Waterball Tank serves as filter backwash storage at the Crozet Water Treatment Plant. Routine inspections of these tanks in 2012 indicated that the tanks would require recoating by 2020. The project includes recoating the interior and top-coating the exterior of both tanks as well as installation of an active mixing system at the Bucks Elbow Tank to decrease stratification and improve overall water quality in the Crozet area. Minor repairs and

improvements to both tanks will also be included in this work. Construction of the tank improvements are expected to begin in spring of 2021.

17. MCAWRRF Digester Sludge Storage Improvements

Design Engineer:	TBD
Project Start:	Spring 2019
Project Status:	Preliminary Design
Construction Start:	Spring/Summer 2019
Completion:	Fall 2019
Total Capital Project Budget:	$265,000

Current Status:

We are currently scheduling an engineer to perform an interior inspection of the sludge storage tank. Preparation of construction documents will begin after an inspection is completed and scope of repair work better defined. Implementation of this work will commence after Digester No. 3 is coated and back in service. Coating of Digester No. 3 has begun with completion anticipated in May 2019.

History:

With the second centrifuge installation, additional capacity for storage of digested sludge would provide the Authority operational flexibility it does not currently have. Additionally, the sole sludge storage tank at the MCAWRRF was constructed in 1959 of reinforced concrete and is in need of repairs. This project would convert one of the three existing anaerobic digesters (Digester No. 1) into a sludge storage tank through piping modifications, and would provide redundancy to the existing sludge storage tank so it can be removed from service, cleaned, inspected, and repaired with minimal impact to the existing sludge dewatering operations. The piping configuration would also allow flexibility for the anaerobic digester to be used as either an anaerobic digester or sludge storage tank as needed for operations. The scope of work would include piping modifications, hydraulic improvements, tank safety improvements such as handrail and lights, and structural improvements to the existing sludge storage tank roof.

18. MCAWRRF Aluminum Slide Gate Replacements

Design Engineer:	Hazen and Sawyer
Project Start:	November 2018
Project Status:	70% Design (for UV Facility work)
Construction Start:	May 2019
Completion:	July 2019
Total Capital Project Budget:	$470,000

Current Status:

Staff is currently reviewing the design for the UV Facility Slide Gate Replacement Project for which a quote package will be advertised in late April.

History:

Several large aluminum slide gates are located at the influent side of the Moores Creek Pump Station. These gates allow staff to stop or divert flow to perform maintenance activities. After repeated attempts to access and repair the gates, it is now necessary to replace and modify the gate arrangement. The replacement includes new gates for greater flexibility and resiliency as well as significant influent flow bypass pumping. Likewise, there are several gates at the Ultraviolent disinfection facility that leak water, causing a reduced capacity of the facility. Replacement of these gates will restore the process to full capacity.

19. Glenmore Secondary Clarifier Coating

Design Engineer:	Short Elliot Hendrickson (SEH)
Project Start:	Fall 2018
Project Status:	Fee negotiation
Construction Start:	May 2019
Completion:	August 2019
Approved Capital Budget:	$50,000
Current Project Estimate:	$110,000

Current Status:

Engineering staff has developed specifications and is negotiating a fee with Lyttle Utilities for a change order to their MCAWRRF Digester Coating project for blasting and coating both clarifiers.

History:

The secondary clarifiers at the Glenmore facility were painted over 10-years ago. The clarifier environment is a particularly harsh environment subject to corrosive gases, grit abrasion and mechanical wear. Based on observations by operations staff, the coating system is in need of replacement to prevent deterioration and failure of the underlying metal superstructure. This project includes the cleaning and full coating of the clarifier.

20. Sugar Hollow Dam – Rubber Crest Gate Replacement and Intake Tower Repairs

Design Engineer:	Schnabel Engineering
Project Start:	January 2019
Project Status:	Work Authorization Under Negotiation
Construction Start:	2020
Completion:	2021
Approved Capital Budget:	$940,000
Current Project Estimate:	$1,140,000

Current Status:

A work authorization for design services is currently under negotiation with Schnabel Engineering and is anticipated to be included in next month's consent agenda for approval. An evaluation will be performed in spring of 2019 with design work to follow. Construction is anticipated to begin in spring of 2020.

History:

In 1998, the Sugar Hollow Dam underwent a significant upgrade to improve structural stability and spillway capacity. The original metal spillway gates were replaced with a manufactured five-foot-high inflatable rubber dam that is bolted to the existing concrete structure. This rubber dam allows for the normal storage of water in the reservoir with the ability to be lowered during extreme storm events. The rubber dam has an approximate service life of twenty years and is therefore now due for replacement. The aging intake tower structure will be inspected and evaluated. Recommended repairs may include issues relating to the intake gate valves and tower walls, including repair or replacement of intake trash racks, and sealing/grouting of minor concrete wall cracks.

21. Scottsville WTP – Finished Water Metering Improvements

Design Engineer:	Short Elliot Hendrickson (SEH)
Project Start:	September 2018
Project Status:	85% Design
Construction Start:	June 2019
Completion:	September 2019
Total Capital Project Budget:	$145,000

Current Status:

SEH is completing final design documents and we anticipate advertising the project for bids by the end of April.

History:

The Scottsville WTP is permitted to provide up to 0.25 MGD of potable drinking water to RWSA customers in the Scottsville service area. After water has been treated in the plant it is collected in an existing clearwell, which was constructed with the original facility. From the clearwell, the water is pumped into the distribution system by one of the two high service pumps. The flow from these pumps is not metered. In order to keep a record of the total flow entering the Scottsville system, plant operators must periodically conduct draw-down tests to verify the pumping rate of each of the two pumps. The total flow is then calculated based on the run time of each pump. This method of measuring flow is not accurate, as the pumping rate will vary based on the clearwell level and the hydraulic grade line of the distribution system. In addition, the Virginia Department of Health has indicated that the flow should be metered during recent conversations related to the disinfection profile calculation throughout the plant. The purpose of this project is to install a finished water meter at the plant.

22. South Rivanna Dam – Gate Repairs

Design Engineer:	Schnabel
Project Start:	July 2019
Project Status:	Work Authorization Development
Construction Start:	Spring- Fall 2020
Completion:	2020
Total Capital Project Budget:	$900,000

Current Status:
Design will begin in July 2019 with construction in 2020, pending preliminary findings.

History:
The South Rivanna Dam, originally constructed in 1965, is equipped with two 36" diameter slide gates and conduits, one each on the north and south abutments of the dam, which can be utilized to dewater the facility or to meet minimum instream flow (MIF) requirements when the dam is not spilling. These gates are original to the dam and while they are operable and are exercised regularly, they can no longer provide a complete seal, therefore allowing some leakage through the dam. RWSA has protocols in place to temporarily stop leakage through the gates when necessary to conserve water; however, there is a desire to repair or replace the gates and components as needed to restore full functionality. The project includes other repairs to the facility, including improvements to the concrete wall adjacent to the Raw Water Pump Station as well as improvements to the north dam tower to provide safer access by staff while still discouraging access by the general public.

23. Moores Creek Wetland Hydrology Improvements

Design Engineer:	VHB/ECS, Mid-Atlantic
Project Start:	March 2019
Project Status:	Kick-off
Construction Start:	Summer 2019
Completion:	Fall 2019
Total Capital Project Budget:	$95,000

Current Status:
A kick-off meeting was held in March. Work is currently underway and the consultant will be providing design plans and an Erosion and Sediment Control permit application in May 2019.

History:
As part of the Ragged Mountain project, RWSA was required to mitigate for impacts to streams and wetlands. The wetland mitigation site is located along Moores Creek on Franklin St. RWSA has been monitoring the mitigation sites, as required by the project permit, since construction in 2014. Reports on the success of the site are submitted to the Department of Environmental Quality (DEQ) at intervals during the first 10 year of the project construction. From this monitoring it was determined that the wetland is holding more water than is ideal for its function. VHB designed a Hydrology Improvement Plan for the site, which was approved by DEQ. RWSA is now working with ECS Mid-Atlantic, to obtain the necessary County permits for the improvements (i.e., Erosion and Sediment Control permit).

24. Avon to Pantops Water Main (on hold until completion of the Urban Water Master Plan)

Design Engineer:	Michael Baker International (Baker)
Project Start:	August 2017
Project Status:	Preliminary Engineering Report
Construction Start:	TBD
Completion:	TBD

Total Capital Project Budget: $13,000,000

Current Status:

Route alignment determination, hydraulic modeling, and preliminary design were underway. Due to the complicated nature of our finished water systems, it was decided at the August 2018 Board meeting that a more comprehensive approach is warranted and we should complete the Finished Water Master Plan prior to moving forward with final design and construction of the Avon to Pantops Water Main. This project is on hold.

History:

The focus of this project is on the southern half of the urban area water system which is currently served predominantly by the Avon Street and Pantops water storage tanks. The Avon Street tank is hydraulically well connected to the Observatory Water Treatment Plant while the Pantops tank is well connected to the South Rivanna Water Treatment Plant. The hydraulic connectivity between the two tanks, however, is less than desired, creating operational challenges and reduced system flexibility. In 1987, the City and ACSA developed the Southern Loop Agreement which laid out two key phases (with the first being built at the time). The 1987 Agreement and planning efforts will service as a starting point for this current project. An engineering contract has been negotiated and was approved by the Board of Directors in July 2017.

25. South Fork Rivanna Reservoir to Ragged Mtn. Reservoir Water Line Right-of-Way

Design Engineer:	Michael Baker International (Baker)
Project Start:	October 2017
Project Status:	Preliminary Engineering Report
Completion:	2021
Total Capital Project Budget:	$2,295,000

Current Status:

A Draft PER was completed in January 2019. Survey work began in late March to begin preparation of easement plats. Easement acquisition negotiations with private property owners are expected to begin by May 2019. Several of the properties are owned by the VDOT, Albemarle School Board, UVA Foundation and the City of Charlottesville. A work authorization for easement acquisition services has been negotiated with ERM and Associates and is included in this month's consent agenda for approval. Appraisals will be performed beginning in late April for any easements with an estimated value over $10,000 in accordance with RWSA policy.

History:

The approved 50-year Community Water Supply Plan includes the future construction of a raw water line from the South Fork Rivanna Reservoir to the Ragged Mountain Reservoir. This water line will replace the existing Upper Sugar Hollow Pipeline along an alternative alignment to increase raw water transfer capacity in the Urban Water System. The preliminary route for the water line followed the proposed Route 29 Charlottesville Bypass; however, the Bypass project was suspended by VDOT in 2014, requiring a more detailed routing study for the future water line. This project includes a routing

study, preliminary design and preparation of easement documents, as well as acquisition of water line easements along the approved route.

Baker is now completing the routing study. Preliminary design, plat creation and the acquisition of easements will take place as soon as the final route determination has been made. Property owners have been contacted to request permission to access properties for topographical surveying which will take place following completion of the PER. A recommendation for a tentative final alignment was presented at a community information meeting in June 2018.

26. <u>Urban Water Demand and Safe Yield Study</u>

Design Engineer:	Hazen and Sawyer
Project Start:	November 2018
Project Status:	40% complete
Completion:	August 2019
Total Capital Project Budget:	$154,000

<u>Current Status</u>:

Bathymetric studies of the South Rivanna and Ragged Mtn Reservoirs were completed in March 2019. Initial demand projections are expected in May 2019.

<u>History</u>:

The City of Charlottesville, Albemarle County Service Authority, and RWSA entered into the Ragged Mountain Dam Project Agreement in 2012. This Agreement included provisions to monitor the bathymetric capacity of the Urban water reservoirs as well as a requirement to conduct reoccurring demand analysis, demand forecasting and safe yield evaluations. This study will evaluate and calculate current and future demands and present safe yield. Per the project Agreement, these analyses shall be completed by calendar year 2020.

27. <u>Urban Finished Water Infrastructure Master Plan</u>

Design Engineer:	Michael Baker International (Baker)
Project Start:	November 2018
Project Status:	30% complete
Completion:	January 2020
Total Capital Project Budget:	$253,000

<u>Current Status</u>:

Work on this project is on-going. An operations workshop was held with RWSA, ACSA, and the City staff on April 4, 2019.

<u>History</u>:

As identified in the 2017 Strategic Plan, the Authority has a goal to plan, deliver and maintain dependable infrastructure in a financially responsible manner. Staff has identified asset master planning as a priority strategy to improve overall system development. Many previously identified projects in the urban finished water treatment and distribution system are in preliminary engineering,

design or construction. As such, staff have identified a need to develop a current and ongoing finished water master plan.

