RIVANNA
WATER & SEWER AUTHORITY

# Board of Directors Meeting

June 22, 2021

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:** **June 22, 2021**

**LOCATION:** **Virtually via ZOOM**

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

## AGENDA

1. ***CALL TO ORDER***
2. ***STATEMENT FROM THE CHAIR***
3. ***MINUTES OF PREVIOUS BOARD MEETINGS***
   a. *Minutes of Regular Board Meeting on May 25, 2021*
4. ***RECOGNITION***
5. ***EXECUTIVE DIRECTOR'S REPORT***
6. ***ITEMS FROM THE PUBLIC***
7. ***RESPONSES TO PUBLIC COMMENTS***
8. ***CONSENT AGENDA***
   a. *Staff Report on Finance*
   b. *Staff Report on Operations*
   c. *Staff Report on Ongoing Projects*
   d. *Staff Report on Wholesale Metering*
   e. *Staff Drought Monitoring Report*
   f. *Personnel Manual Update - Elimination of Compensatory Time*
   g. *Capital Improvement Plan Amendment – Scottsville WTP Lagoon Liner Replacement*
   h. *Contract Authorization – Security Enhancements; Security 101*
   i. *Capital Improvement Plan Amendment and Contract Authorization; Central Water Line Project; MBI Engineering*

***9. OTHER BUSINESS***

a. *Presentation: Cyber Security Update; Information Systems Administrator, Steven Miller*

b. *Presentation: Virginia Water Protection Permits Update; Director of Engineering and Maintenance, Jennifer Whitaker*

c. *Presentation: Emerging Regulations in Water & Wastewater, Lab Manager, Bill Morris*

***10. OTHER ITEMS FROM BOARD/STAFF NOT ON AGENDA***

***11. CLOSED MEETING***

***12. ADJOURNMENT***

GUIDELINES FOR PUBLIC COMMENT AT VIRTUAL RIVANNA BOARD OF DIRECTORS MEETINGS

If you wish to address the Rivanna Board of Directors during the time allocated for public comment, please use the "chat" feature in the Zoom Meeting interface.

Members of the public who submit comments will be recognized during the specific time designated on the meeting agenda for "Items From The Public." The comment(s) will be read aloud to the Board of Directors only during this agenda item, so comments must be received prior to the end of this agenda item. The comments will be read by the Rivanna Authority's Executive Coordinator/Clerk of the Board.

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.

If you would like to submit a comment, please keep in mind that Board of Directors meetings are formal proceedings and all comments are recorded on tape. In order to give all who wish to submit a comment proper respect and courtesy, the Board requests that commenter follow the following guidelines:

- Submit your comment prior to the start of or during the "Items from the Public" section of the Agenda.
- In your comment, state your full name and address and your organizational affiliation if commenting 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;
- Be respectful and civil in all interactions at Board meetings;
- 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 commenters 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.

Rev. May 20, 2020

CALL TO ORDER

STATEMENT OF CHAIR TO OPEN MEETING

This is Mike Gaffney, Chair of the Rivanna Water and Sewer Authority.

I would like to call the June 22, 2021 meeting of the Board of Directors to order.

Notwithstanding any provision in our Bylaws to the contrary, as permitted under the City of Charlottesville's Continuity of Government Ordinance adopted on March 25, 2020, Albemarle County's Continuity of Government Ordinance adopted on April 15th, 2020, and revised effective October 1, 2020 and Chapter 1283 of the 2020 Acts of the Virginia Assembly effective April 24, 2020, we are holding this meeting by real time electronic means with no board member physically present at a single, central location.

All board members are participating electronically. This meeting is being held pursuant to the second resolution of the City's Continuity of Government Ordinance and Section 6 of the County's revised Continuity of Government Ordinance. All board members will identify themselves and state their physical location by electronic means during the roll call which we will hold next. I note for the record that the public has real time audio-visual access to this meeting over Zoom as provided in the lawfully posted meeting notice and real time audio access over telephone, which is also contained in the notice. The public is always invited to send questions, comments, and suggestions to the Board through Bill Mawyer, the Authority's Executive Director, at any time.

ROLL CALL:

Mr. Boyles: Please state your full name and location.
Ms. Hildebrand: Please state your full name and location.
Mr. O'Connell: Please state your full name and location.
Dr. Palmer: Please state your full name and location.
Mr. Richardson: Please state your full name and location.
Mr. Snook: Please state your full name and location.

And I am Mike Gaffney and I am located at _____.

Joining us today electronically are the follow Authority staff members:

Bill Mawyer, Lonnie Wood, Jennifer Whitaker, David Tungate, Steven Miller, Dr. Bill Morris, John Hull, and Katie McIlwee

We are also joined electronically by Carrie Staunton, counsel to the 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
## May 25, 2021

A regular meeting of the Rivanna Water and Sewer Authority (RWSA) Board of Directors was held on Tuesday, May 25, 2021 at 2:15 p.m. via Zoom.

**Board Members Present:** Mike Gaffney, Dr. Liz Palmer, Jeff Richardson, Lauren Hildebrand, Gary O'Connell, Chip Boyles, Lloyd Snook.

**Board Members Absent:** none.

**Rivanna Staff Present:** Bill Mawyer, Lonnie Wood, Jennifer Whitaker, David Tungate, John Hull, Scott Schiller, Miranda Baird.

**Attorney(s) Present:** Lori Schweller.

### *1. CALL TO ORDER*

Mr. Gaffney called the May 25, 2021 regular meeting of the Rivanna Water and Sewer Authority to order at 2:23 p.m.

### *2. STATEMENT FROM THE CHAIR*

Mr. Gaffney read the following statement aloud: "Notwithstanding any provision in our Bylaws to the contrary, as permitted under the City of Charlottesville's Continuity of Government Ordinance adopted on March 25, 2020, Albemarle County's Continuity of Government Ordinance adopted on April 15th, 2020, and revised effective October 1, 2020 and Chapter 1283 of the 2020 Acts of the Virginia Assembly effective April 24, 2020, we are holding this meeting by real time electronic means with no board member physically present at a single, central location.

"All board members are participating electronically. This meeting is being held pursuant to the second resolution of the City's Continuity of Government Ordinance and Section 6 of the County's revised Continuity of Government Ordinance. All board members will identify themselves and state their physical location by electronic means during the roll call which we will hold next.

"I note for the record that the public has real time audio-visual access to this meeting over Zoom as provided in the lawfully posted meeting notice and real time audio access over telephone, which is also contained in the notice. The public is always invited to send questions, comments, and suggestions to the Board through Bill Mawyer, the Authority's Executive Director, at any time."

Mr. Gaffney called the roll.

Mr. Chip Boyles said he was located at 605 East Main Street in Charlottesville, VA.

Ms. Lauren Hildebrand said she was located at 305 4th Street Northwest in Charlottesville, VA.

Mr. Gary O'Connell said he was located at 168 Spotnap Road (ACSA headquarters).

Dr. Liz Palmer said she was located at 2958 Mechum Banks Drive, Charlottesville, VA 22901.

Mr. Jeff Richardson said he was located at the County Office Building at 401 McIntire Road in Charlottesville, VA.

Mr. Lloyd Snook said he was located at 2408 Hillwood Place in Charlottesville, VA.

Mr. Mike Gaffney said he was located at 3180 Dundee Road in Earlysville, VA.

Mr. Gaffney said the following Authority staff members were joining the meeting electronically: Bill Mawyer, Lonnie Wood, Jennifer Whitaker, David Tungate, John Hull, and Miranda Baird.

Mr. Gaffney said they were also joined electronically by Ms. Lori Schweller, Counsel to the Authority.

***3. MINUTES OF PREVIOUS BOARD MEETINGS***

*a. Minutes of Regular Board Meeting on April 27, 2021*

Dr. Palmer said she had submitted a correction to the minutes Mr. Mawyer earlier, to change a date from 2021 to 2012 in the approval of the Water Supply Plan, on line 626.

**Dr. Palmer moved that the board approve the minutes of the previous board meeting. The motion was seconded by Mr. Snook and passed unanimously (7-0).**

***4. RECOGNITIONS***

There were no recognitions.

***5. EXECUTIVE DIRECTOR'S REPORT***

Mr. Mawyer said Mr. Haider Al-Safee, a Rivanna employee, has been with the Authority for about 18 months and is a Water Operator who passed his Class III, then his Class II license. He said Mr. Al-Safee has moved up from a trainee through several license levels in his 18 months with the Authority. He said they are proud of Mr. Al-Safee and his efforts to get his license.

Mr. Mawyer said COVID vaccinations have been positive in the RWSA. He said 81% of staff had requested vaccination, and all of those staff have received one or more vaccinations, to date.

Mr. Mawyer said the gasoline shortage did not impact Rivanna. Although they discussed and planned as far as how to get critical staff to work, in reality, there was not much effect. He said there is gas and diesel fuel on site that they are able to use for Rivanna vehicles.