28. South Rivanna River Crossing and North Rivanna Transmission Main

Design Engineer:	Michael Baker International (Baker)
Project Start:	July 2020
Project Status:	Planning
Construction Start:	2021
Completion:	2023
Total Capital Project Budget:	$5,340,000

Current Status:

An update to the Airport Zone Study Report was completed in summer of 2018, confirming the need for and timing of the river crossing and transmission main. Design of the project will begin in summer 2020.

History:

RWSA has previously identified through master planning that a 24-inch water main will be needed from the South Rivanna Water Treatment Plant (SRWTP) to Hollymead Town Center to meet future water demands. Two segments of this water main were constructed as part of the VDOT Rt. 20 Solutions projects, including approximately 10,000 LF of 24-inch water main along Rt. 29 and 600 LF of 24-inch water main along the new Berkmar Drive Extension, behind the Kohl's department store. To complete the connection between the SRWTP and the Airport Road Pump Station Site, RWSA plans to construct a new river crossing at the South Fork Rivanna River and two "gap" sections of 24-inch water main between the already completed sections. Much of the new water main route is within VDOT right-of-way; however, acquisition of right-of-way will be required at the river crossing and on the Kohl's Property at Hollymead Town Center.

29. Route 29 Pump Station

Design Engineer:	Michael Baker International (Baker)
Project Start:	July 2019
Project Status:	Planning
Construction Start:	2021
Completion:	2022
Total Capital Project Budget:	$2,300,000

Current Status:

Design of the pump station is anticipated to begin in the summer of 2019.

History:

The Rt. 29 Pipeline and Pump Station master plan was developed in 2007 and originally envisioned a multi-faceted project that reliably connected the North and South Rivanna pressure bands; reduced excessive operating pressures, and developed a new Airport pressure zone to serve the highest

elevations near the Airport and Hollymead Town Center. The master plan update was completed in June of 2018 to reflect the changes in the system and demands since 2007. This project, along with the South Rivanna River Crossing and North Rivanna Transmission Main project, will provide a reliable and redundant finished water supply to the North Rivanna area. The proposed pump station will be able to serve system demands at both the current high pressure and future low pressure conditions. These facilities will also lead to future phase implementation which will include a storage tank and the creation of the Airport water pressure zone.

30. <u>South Rivanna Hydropower Plant Decommissioning</u>

Consultant:	Gomez and Sullivan
Project Start:	October 2016
Project Status:	Exemption Surrender Process – Phase 2 Underway
Construction Start:	2019
Completion:	2020
Approved Capital Budget:	$400,000
Current Project Estimate:	$750,000

<u>Current Status</u>:

A consultation document was provided to local regulatory agencies and a meeting was held on May 21, 2018 with the agencies to discuss the decommissioning process. Minor comments were provided by those agencies and development of the surrender application for submission to FERC is underway. As part of the application, a draft decommissioning plan has been developed and is being reviewed by RWSA. Due to a recent significant wet weather event, returning the 72-inch diameter penstock to a reservoir drain has been evaluated by Gomez and Sullivan. Modifications to the decommissioning plan are being developed to incorporate that into the project.

<u>History</u>:

RWSA constructed a hydropower plant at the South Fork Rivanna Dam in 1987. Power generation at the plant was limited for a number of years due to various mechanical issues. In December 2011, RWSA retained HDR to perform a mechanical and electrical equipment assessment and to provide recommendations for capital expenditures and continued operation. This assessment identified the need to perform a number of mechanical and electrical modifications to improve operation of the hydropower plant. On June 16, 2013, while the plant was down for testing associated with repairs to the speed reducer and generator, the powerhouse flooded during a heavy rainfall event. A post-flood inspection indicated that the rising water damaged the electrical equipment. In addition to electrical system issues, the turbine blades were "stuck" and inoperable prior to the flood event. Prior to beginning any rehabilitation work on the hydropower plant, it was determined that a feasibility study should be performed that reviewed previous recommendations and took into account interaction with the Federal Energy Regulatory Commission (FERC) to determine if it was cost effective for RWSA to rehabilitate the facility. The feasibility study was conducted by Gomez and Sullivan and concluded that rehabilitation of the facility would most likely not provide a return on investment based on current market conditions. Staff recommended that RWSA proceed with surrendering the exemption to licensure with FERC and decommission the facility. During the meeting on October 25, 2016, the

Board of Directors agreed with the recommendation and staff began to proceed with the surrender process.

Work associated with the first phase of the exemption surrender process with Gomez and Sullivan and Van Ness Feldman was completed confirming with FERC what the next steps in the surrender process would include. A work authorization with Gomez and Sullivan for Phase 2 of the exemption surrender process was finalized in August 2017 and includes tasks to manage the local regulatory agencies consultation process and development of the surrender application and decommissioning plan.

31. <u>Security Enhancements</u>

Design Engineer:	TBD
Project Start:	July 2018
Project Status:	Planning
Construction Start:	2019
Completion:	2021
Total Capital Project Budget:	$2,400,000

<u>Current Status:</u>

RWSA Engineering staff has begun addressing priority items discussed during the meeting it held with RWSA Operations staff in October 2018 and determining which portions of the project will require additional input from various RWSA departments. RWSA staff has met with ACSA and City staff to discuss how access control and intrusion detection systems have been implemented into to the day-to-day operations of the respective utilities. Meetings with additional utilities and organizations will be conducted as needed to gain additional perspective on access control and other security measures. It is expected that a Request for Proposal (RFP) will be issued by RWSA staff in order to facilitate the selection of an integrator to facilitate incorporation of an access control system throughout the Authority. The recommended access control system will be implemented into the CZWTP, OBSWTP, and SRWTP expansion/improvement projects as an initial measure, with additional facilities to follow. RWSA staff anticipates advertising the access control RFP in late April/early May 2019. As the project's scope of work is refined, a consultant will be selected to provide project assistance where needed.

<u>History:</u>

As required by the Federal Bioterrorism Act of 2002, water utilities must conduct Vulnerability Assessments and have Emergency Response Plans. RWSA recently completed an updated Risk Assessment of its water system in collaboration with the Albemarle County Service Authority (ACSA), City of Charlottesville (City), and University of Virginia (UVA). A number of security improvements that could be applied to both the water and wastewater systems were identified. The purpose of this project will be to install security improvements at RWSA facilities including additional security gate and fencing components, vehicle bollards, facility signage, camera system enhancements, additional security lighting, intrusion detection systems, door and window hardening, installation of industrial strength locks, communication technology and cable hardening, and an enhanced access control program.

32. Upper Schenks Branch Interceptor, Phase II

Design Engineer:	Frazier Engineering, P.A.
Project Start:	TBD
Project Status:	Planning
Construction Start:	TBD
Completion:	TBD
Approved Capital Budget:	$4,485,000
Current Project Estimate:	$3,985,000

Current Status:

Discussions are underway to determine an alignment for the replacement sewer line, generally located between the McIntire Recycling Center and Preston Avenue along McIntire Road. As part of this process, some additional subsurface exploration work will be conducted starting next month to gather rock information along the alignment in McIntire Road as well as across the ballfield.

History:

The Schenks Branch Sanitary Sewer interceptor is a pipeline operated by RWSA that serves the City of Charlottesville. The 21-inch sewer line was originally constructed by the City in the 1950s. Evaluations from the flow metering and modeling from the Comprehensive Sanitary Sewer Interceptor Study, and negotiations with the ACSA and City, resulted in an inflow and infiltration reduction plan from which it was concluded that increased capacity of the Schenks Branch Interceptor was needed for wet weather peak flow. Due to several road construction projects and the construction of the Meadow Creek Interceptor project along the sewer alignment, Schenks Branch was to be constructed in multiple phases. The completed sections, collectively known as the Lower Schenks Branch Interceptor, include the Tie-in to Meadow Creek, the section along McIntire Road Ext, and the section though the Route 250 Interchange.

The remaining sections, which are considered the Upper Schenks Branch Interceptor, were split into 2 phases. The first phase has been completed and is located within City-owned Schenks Greenway adjacent to McIntire Road and the second phase is to be located on County property (baseball field and County Office Building) adjacent to McIntire Road or within McIntire Road. Both phases are included in a DEQ Consent Order. As a result of discussions between RWSA and DEQ, DEQ approved a milestone schedule for completing the Phase 1 section by March 31, 2017 and set in "abeyance" a schedule for completing work on Phase 2 as a result of complications associated with the execution of the necessary easements. Phase 2, preliminary construction drawings and specifications have been developed. No new agreements concerning right-of-way have been reported to RWSA regarding Phase 2. No bidding or construction can take place until one of the following two options occur: (1) County grants RWSA a suitable easement on County property; or (2) City grants RWSA permission and a street cut permit to install the sewer directly under McIntire Road.

33. Asset Management Plan

Design Consultant:	GHD, Inc.
Project Start:	July 2018
Project Status:	80% Complete (Phase 1)

Completion: 2020
Total Capital Project Budget: $500,000

Current Status:

As part of the first phase, Asset Management awareness training and workshops related to Asset Management Program Development, the Gap Assessment process, and development of an Asset Management Policy have been conducted. A draft report documenting the Gap Assessment has been submitted and various other documents associated with policy and business processes are being reviewed as well. Completion of this first phase is anticipated in June 2019.

History:

Asset management is the practice of managing our infrastructure to minimize the total cost of owning and operating these assets while providing desired service levels. In doing so, it is used to make sure planned maintenance activities take place and that capital assets are replaced, repaired or upgraded at the right time, while ensuring that the money necessary to perform those activities is available. RWSA has some components of an asset management program in place (i.e. GIS, work order system), but has identified the need to further develop the program as part of our Strategic Planning process. In order to continue to build the program, a consultant has been procured to assist with a three-phase process that will include facilitation and development of an asset management strategic plan, development and management of a pilot study where the results of the strategic plan will be applied to a specific class of assets, and assistance through a full implementation process. As part of this three-phase process, the consultant will also assist RWSA with the procurement of a software package to facilitate the overall program.

O&M Related Projects

Staff is currently working on several O&M related projects within the water and wastewater systems as listed below:

#	Project Description	Total Approx. Value
35	NRWTP Raw Water Metering Improvements	$135,000
36	NRWTP Sludge Lagoon Study and WTP Needs Assessment	$60,100
37	NRWTP High Service Pump Replacement	$200,000
38	MCAWRRF Cogeneration System Analysis	$48,300
39	SRWTP Future Site Development Analysis	$15,000

- NRWTP Raw Water Metering Improvements

The NRWTP is permitted to provide up to 2.0 MGD of potable drinking water to customers located in the Urban service area. After water is pumped from the raw water pump station on the North Fork Rivanna River, the raw water flow is metered by an orifice plate, or insert style meter, prior to entering the rapid mix chamber. The meter is located behind the existing powdered activated carbon feed system and is difficult to access. In addition, RWSA recognizes that the accuracy of this style of meter is reduced by laying length conditions in comparison to modern magnetic flow meters which have

been installed at other locations. RWSA is working with SEH to develop contract documents to have a magnetic flow meter installed on the raw water line in an exterior below grade vault. The schedule for bidding of this work will be dependent on the availability of funds.

- NRWTP Sludge Lagoon Study and WTP Needs Assessment

  The two lagoons or settling ponds at the plant are earthen basins designed to capture and hold residuals generated through the treatment process as well as periodic draining and washdown of the sedimentation and flocculation basins. The basins were designed to allow all the residuals and solids to settle out and then the clarified water to be decanted and conveyed to the river. The operational use of these lagoons is not as originally intended, and the Virginia Department of Environmental Quality has concerns regarding their condition. A study is being performed to determine how they can be improved, and other locations on site that may be less prone to flood waters. Under this project, a needs assessment at the plant will be also be performed and updated.

- MCAWRRF Cogeneration System Analysis

  The MCAWRRF currently utilizes a cogeneration facility which accepts digester gas and uses it to create electricity and heat. The facility was put into operation in 2011. The generator supplies power back to the plant electrical distribution system providing energy usage savings through offsetting usage through the electric utility. Unfortunately, there have been a number of issues associated with operation of the generator including, expensive and proprietary maintenance services and temperature issues. With a significant and expensive scheduled maintenance event forthcoming, RWSA wanted to conduct a study to determine if these issues could be resolved or if there was a more efficient way to utilize the digester gas. This study will evaluate options for improvements to the existing system or new systems that could be implemented along with estimated costs and returns on investment. A final report was submitted on February 22nd and RWSA is evaluating the final conclusions.