Mr. Mawyer said they are getting geared up again with the Schenks Branch sewer line replacement project, and there would be a meeting the following week to review where they are in that project, in the hopes to continue discussions with Mr. Richardson and Mr. Boyles.

Mr. Mawyer said Rivanna continues to work with the UVA Foundation about getting easements for the Rivanna-to-Ragged waterline project.

Mr. Mawyer said that in the newspaper the following day, one may see a public notice for the Environmental Permit Program. He said Rivanna is required to have sewer user regulations, which they do have. He said as a part of their permit, they have requested that the DEQ allow them to have some flexibility to accept alternate methods of compliance for their categorical pre-treatment standards, which apply specifically to their significant industrial users, of which there are three: Northup Grumman, Microsystems, and Virginia Diodes. He said this is not a significant issue but rather a modification to the permit.

Mr. Mawyer said they were monitoring potential drought conditions. He said there was currently no drought considered in Central Virginia. He said the Virginia DEQ Drought Monitoring Committee said conditions were normal in Central Virginia. He said he plans to have a more detailed report for the board in June, unless there is a lot of rain, in which case it will be a non-issue.

Mr. Gaffney asked Mr. Mawyer for an update on the Central Waterline.

Mr. Mawyer said they continue to talk with City staff and Service Authority staff as they refine a potential route through the City to extend the 24-inch waterline that will go from the Observatory Mountain water tank, on its way to Free Bridge to connect to the system in that area. He said City and ACSA staff have been doing field surveys and are trying to select a precise path for this waterline. He said they are nearing the end of the selection process.

***6. ITEMS FROM THE PUBLIC***

There were no public comments.

***7. RESPONSES TO PUBLIC COMMENT***

As there were no public comments, there were no responses.

***8. CONSENT AGENDA***

*a. Staff Report on Finance*

*b. Staff Report on Operations*

*c. Staff Report on Ongoing Projects*

*d. Staff Report on Wholesale Metering*

*e. FY 22 Personnel Management Plan Update*

*f. FY22 Pay Scale Adjustment*

*g. FY22 Holiday Schedule*

*h. Construction Change Order Authorization – MC Slide Gate Improvements Project – Waco, Inc.*

**Dr. Palmer moved that the board approve the Consent Agenda. The motion was seconded by Mr. O'Connell and passed unanimously (7-0).**

## *9. OTHER BUSINESS*

*a. Presentation: Approval of FY 2022-2026 Capital Improvement Plan; Bill Mawyer, Executive Director*

Mr. Mawyer said he had covered this with the board in detail in February, and he wanted to bring this item back for final consideration. He said a public hearing was not needed on this, but he would like the board to approve it.

Mr. Mawyer said infrastructure and master planning is one of Rivanna's strategic goals and that for the next five years, they have proposed 54 projects totaling $170.1 million, with the majority of those dollars being spent in the urban water system for treatment plants and piping.

Mr. Mawyer said Rivanna proposes to use about $14 million of their cash reserves over the next five years to help level the costs to the customers of both the City and the Service Authority. He said Rivanna is seeing that they may need to issue up to $129 million in additional debt.

Mr. Mawyer said Rivanna's major programs for the next five years include upgrading treatment plants, regulatory requirements with the Crozet Wastewater Flow Equalization Tank, updating exterior lighting at Moores Creek, and the Beaver Creek Dam and Pump Station project which has a regulatory requirement to increase the spillway size. He said there is redundancy and resiliency provided by the Central Waterline that will go through the City; the Airport Road Pump Station that helps to strengthen the northern end of the finished water distribution system; and a river crossing at South Rivanna, which will give them a second crossing and redundancy. He said as well, the South Rivanna to Ragged Pipeline will provide redundancy, resiliency, and capacity to the entire urban water system.

Mr. Mawyer said there are a number of operations, maintenance, and security projects. He said there are growth aspects associated with the Rivanna-to-Ragged Pipeline and that, as he mentioned to the board in February, he split the costs for the project in half – half being under redundancy and resiliency, and half being in growth.

Mr. Mawyer said there is also master planning for the urban water system, wastewater facilities at Moores Creek, asset management program to proactively manage Rivanna's many assets, and information technology systems.

Mr. Mawyer said significant projects in the CIP include the water treatment plant renovation projects, the pipeline replacement going from Ragged Mountain Reservoir to Observatory Treatment Plant, the Central Waterline that will go possibly through the center of the City (possibly through the Cherry Avenue area), the Rivanna to Ragged Mountain Waterline (the

largest project) and raising the water level at Ragged Mountain 12 feet to add 700 million gallons of storage in the reservoir.