- SRWTP Future Site Development Analysis

  As future water demands increase, facility expansions and additions at the SRWTP site are proposed to continue. At some point in the future, RWSA plans to increase the capacity at the SRWTP to 16 MGD along with preliminary plans for a 41 MGD raw water pump station and a 25 MGD pretreatment facility associated with the future transfer of raw water from the South Rivanna Reservoir to the Ragged Mountain Reservoir. With property development activity increasing near the plant, the intent of this analysis is to confirm what approximate space would be needed to meet the plant's future needs in order to better determine future property requirements. The analysis is expected to be completed by May 2019.

RIVANNA WATER & SEWER AUTHORITY
695 Moores Creek Lane | Charlottesville, Virginia 22902-9016
434.977.2970
434.293.8858
www.rivanna.org

MEMORANDUM

TO: **RIVANNA WATER & SEWER AUTHORITY BOARD OF DIRECTORS**

FROM: **DAVE TUNGATE, DIRECTOR OF OPERATIONS**

REVIEWED BY: **BILL MAWYER, EXECUTIVE DIRECTOR**

SUBJECT: **OPERATIONS REPORT FOR MARCH 2019**

DATE: **APRIL 23, 2019**

WATER OPERATIONS:

The average daily/monthly total water distributed for March 2019 was as follows:

Water Treatment Plant	***Average Daily Production (MGD)***	***Total Monthly Production (MG)***	***Maximum Daily Production in the Month (MGD)***
Observatory	1.79	55.41	2.80 (3/29/19)
South Rivanna	6.00	185.95	6.92 (3/19/19)
North Rivanna	0.05	1.66	0.36 (3/30/19)
Urban Total	7.84	243.02	8.94 (3/28/19)
Crozet	0.525	16.27	0.768 (3/20/19)
Scottsville	0.040	1.24	0.051 (3/24/19)
RWSA Total	8.40	260.53	---

- All RWSA water treatment facilities were in regulatory compliance during the month of March.

Status of Reservoirs (as of April 18, 2019):

- Urban Reservoirs: 100 % of Total Useable Capacity
- Ragged Mountain Reservoir is full (100%)
- Sugar Hollow Reservoir is full (100%)
- South Rivanna Reservoir is full (100%)
- Beaver Creek Reservoir is full (100%)
- Totier Creek Reservoir is full (100%)

WASTEWATER OPERATIONS:

All RWSA Water Resource Recovery Facilities (WRRFs) were in regulatory compliance with their effluent limitations during March 2019 with the exception of Nitrogen at Glenmore and Moores Creek due to anomalies in the test results from a contract lab. RWSA is in discussion with DEQ and the contract lab concerning the validity of the test results. Performance of the WRRFs in March was as follows compared to the respective VDEQ permit limits:

WRRF	*Average Daily Effluent Flow (mgd)*	*Average $CBOD_5$ (ppm)*		*Average Total Suspended Solids (ppm)*		*Average Ammonia (ppm)*	
		RESULT	*LIMIT*	*RESULT*	*LIMIT*	*RESULT*	*LIMIT*
Moores Creek	12.7	1.0	10	1.4	22	0.03	7.0
Glenmore	0.144	4.0	15	8.0	30	0.53	NL
Scottsville	0.096	4.0	25	8.0	30	0.08	NL
Stone Robinson	0.002	NR	30	NR	30	NR	NL

NR = Not Required
NL = No Limit
<QL: Less than analytical method quantitative level (2 ppm for CBOD, and 1 ppm for TSS).

Nutrient discharges at the Moores Creek AWRRF were as follows for March 2019. RWSA is in discussion with DEQ and the contract lab concerning the validity of the Nitrogen results:

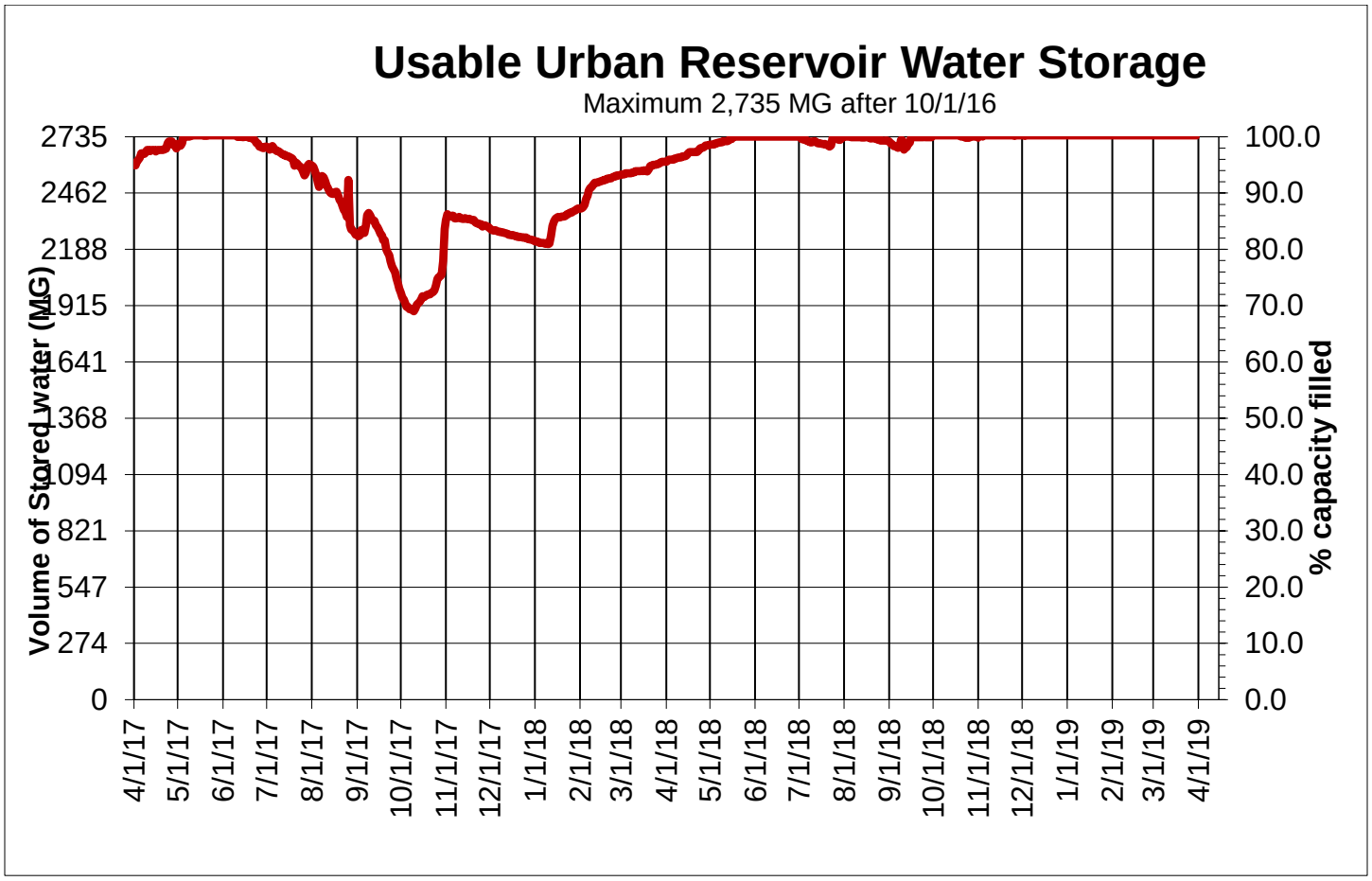
State Annual Allocation (lb./yr.)		*Average Monthly Allocation (lb./mo.)**	*Moores Creek Discharge (lb./mo.)*	*Performance as % of Average Allocation**
Nitrogen	282,994	23,583	47,143	199%
Phosphorous	18,525	1,544	697	45%

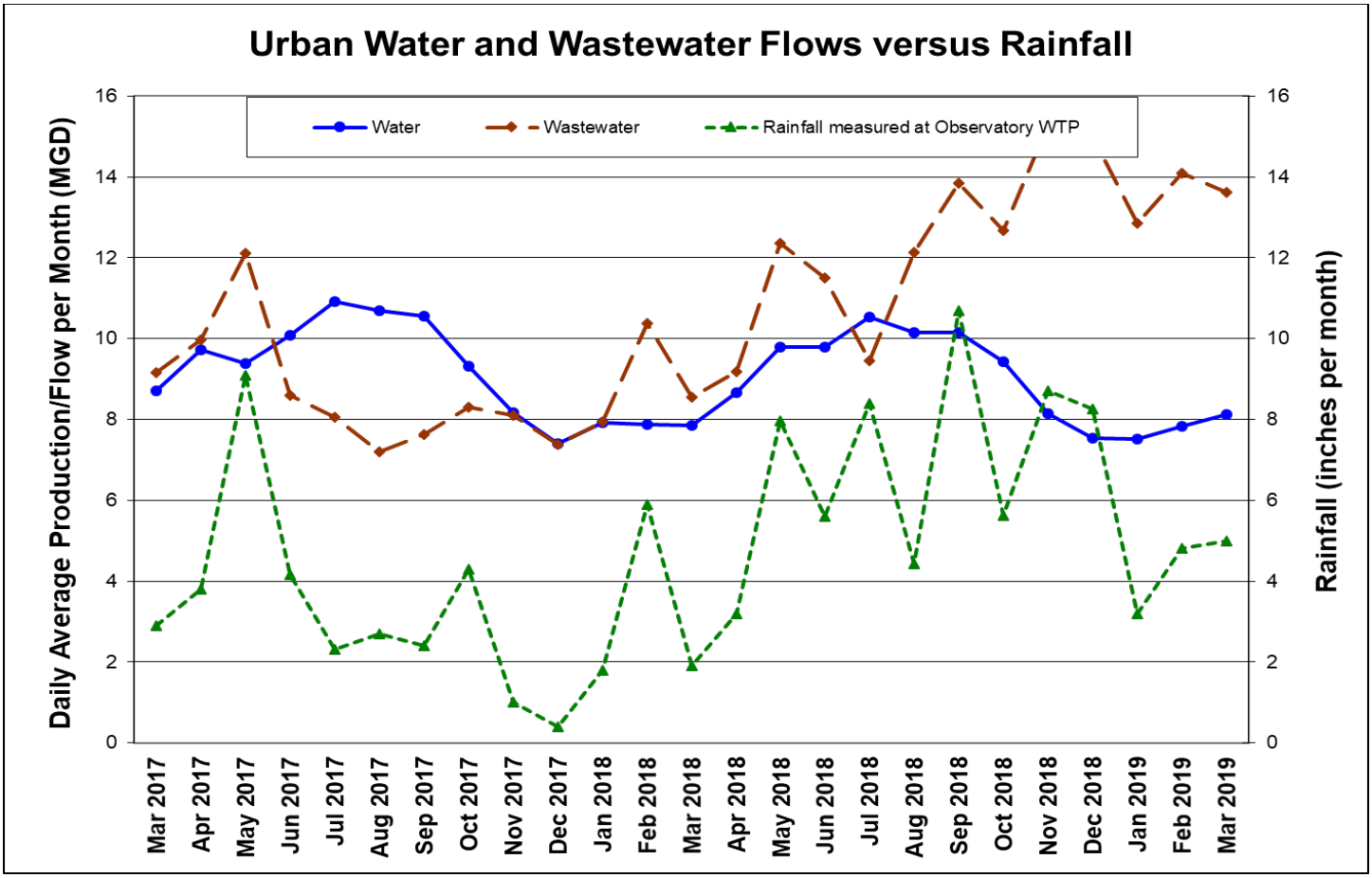
*State allocations are expressed as annual amounts. One-twelfth of that allocation is an internal monthly benchmark for comparative purposes only.

WATER AND WASTEWATER DATA:

The following graphs are provided for review:

- Usable Urban Reservoir Water Storage
- Urban Water and Wastewater Flows versus Rainfall


Usable Urban Reservoir Water Storage
Maximum 2,735 MG after 10/1/16
Volume of Stored water (MG)
% capacity filled
2735
2462
2188
1915
1641
1368
1094
821
547
274
0
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
4/1/17
5/1/17
6/1/17
7/1/17
8/1/17
9/1/17
10/1/17
11/1/17
12/1/17
1/1/18
2/1/18
3/1/18
4/1/18
5/1/18
6/1/18
7/1/18
8/1/18
9/1/18
10/1/18
11/1/18
12/1/18
1/1/19
2/1/19
3/1/19
4/1/19


Urban Water and Wastewater Flows versus Rainfall
Water
Wastewater
Rainfall measured at Observatory WTP
Daily Average Production/Flow per Month (MGD)
Rainfall (inches per month)
0
2
4
6
8
10
12
14
16
Mar 2017
Apr 2017
May 2017
Jun 2017
Jul 2017
Aug 2017
Sep 2017
Oct 2017
Nov 2017
Dec 2017
Jan 2018
Feb 2018
Mar 2018
Apr 2018
May 2018
Jun 2018
Jul 2018
Aug 2018
Sep 2018
Oct 2018
Nov 2018
Dec 2018
Jan 2019
Feb 2019
Mar 2019

RIVANNA WATER & SEWER AUTHORITY
695 Moores Creek Lane | Charlottesville, Virginia 22902-9016
434.977.2970
434.293.8858
www.rivanna.org

MEMORANDUM

TO: **RIVANNA WATER & SEWER AUTHORITY BOARD OF DIRECTORS**

FROM: **BILL MAWYER, EXECUTIVE DIRECTOR**

SUBJECT: **APPROVAL OF EMPLOYEE HOLIDAY ON FRIDAY, JULY 5TH**

DATE: **APRIL 23, 2019**

An additional holiday is requested for staff on Friday, July 5, 2019. Our office will be closed on Thursday, July 4th, for the Independence Day holiday.

Board Action Requested:

It is respectfully requested that the Board of Directors authorize a holiday (8 hours) on July 5, 2019.

RIVANNA WATER & SEWER AUTHORITY
695 Moores Creek Lane | Charlottesville, Virginia 22902-9016
434.977.2970
434.293.8858
www.rivanna.org

MEMORANDUM

TO: **RIVANNA WATER & SEWER AUTHORITY BOARD OF DIRECTORS**

FROM: **JENNIFER A. WHITAKER, DIRECTOR OF ENGINEERING AND MAINTENANCE**

REVIEWED BY: **BILL MAWYER, EXECUTIVE DIRECTOR**

SUBJECT: **SOUTH RIVANNA RESERVOIR TO RAGGED MOUNTAIN RESERVOIR WATER LINE RIGHT-OF-WAY: EASEMENT ACQUISITION SERVICES - ERM & ASSOCIATES**

DATE: **APRIL 23, 2019**

The approved 50-year Community Water Supply Plan includes the future construction of a raw water line from the South Fork Rivanna Reservoir to the Ragged Mountain Reservoir. This water line will replace the existing Upper Sugar Hollow Pipeline along an alignment to increase raw water transfer capacity in the Urban Water System. This project includes a routing study, preliminary design and preparation of easement documents, as well as acquisition of water line easements along the approved route.

Preliminary routing work on the project began in fall of 2017 by Michael Baker International. Now that most of the alignment has been determined, survey and plat creation for the necessary easements is underway. Property owners have been contacted to request permission to access properties for boundary surveying, which began in late March of 2019. Easement Acquisition work is expected to begin once plats and appraisals (as needed) are completed for each property.

RWSA has worked with ERM & Associates, LLC (ERM) to develop a scope and fee proposal for utility easement acquisition for the project on an estimated 31 parcels. The work authorization includes cost for preparation of the easement packages, easement negotiation, title searches, and appraisal services (as necessary). Compensation is proposed on a time and materials basis with total costs not to exceed $191,025.00. This amount is within the budget allocated for the South Rivanna Reservoir to Ragged Mountain Reservoir Water Line Right-of-Way project in the 2019-2023 Capital Improvement Plan, adopted June 2018.

Board Action Requested:

Staff requests that the Board of Directors authorize the Executive Director to execute a work authorization with ERM under their existing term agreement for Easement Acquisition Services for $191,025.00, and that the Executive Director be authorized to execute necessary amendments in additional amounts, if deemed necessary to complete the work identified above, not to exceed 10% of the initial authorization.

RIVANNA WATER & SEWER AUTHORITY
695 Moores Creek Lane | Charlottesville, Virginia 22902-9016
434.977.2970
434.293.8858
www.rivanna.org

MEMORANDUM

TO: **RIVANNA WATER & SEWER AUTHORITY BOARD OF DIRECTORS**

FROM: **ANDREA B. TERRY, WATER RESOURCES MANAGER**

REVIEWED BY: **BILL MAWYER, EXECUTIVE DIRECTOR**
JENNIFER WHITAKER, DIRECTOR OF ENGINEERING AND MAINTENANCE

SUBJECT: **RIVANNA CONSERVATION ALLIANCE PRESENTAION**

DATE: **APRIL 23, 2019**

Lisa Wittenborn, Program Director, and Julia Ela, Operations Manager of the Rivanna Conservation Alliance, are here today to report on the programs and projects of the Rivanna Conservation Alliance.

Board Action Requested:

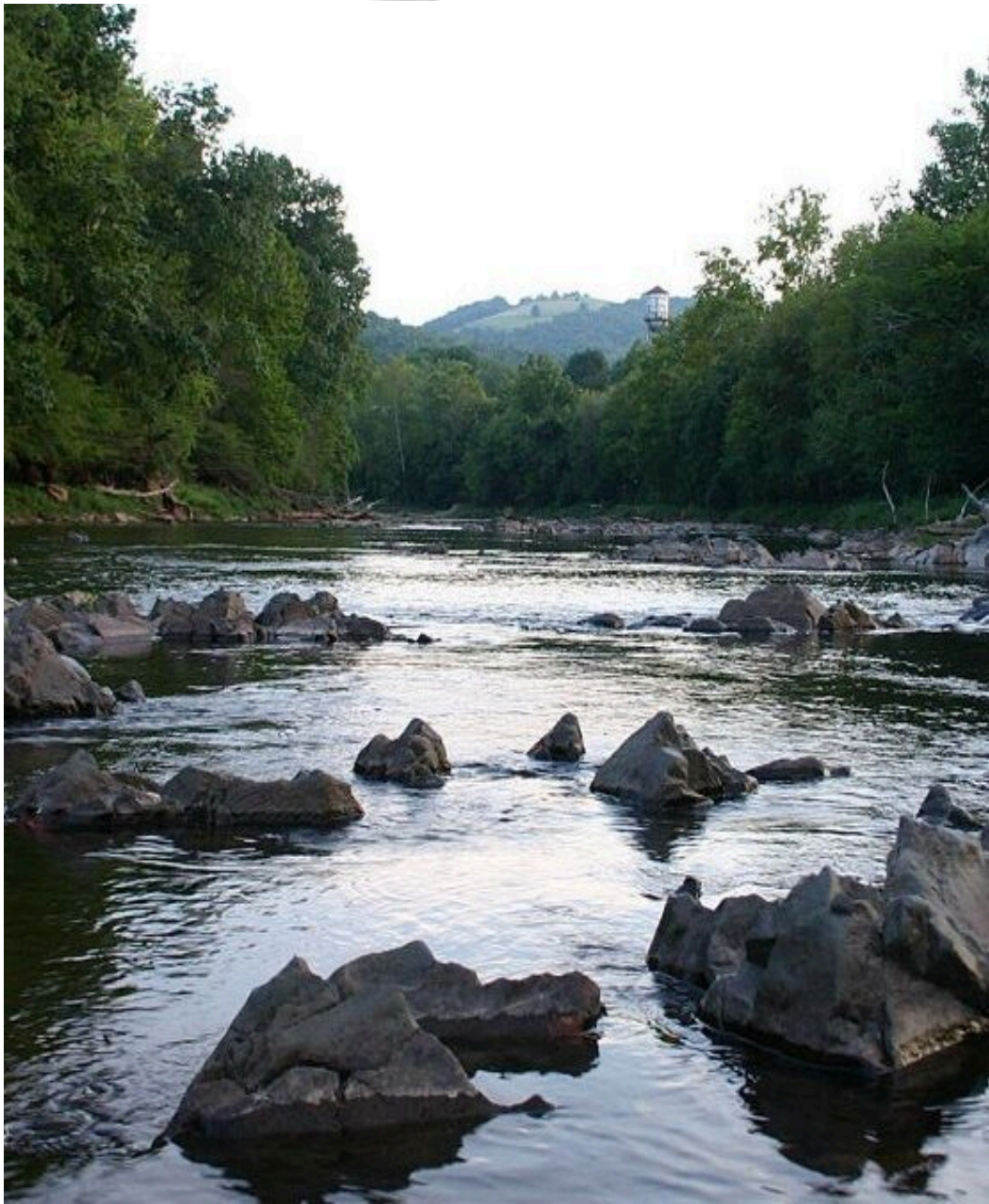
This presentation is for information only. No Board action requested.

RIVANNA
CONSERVATION ALLIANCE

RCA Monitoring Programs and Updates

Presentation to the RWSA Board

April 23, 2019

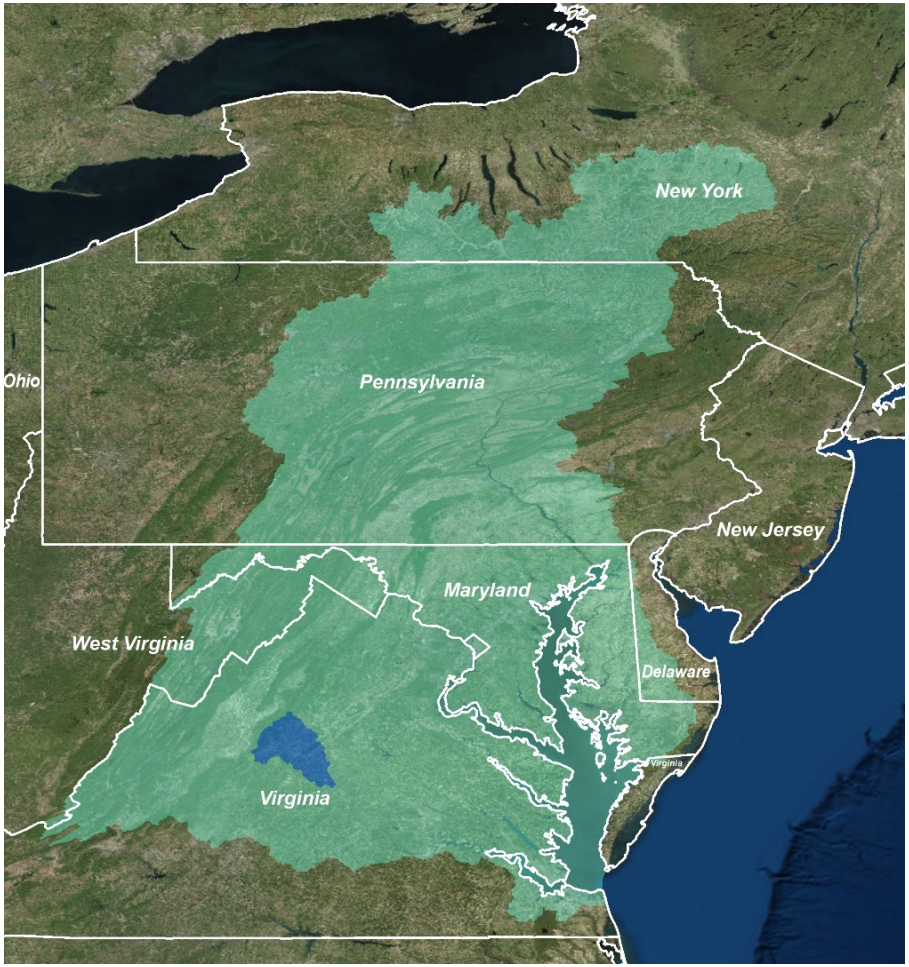


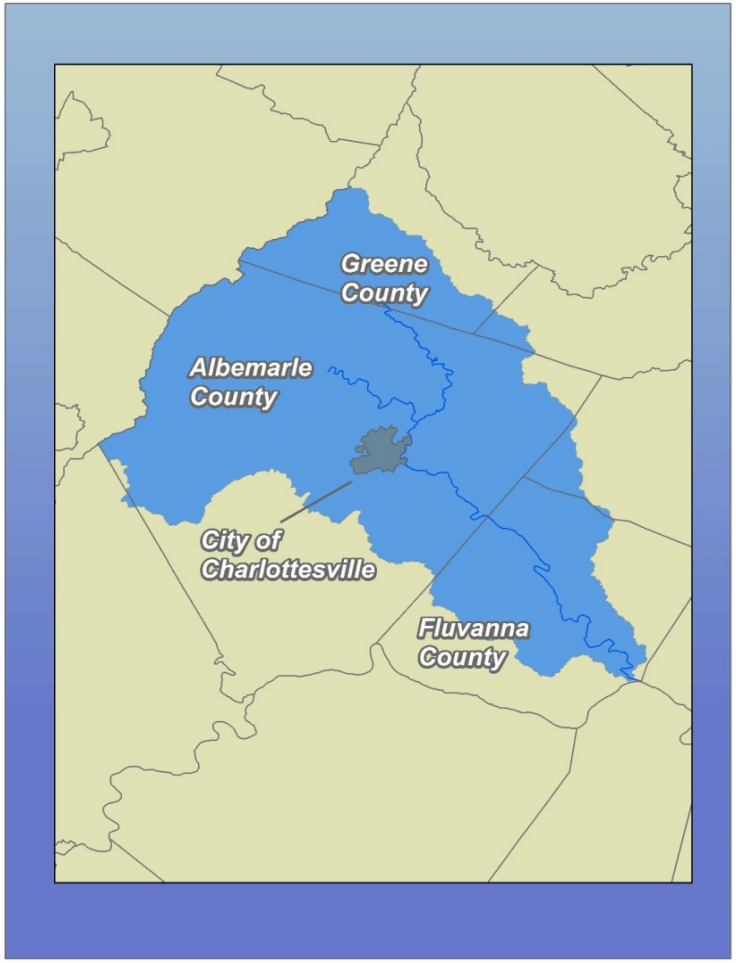
RCA Background

- RCA formed in 2016 by merger of Rivanna Conservation Society (RCS) and StreamWatch
- **Vision**: A healthy, thriving community that values its rivers and streams
- **Mission**: Protection of the Rivanna River and its tributaries through community involvement, conservation, education, recreation, restoration and water quality monitoring and reporting