Mr. Mawyer said included in new projects that are hoped to start soon is continuation of the Rivanna-to-Ragged Pipeline project with a section of about 1,200 feet that will connect at the north end of the pipe that was already installed at the Birdwood Golf Course and extend it to the north along the property line of the Weedon Center and the property owned by JPA Towers (formerly Piedmont Tractor Center). He said they would bore and cross under the railroad tracks at Old Garth Road to the north to be on UVA Foundation property, where an easement is currently under discussion with the Foundation. He said Rivanna is anxious to get this project done while getting ahead of any development in that area that they are told is coming.

Mr. Mawyer said they are finishing up the Sugar Hollow Dam gate replacement, where a new bladder is being installed this week on top of the dam. He said they hope to wrap up this project in the next month or so.

Mr. Mawyer said the Crozet Wastewater Flow Equalization Tank in under construction, and they are beginning to build the concrete tank that will store these wastewater flows when storm water enters the wastewater system from Crozet so that they do not have overflows.

Mr. Mawyer presented an aerial view of the Moores Creek Lighting Project, which will ramp up in June.

Mr. Mawyer said the Airport Road Pump Station will go to bid later in the year and will be constructed over the next two years. He said this is just north of Kohls and the Hollymead Town Center, off of Airport Road.

Mr. Mawyer said for the Beaver Creek Dam, Pump Station, and Piping Project, Rivanna is working with federal agencies on how the project would be built, in hopes that they will share 65% of the construction costs. He said Rivanna anticipates potentially having a labyrinth spillway. He presented a picture of the proposed spillway through the middle of the dam, adding that there will be a bridge going across the spillway, which would be Brown's Gap Turnpike. He said they will also have to move the pump station, as shown on the screen, to one of the sites on the presented map. He said that he would likely be bringing a presentation to the board in June to talk about potential sites for the new pump station.

Mr. Mawyer said in summary, there are 54 projects worth about $170.1 million. He said Rivanna is contributing some reserve funds to help level the costs for their customers, and plans to issue new debt. He offered to answer questions from the board and asked them to approve the CIP.

Dr. Palmer mentioned dealing with the sediment from the South Fork Rivanna Reservoir over to Ragged Mountain before it is transferred, and that Mr. Mawyer had mentioned they are looking at ways of timing this to reduce the sediment load and withdrawal. She asked Mr. Mawyer if he could comment on the status of this.

Mr. Mawyer replied that they have done a desktop assessment of phosphorus and nitrogen that

might be in the water and now, they are starting a test program with the actual water from Rivanna. He said this program will likely go on for a year to a year and a half, and it will test how much sediment, phosphorus, and nitrogen might be in the water at different times of the year to give them real data on when they could plan to pump water to Ragged without having an extreme level of treatment to keep those pollutants out of Ragged. He said they are about a year and a half away from wrapping that up.

Mr. Mawyer said they have been looking at ways to minimize the costs of the pretreatment facility, and the goal is to provide an appropriate level of sediment, phosphorus, and nitrogen pretreatment in the water in South Rivanna before they pump it to Ragged to help maintain the high level of water quality at Ragged.

Mr. Mawyer said they will have detailed answers in a year and a half, which will be plenty of time for Rivanna to design and build the pipeline project starting in 2027.

Dr. Palmer said if they are successful in figuring out a way to do it, it would greatly decrease the price of the pipeline.

Mr. Mawyer agreed. He said they have the option to pump when they want to if the water is very high in sediment load. He said perhaps they would not need to transfer water then, and they can wait until calm times after a storm, when the water quality is much higher. He said this is when they would pump to maintain the water level at Ragged Mountain Reservoir, rather than having to treat it when it is very dirty. He said they have to treat water at the South Rivanna WTP every day when it is full of sediment because people want to drink and use water every day. He said they do not have this option in the finished water, but they do in the raw water area, which is what he was referring to about being selective when transferring water from Rivanna to Ragged.

Dr. Palmer said the untreated water could remain in South Fork when South Fork water is very muddy, to decrease the cost of treatment.

Mr. Mawyer said this was correct. He said this gives them a lot of flexibility once they can get the pipeline completed from the Rivanna to Ragged Reservoirs.

Mr. O'Connell asked Mr. Mawyer if he could talk about the Crozet Water Treatment Plant, next steps on the Beaver Creek Dam Project, and timeframes.

Mr. Mawyer said the Crozet Water Treatment Plant upgrade is substantially complete, and the plant will now produce 2 million gallons, where it had been at 1 million gallons per day. He said they are in the process of increasing the raw water pumping capacity from the reservoir to the WTP.