RIVANNA CONSERVATION ALLIANCE

Rivanna River Watershed





RCA Programs - Education

- School programs
- Pop-ups
- River kiosks
- Scheier Natural Area and Education Center
- Public events

➢ **RiverFest May 11!**

Burley Middle School students testing the water in Schenks Branch

RCA Programs – River Stewards

- Weekly river reconnaissance trips
- River safety
- River & stream cleanups
- Paddling experiences
- River Race

RCA Programs - Conservation

- Rain gardens
- Buffer plantings
- Invasive species removals
- River and stream

Level III Monitoring Programs

- Data equivalent to those collected by state agencies
- Can be used for:
  - Identifying impaired waters
  - TMDLs
  - MS4 stormwater programs
  - Water safety information
  - Water quality improvement decisions
- Added value to data and monitoring programs

RIVANNA CONSERVATION ALLIANCE

RCA Benthic Monitoring

- Volunteers sample benthic macroinvertebrates (small organisms that live at bottom of streams)
- Number/diversity indicate water quality
- 50 sites sampled each spring and fall

RIVANNA
CONSERVATION ALLIANCE

RCA Bacteria Monitoring

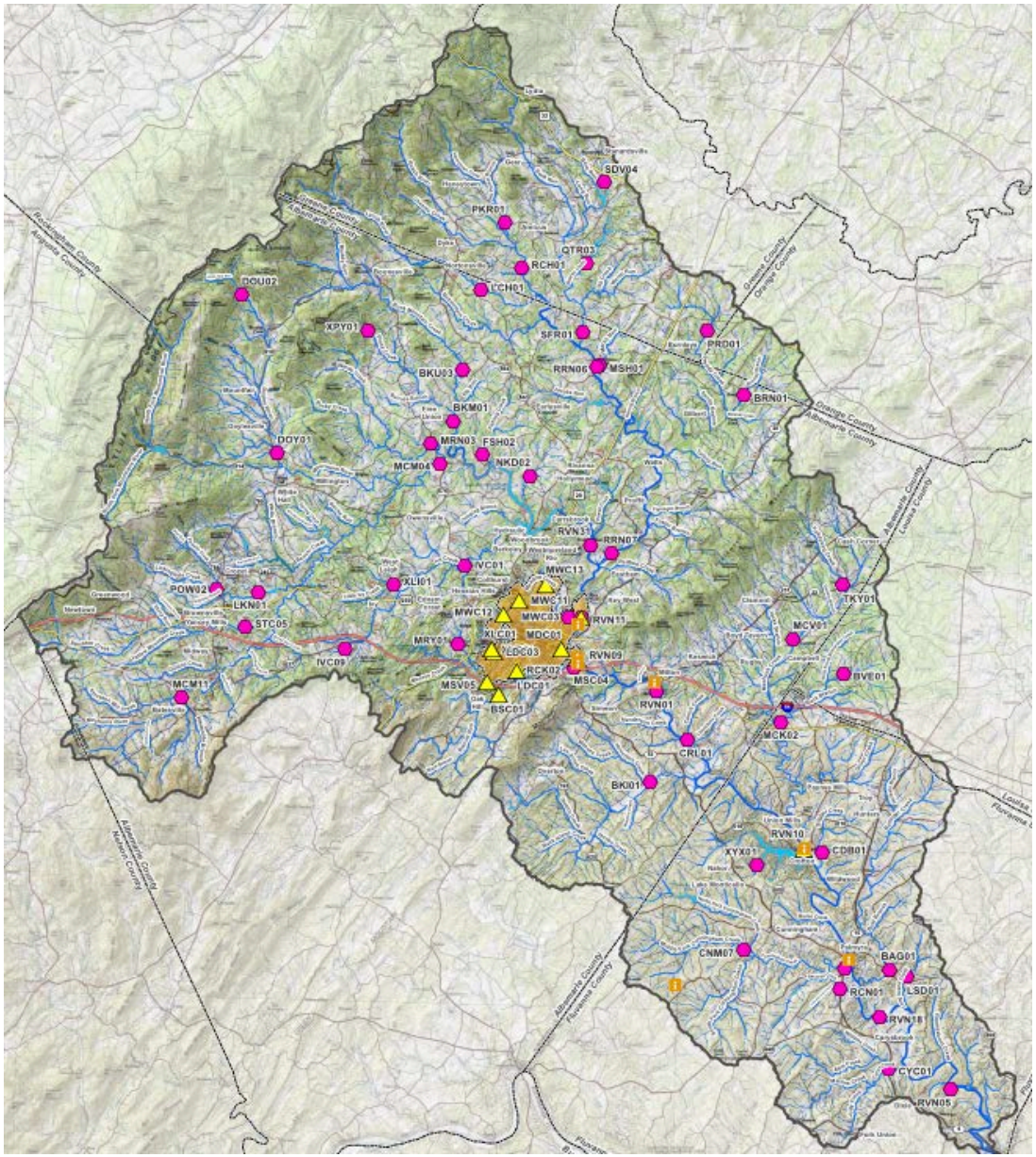
- Volunteers test for *E. Coli* bacteria levels
- 20 urban sites sampled monthly
- 2 recreation sites tested weekly in summer

Monitoring Sites

- 50 Benthic Sites

- 16 Established Bacteria Sites

  (4 Additional Bacteria Sites Shift Location Monthly)



Recent Monitoring Highlights

- Trained volunteers and completed first year of Level III bacteria sampling
- Contributed essential data to Cunningham Creek and North Fork Rivanna TMDL processes
- Detected several sewer line leaks, leading to quick repairs
- Combined and upgraded monitoring labs in a new space
- Won the USDA/NRCS Virginia and Southeast Earth Team Awards for Outstanding Volunteer Group

RIVANNA
CONSERVATION ALLIANCE

Monitoring Goals for 2019

- Sample four additional locations monthly for bacteria
- Conduct habitat assessments at 25 benthic sites
- Analyze stream health trends using long-term benthic data
- Establish new Level III program for testing pH, dissolved oxygen, and conductivity
- Conduct a fish study, building off the study in 2007

RIVANNA
CONSERVATION ALLIANCE

Thank you for your ongoing support of RCA's Monitoring Programs

www.rivannariver.org



RIVANNA WATER & SEWER AUTHORITY
695 Moores Creek Lane | Charlottesville, Virginia 22902-9016
434.977.2970
434.293.8858
www.rivanna.org

MEMORANDUM

TO: **RIVANNA WATER & SEWER AUTHORITY BOARD OF DIRECTORS**

FROM: **ANDREA B. TERRY, WATER RESOURCES MANAGER**

REVIEWED BY: **BILL MAWYER, EXECUTIVE DIRECTOR**
JENNIFER WHITAKER, DIRECTOR OF ENGINEERING AND MAINTENANCE

SUBJECT: **ANNUAL RESERVOIR REPORT**

DATE: **APRIL 23, 2019**

In September 2014, the Board authorized a contract for "Reservoir Management Services" with DiNatale Water Consultants to conduct a study of RWSA's five reservoirs. Phase 1 of this study was completed in 2016, the findings of which were presented to the Board in May 2016. At that time, the Board requested that a less formal, summary document be created. Both the final ***Phase 1 Reservoir Water Quality and Management Assessment*** and the summary document ***Reservoir Water Quality and Management Study: A First Look*** are available on our website at www.rivanna.org/reservoir-study. Phase 2 of the study was authorized by the Board in August 2016 and completed in 2018. A presentation of the Phase 2 with recommendations was presented to the Board in April 2018.

We are continuing with the monitoring program to create a robust data base of reservoir water quality information. This database will help us make decisions about algal treatment of reservoirs, and increase our knowledge of the ecology of these systems.

In addition to the water quality monitoring, bathymetric surveys of South Rivanna Reservoir and Ragged Mountain Reservoir were completed in 2018. Based on the results of these surveys, the estimate of useable storage in the Urban System has decreased from 2,735 BG to 2,665 BG, which is a decrease of 70 MG from prior estimates.

Board Action Requested:

This presentation is for information only.

RWSA Annual Reservoir Report

Year 2018

RIVANNA WATER & SEWER AUTHORITY

Presented by:

Andrea Terry, Water Resources Manager

April 23, 2019

RWSA Reservoirs

- Water Quality
  - Reservoir monitoring program
- Water Quantity
  - Bathymetric surveys in 2018
    - South Fork Rivanna Reservoir
    - Ragged Mountain Reservoir

Water Supply Reservoirs

South Fork Rivanna Reservoir

Sugar Hollow Reservoir

Ragged Mountain Reservoir

Totier Creek

(Scottsville)

Urban Area

Beaver Creek

(Crozet)

Reservoir Water Quality

Phase 1 Reservoir Water Quality and Management Assessment

- Presented to Board in April 2016
- Evaluated existing watershed and reservoir data
- Created monitoring plan to establish baseline data for long-term trending
- Identified sources of existing or potential water quality concerns
- Evaluated strategies for management of reservoir water quality

Phase 2 Reservoir Water Quality and Management Assessment

- Presented to Board in April 2018
- Continued reservoir monitoring (with focus on SRR and BCR)
- Conducted additional sampling and flow studies to further understand processes happening in reservoirs
- Further identification of sources of nutrients (internal vs. external)
- Refined recommended reservoir management methods from Phase 1

What Now?

On-Going Reservoir Monitoring Program

- Continue to collect data on reservoirs to maintain a robust water quality dataset
- These data will be used to guide management decisions
- Program provides background should any in-lake alternatives to algal management be funded in the future

On-Going Reservoir Monitoring Program

- Sampling includes EXO-sonde and grab samples
- Bi-weekly sampling at Urban reservoirs (April-November)
- Monthly sampling at SH and TCR
  - Adjust based on indicator parameters:
    - Weather forecast
    - Reservoir levels
    - Raw water quality
    - Appearance of reservoir

On-Going Reservoir Monitoring Program

Beaver Creek Reservoir

- 2018 monitoring data trending similarly to the past three years:
  - Stratification occurs early in May and lasts through to November
  - Reservoir became anoxic in depths in June
  - Phosphorus loading from inflowing streams likely is a long-term source of Phosphorus
  - Lake turnover in the fall releases nutrients from the sediment, causing late in the year algal blooms
  - Blooms occurred from April through December
- Residence time for water ranges from 39-135 days, with it being shorter during periods of high flows
- Investigating the possibility of installing a water quality sonde in Beaver Creek Reservoir to continuously monitor water quality

On-Going Reservoir Monitoring Program

South Fork Rivanna Reservoir

- Run-of-the-River Reservoir
- Residence time for water during high flows is less than a day
- 2018 extremely wet year
- Reservoir level never fell below crest in 2018
- No algal blooms above triggers in 2018

On-Going Reservoir Monitoring Program

Ragged Mountain Reservoir

- No blue-green algal blooms observed
- One green algae bloom that staff monitored, but did not require lake treatment

Totier Creek Reservoir and Sugar Hollow Reservoir

- No algal blooms requiring treatment were observed

Number of Algaecide Applications for Control of Blue-green Algae

Year	SFRR	BC	RM*	SH	TC
2014	0	5	2	0	0
2015	2	4	3	1	1
2016	1	8	0	0	0
2017	2	5	0	0	0
2018	0	7	0	0	0

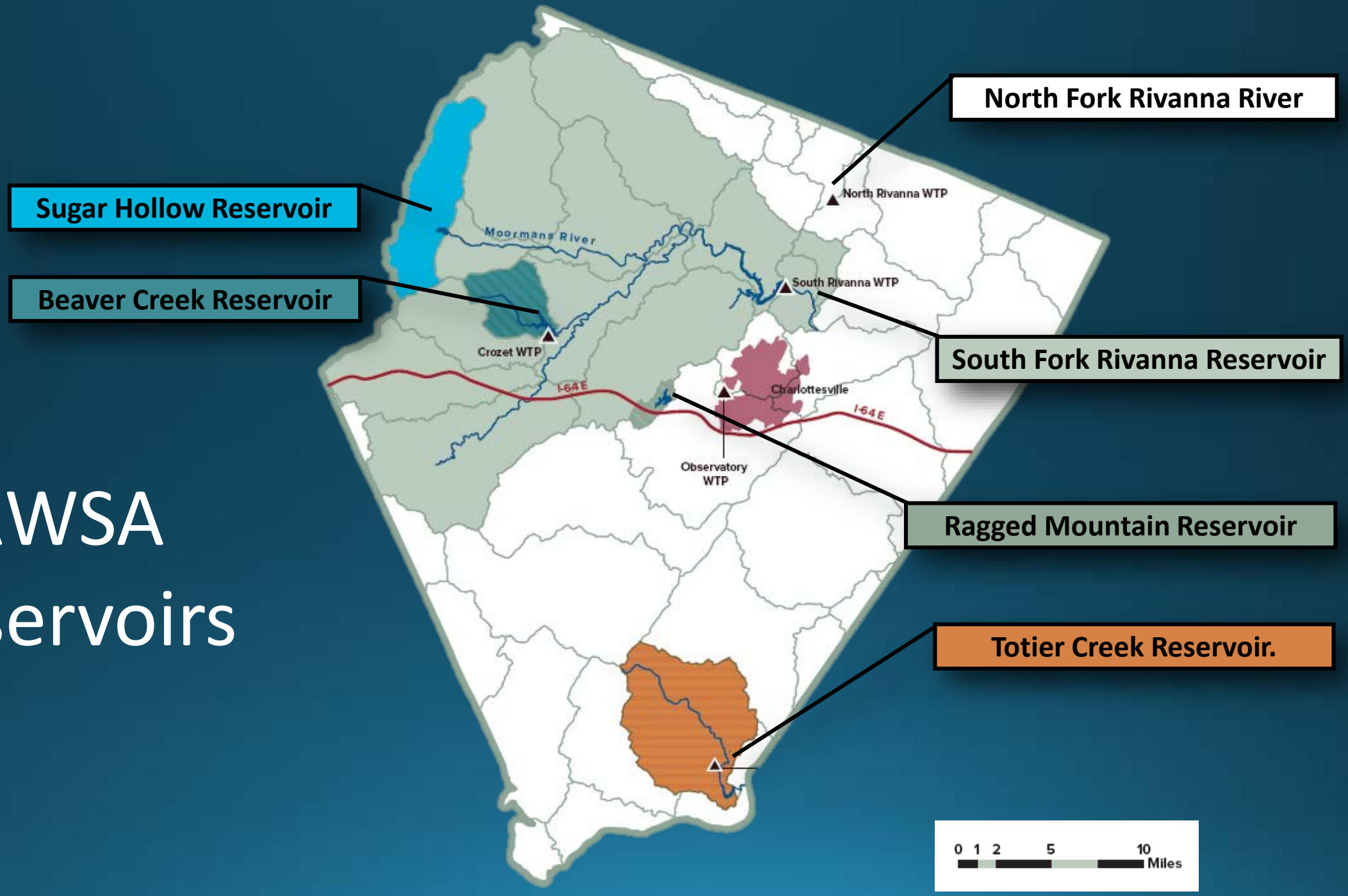
* Treatment at RM was for green algae bloom

On-Going Reservoir Monitoring

- Continue to monitor
- Continue collaboration on projects to protect water quality of the reservoirs with:
  - Albemarle County
  - Soil and Water Conservation District

Water Quantity

RWSA Reservoirs



Pre-2018 Reservoir Characteristics

Reservoir	Volume* (MG)	Surface Area (Acres)	Watershed (miles^2)
South Fork Rivanna	883	366	259
Ragged Mountain	1,513	170	2
Sugar Hollow	339	47	18
Beaver Creek	500	104	10
Totier Creek	155	66	29

* Data Sources

- South Rivanna Reservoir 2009 bathymetry
- Ragged Mountain Reservoir 2016 As-Builts
- Sugar Hollow Reservoir 2015 bathymetry
- Beaver Creek Reservoir 2016 Bathymetry
- Totier Creek Reservoir Design Drawings 1969

2018 Reservoir Characteristics

Reservoir	Volume* (MG)	Surface Area (Acres)	Watershed (miles^2)
South Fork Rivanna	885 (883)	366	259
Ragged Mountain	1,441 (1,513)	170	2
Sugar Hollow	339	47	18
Beaver Creek	500	104	10
Totier Creek	155	66	29

* Data Sources

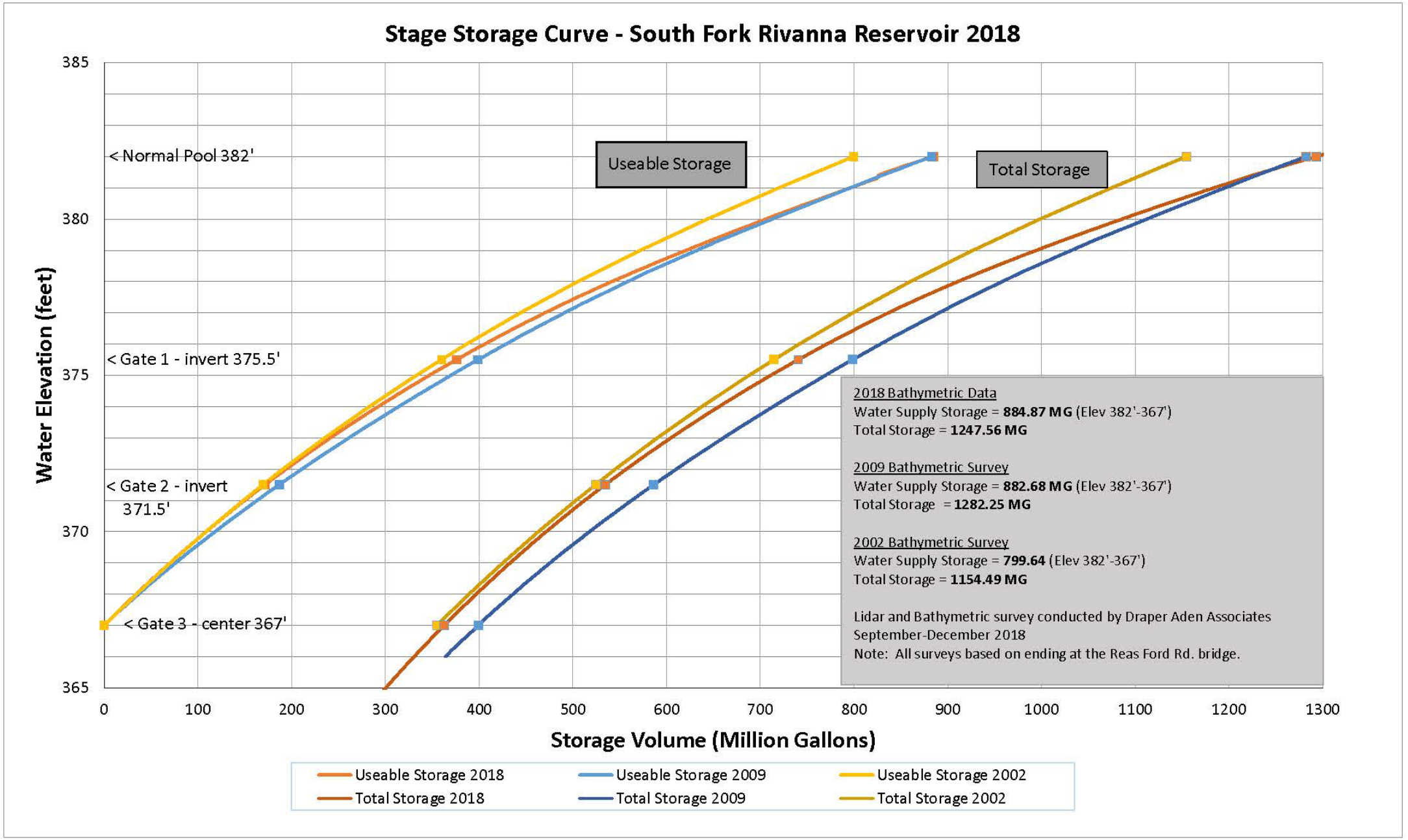
- South Rivanna 2018 bathymetry
- Ragged Mountain 2018 bathymetry
- Sugar Hollow 2015 bathymetry
- Beaver Creek Reservoir 2016 Bathymetry
- Totier Creek Reservoir Design Drawings 1969

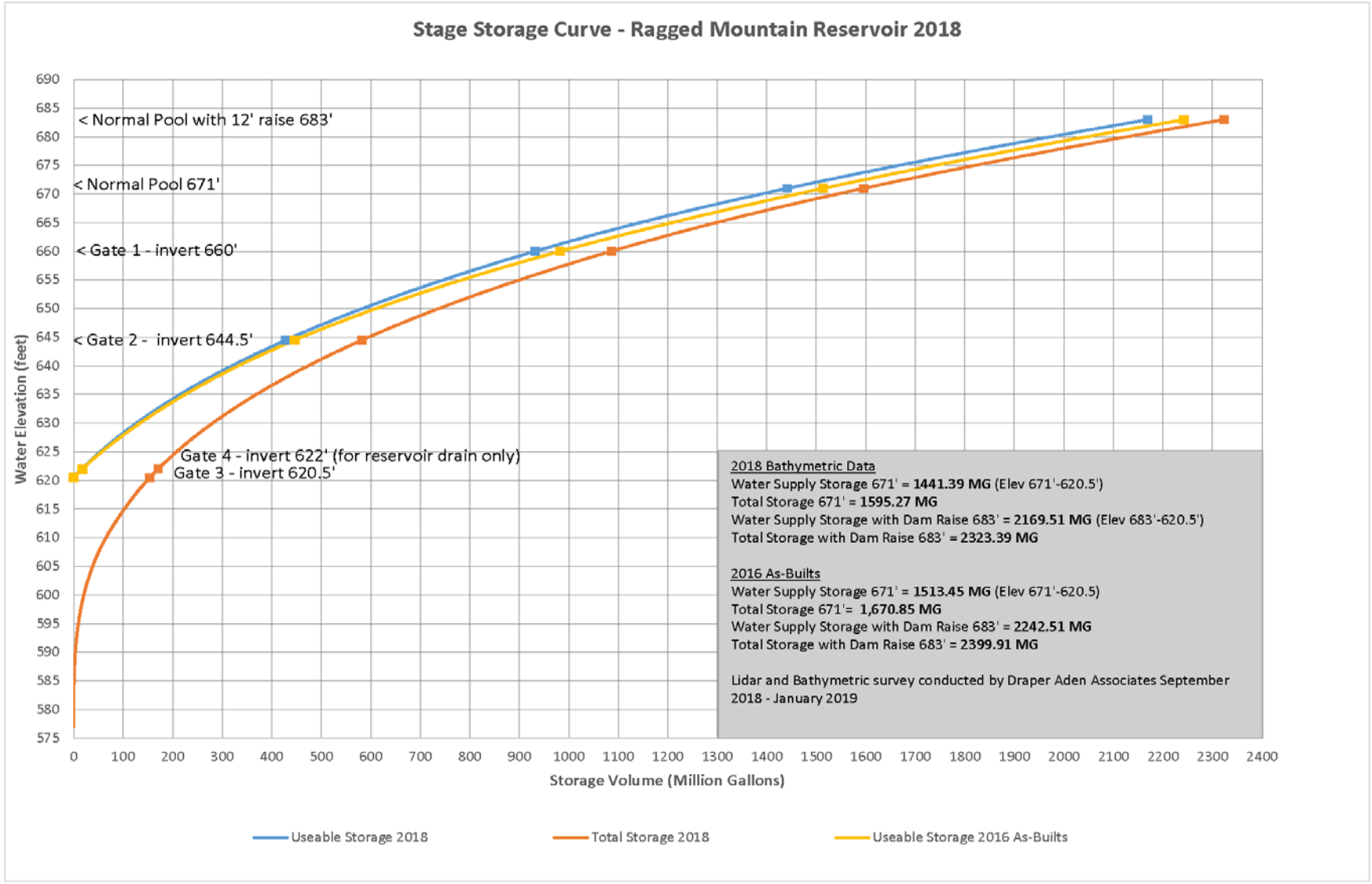
**Green denotes changes from 2018

Change in Urban Useable Water Storage

- South Fork Rivanna increased 2 MG
- Ragged Mountain Reservoir decreased by 72 MG

- Useable Storage in the Urban System reservoirs
  - 2,735 BG past estimate
  - 2,665 BG based on new bathymetry
  - 70 MG decrease


Stage Storage Curve - South Fork Rivanna Reservoir 2018
Water Elevation (feet)
385
380
375
370
365
< Normal Pool 382'
< Gate 1 - invert 375.5'
< Gate 2 - invert 371.5'
< Gate 3 - center 367'
Useable Storage
Total Storage
2018 Bathymetric Data
Water Supply Storage = 884.87 MG (Elev 382'-367')
Total Storage = 1247.56 MG
2009 Bathymetric Survey
Water Supply Storage = 882.68 MG (Elev 382'-367')
Total Storage = 1282.25 MG
2002 Bathymetric Survey
Water Supply Storage = 799.64 (Elev 382'-367')
Total Storage = 1154.49 MG
Lidar and Bathymetric survey conducted by Draper Aden Associates
September-December 2018
Note: All surveys based on ending at the Reas Ford Rd. bridge.
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
Storage Volume (Million Gallons)
Useable Storage 2018
Useable Storage 2009
Useable Storage 2002
Total Storage 2018
Total Storage 2009
Total Storage 2002


Stage Storage Curve - Ragged Mountain Reservoir 2018
< Normal Pool with 12' raise 683'
< Normal Pool 671'
< Gate 1 - invert 660'
< Gate 2 - invert 644.5'
Gate 4 - invert 622' (for reservoir drain only)
Gate 3 - invert 620.5'
Water Elevation (feet)
690
685
680
675
670
665
660
655
650
645
640
635
630
625
620
615
610
605
600
595
590
585
580
575
0 100 200 300 400 500 600 700 800 900 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000 2100 2200 2300 2400
Storage Volume (Million Gallons)
2018 Bathymetric Data
Water Supply Storage 671' = 1441.39 MG (Elev 671'-620.5')
Total Storage 671' = 1595.27 MG
Water Supply Storage with Dam Raise 683' = 2169.51 MG (Elev 683'-620.5')
Total Storage with Dam Raise 683' = 2323.39 MG
2016 As-Builts
Water Supply Storage 671' = 1513.45 MG (Elev 671'-620.5)
Total Storage 671'= 1,670.85 MG
Water Supply Storage with Dam Raise 683' = 2242.51 MG
Total Storage with Dam Raise 683' = 2399.91 MG
Lidar and Bathymetric survey conducted by Draper Aden Associates September 2018 - January 2019
Useable Storage 2018
Total Storage 2018
Useable Storage 2016 As-Builts

Questions?

CYBER-SECURITY

Rivanna's 7 Layers of protection

Presented by:

Steven Miller, IS Administrator

RWSA/RSWA

WHAT IS CYBER-SECURITY?

cybersecurity noun

cy·ber·se·cu·ri·ty | \ˈsī-bər-si-ˌkyu̇r-ə-tē\

Cyber-security is the practice of defending computers, servers, mobile devices, electronic systems, networks and data from malicious attacks.

COMMON CYBER-SECURITY ATTACKS

- **Viruses**
- **Malware**
- **Phishing Emails**
- **Social Engineering**
  - *obtain passwords from users*
- **Theft**
  - *stealing of username and password*
- **Intercepting Communications**

CYBER ATTACK IS THE NUMBER ONE THREAT TO OUR WATER INFRASTRUCTURE.

Defense-In-Depth

- The layered approach is called the "defense-in-depth" strategy.
  - Defense-in-depth takes into account the fact that no single security product can adequately protect an industrial system. Rather, a properly configured combination of security technologies, controls, and policies is required.

- "You have to think of cyber security as a chain and it's only as strong as its weakest link," according to, a senior control systems technologist specializing water and wastewater,
  - "That's where the defense-in-depth approach comes from.“

According to the EPA Water Sector Cybersecurity Brief, cyberattacks on water utilities and automated controls systems like SCADA can cause service disruptions and real harm, including:

- Upset treatment and conveyance processes by opening and closing valves, overriding alarms or disabling pumps or other equipment;
- Deface the utility's website or compromise the email system;
- Steal customers' personal data or credit card information from the utility's billing system; and
- Install malicious programs like ransomware, which can disable business enterprise or process control operations.

Rivanna’s Philosophy

Employ an approach to cyber security consisting of 7 distinct layers.

Maintain a robust back-up Scheme to assist in recovery in the event of a disaster or successful cyber attack.

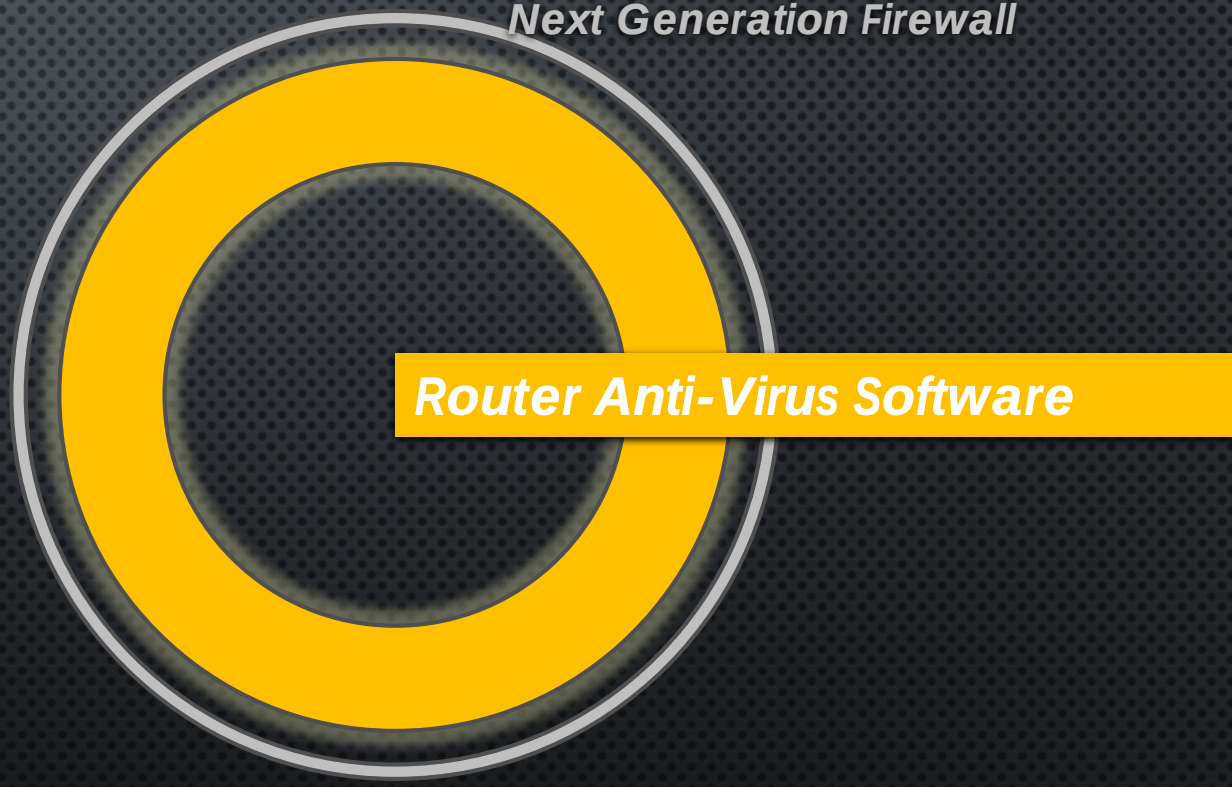
Monitor threats using data pulled from all of our main routers.

LAYER 1
Next Generation Firewall

The first layer is the firewall. This is the outer public facing protection ring consisting of a Next Generation (or adaptive) Firewall powered by our routers. Located at each site, these routers are the gate keepers for all internal, site to site and internet traffic.

LAYER 2
Router Anti-Virus Software

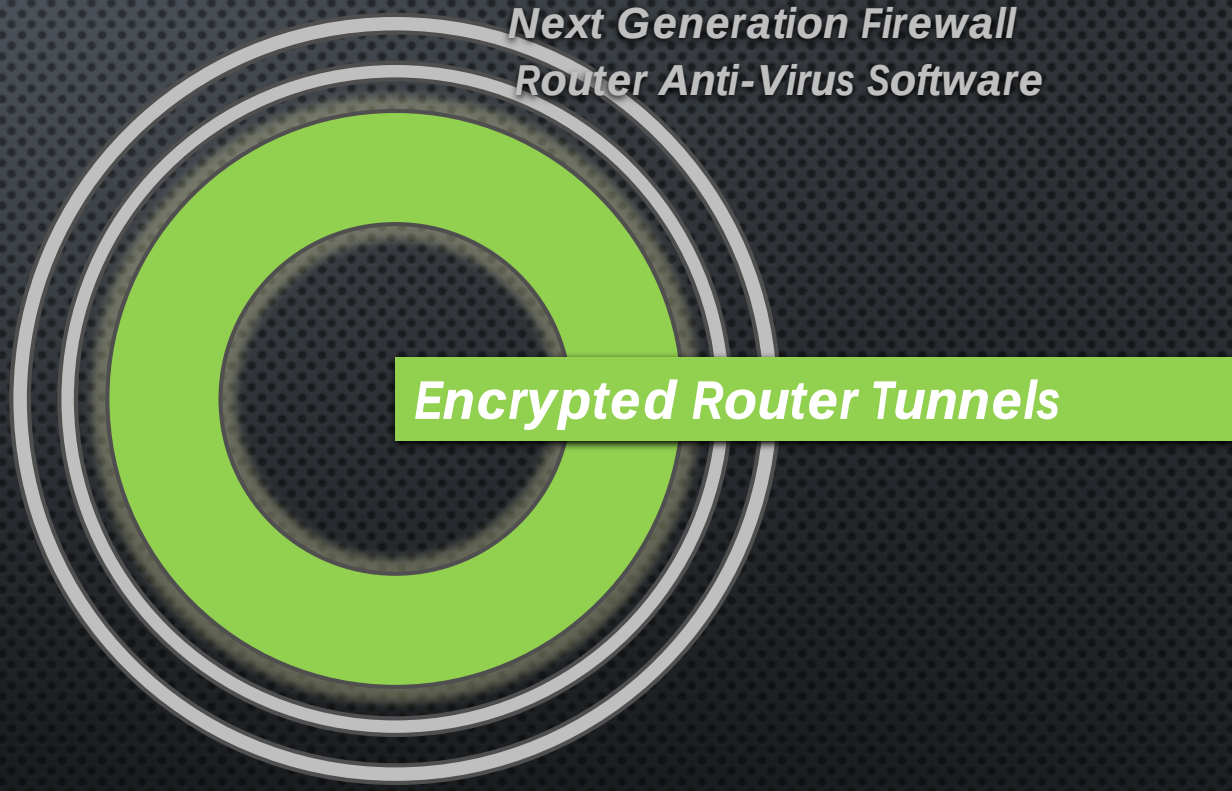
Our routers contain built in Anti-Virus software that inspects every data packet from the outside world (e-mail, webpages, file transfers, etc.) before allowing to pass.



LAYER 3

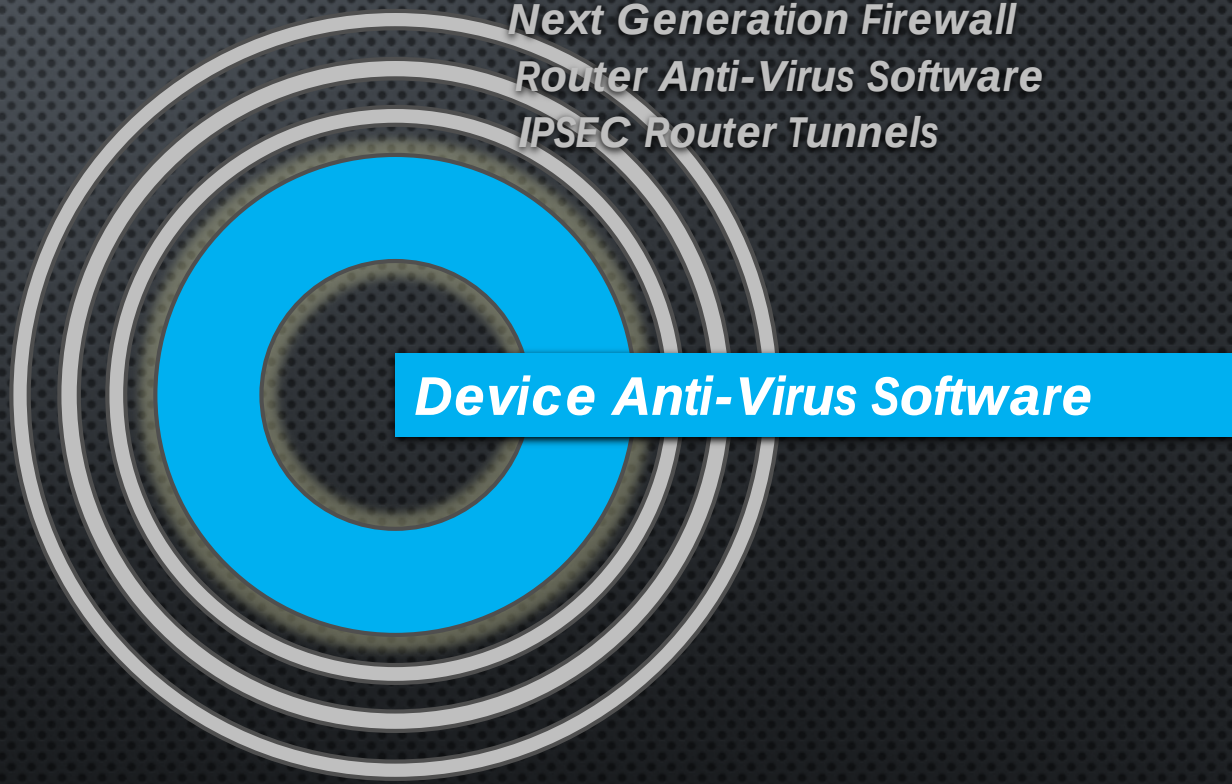
Encrypted Router Tunnels

Our inter-site connections are made with encrypted router to router Encrypted tunnels. This prevents unauthorized outside connections and interception of the data.



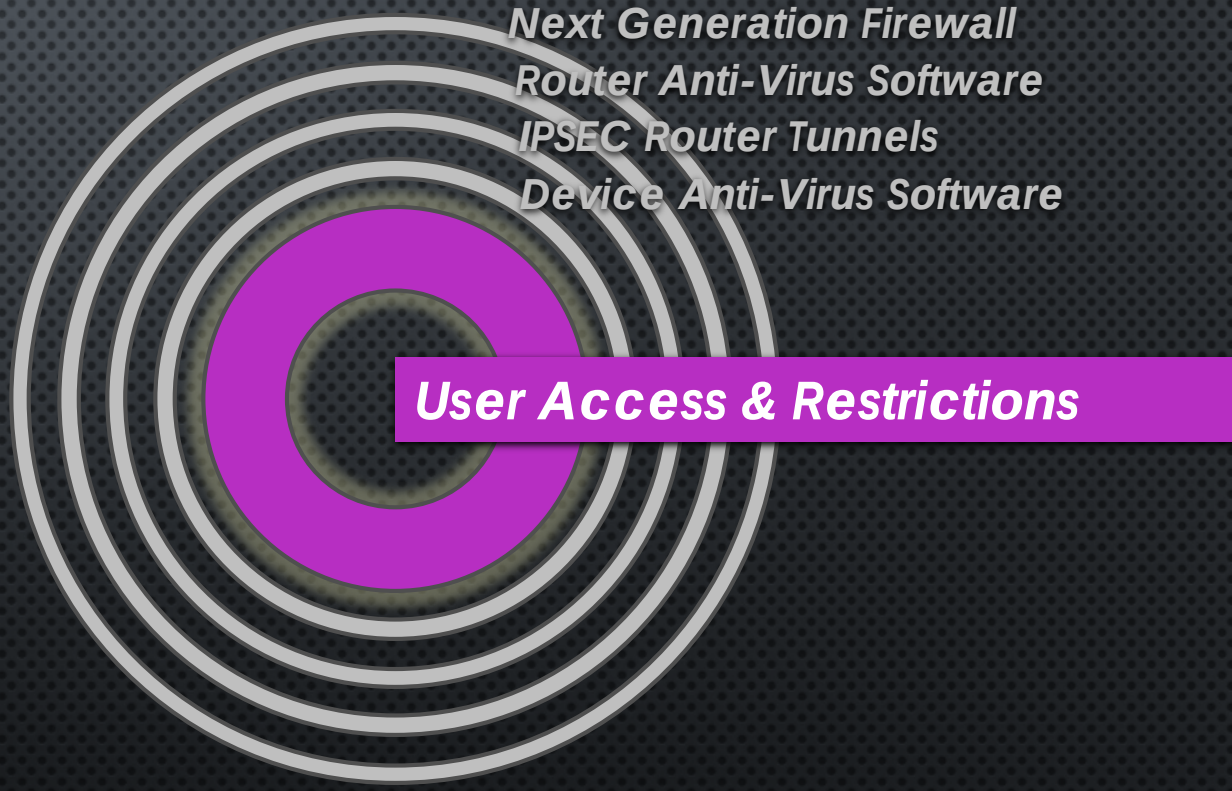
LAYER 4
Device Anti-Virus Software

We use leading commercial Anti-virus software, which is installed on all workstations, servers, laptops and mobile devices (including phones) that connect to any Rivanna network.



LAYER 5
User Access & Restrictions

To control access to shared resources at a network level, We use Microsoft Active directory. Users are required to enter a unique password to log into the local network. Access is restricted and based on user need and function within Rivanna.



The FBI says that remote access is the number one Cyber vulnerability of SCADA systems.

LAYER 6
Password Protected Software

Software used for daily operations requires users to provide a username and password to access. This includes; SCADA, accounting software, e-mail, etc.

LAYER 7
User Based Protection

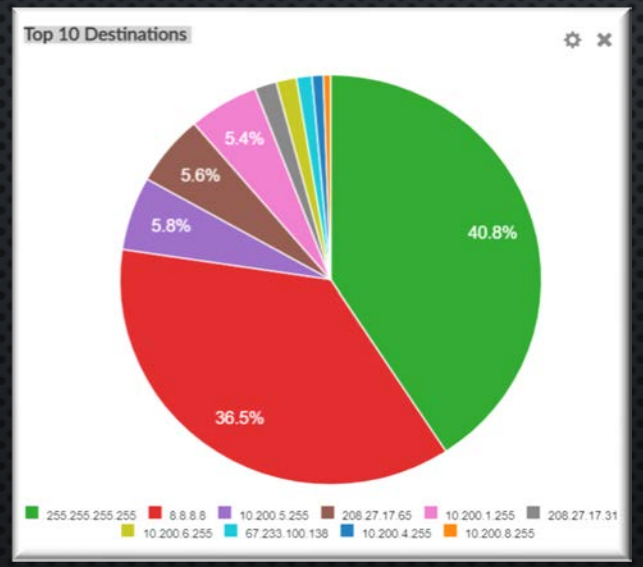
The most vulnerable part of any system is its user. Users can allow access inadvertently in many ways.

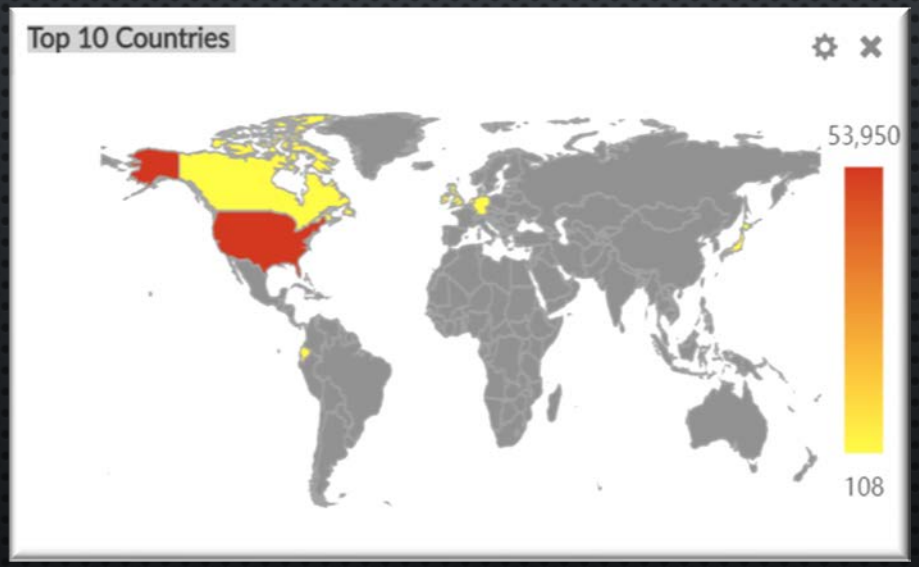
Disaster Recovery

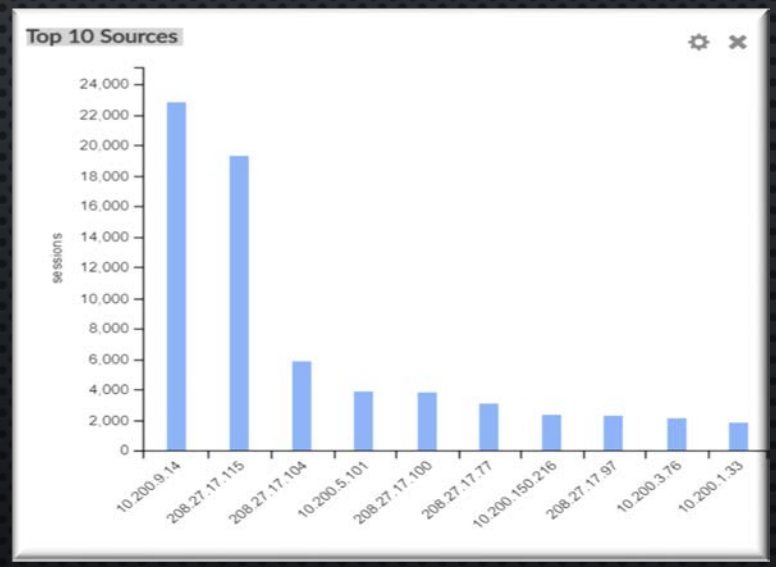
The disaster recovery/backup system provides Rivanna with several options for restoring data that has become corrupt, erased or encrypted in the event of a successful network breach/attack.

Threat Monitoring

A separate device monitors all our routers and provides dashboards with threat and usage information. It looks for patterns of suspect behavior by software and user. This device is monitored at least 3 times a day, by me as well as periodically during the day by the entire IT/SCADA staff. Additionally the device sends alerts if an immediate threat is detected.







IT / SCADA Overview

Our IT/SCADA department consists of 6 individuals:

IT/SCADA Administrator	IS Assistant Administrator	IT/SCADA Supervisor
IT/SCADA Technician	GIS Coordinator	Software Analyst

In addition to cyber security monitoring and configuration, the IT Team is responsible for overseeing networks, devices, and connections across numerous remote locations. These networks include:

- SCADA –
  - Control Software Systems
  - Historical Data Collection and Retrieval Capabilities
  - Maintaining and programming 68+ PLC's to power the SCADA system
- Administration –
  - E-mail and Software Distribution Systems
  - Internal and External GIS System
  - Accounting, Ticketing, Work Order Management and Document Storage Systems
  - Setup and Helpdesk for over 70 desktops and 30 servers
  - Mobile Devices (Including Laptops, Tablets and Cell Phones)

QUESTIONS?

RIVANNA
AUTHORITIES