Mr. Mawyer referred to his "three-legged stool" analogy: they must have the water available, be able to pump and pipe it, and be able to treat it in order to provide it to customers. He said currently, the bottleneck is in the raw water pumping from Beaver Creek to the expanded treatment plant. He said they are in the process of getting new pumps, which should be in place in the next month or so to allow them to pump 1.5 mgd.

Mr. Mawyer said the Crozet community is challenging 1 mgd in treatment capacity and the day prior, the demand was 870,000 gallons. He said Rivanna recognizes they need to have more water supply, and they believe the Beaver Creek Reservoir is adequate. He said now, the water treatment plant is capable of serving the community for many years. He said they are upgrading the pumps so that they can get the raw water to the treatment plant.

Mr. Mawyer said the dam project is about stormwater control and protecting residents, businesses, and facilities below the dam. He said the spillway is not large enough to release the amount of water that the regulations require to be released (31 inches of rain per day). He said when one's facilities cannot do this, there are incidents such as what occurred in Lynchburg, where the dam washed out, as well as in California and other places. He said Rivanna is trying to get in compliance with the regulations so that they have adequate facilities to pass the proper amount of stormwater when there is a major storm event without having the spillway wash out, potentially losing the entire dam and the sole water supply for the entire Crozet community.

Mr. O'Connell asked what the next step was on the dam project.

Mr. Mawyer replied that Rivanna is still working with the federal agency in reviewing all the components of the project: the dam, how it will be built, the pump station, and the potential bypass road to get people around the construction project. He said that in 2022, they should finish this process, and they will have all final decisions made in accordance and concurrence with the federal agency on the design of the project. He said then, hopefully, the agency will agree to fund 65% of the costs. He said they would then go into final design and start construction in 2024, lasting through 2026. He said this is the plan if the project stays on track.

**Mr. O'Connell moved that the board approve the FY 22-26 Capital Improvements Plan. The motion was seconded by Dr. Palmer and passed unanimously (7-0).**

*b. Presentation and Public Hearing: Approval of FY 2021 – 2022 Operating Budget and Rate Schedule Resolution: Bill Mawyer, Executive Director*

Mr. Mawyer said this proposed budget was reviewed in detail earlier in the year. He said for the operating budget for next fiscal year (July 2021 through June of 2022), Rivanna is proposing a budget of $38.9 million, which is a 4.9% increase over the current year's budget. He said the charges to the City would be about $15.9 million, and the charges to the ACSA would be about $21.1 million.

Mr. Mawyer said programs include debt (the largest program), at 47%, to fund the CIP that was just discussed. He said the second largest program is personnel costs, at 24%, which pays for salaries, benefits, health insurance, worker's compensation, and retirement. He said thirdly is operations and maintenance, which pays for the chemicals, equipment repair, and the like, at $6.3 million, or 17% of the budget. He said lastly, there are general services, which are professional and non-professional services that are contracted out, as well as communications and utility costs.

Mr. Mawyer said these funds go to support all capital facilities and equipment, where there is about $280 million in assets with five water supply reservoirs, six water treatment plants, four wastewater treatment plants, pump stations, waterlines, and the Lickinghole Creek Basin (a stormwater impoundment they manage and own). He said Rivanna has 93.4 employees and with the new budget, they would add three employees, for a total of 96.4.

Mr. Mawyer said major projects in the coming years include substantially completing renovations of the South Rivanna and Observatory Water Treatment Plants, the Crozet Wastewater Flow Equalization Tank (currently under construction), and the Airport Road Pump Station. He said they continue to put the Rivanna to Ragged Mountain Pipeline easements in place to build a small section from Birdwood to Old Garth Road. He said there is the Central Waterline and Beaver Creek Dam as well.

Mr. Mawyer added that there are major permit applications for renewal, including the Urban Water Protection Permit that was applied for in May. He said Ms. Whitaker will tell the board more about those permits in June. He said further, Rivanna has to apply for a new permit for the Crozet water system.

Mr. Mawyer said strategic investments proposed for the coming year include a 2% merit pool for staff, which totals about $145,000. He said the rest of the money in that category is for the mid-year merit that the board granted in January 2021.

Mr. Mawyer said Rivanna has proposed three additional positions, one being an Accounting Associate to help Mr. Wood and his group as they have not had an additional staff person in that group for decades, and the budgets have grown significantly. He said the group not only accounts for the Water and Sewer Authority, but for Solid Waste as well.

Mr. Mawyer said Rivanna is asking for another IT Administrator position to help them manage their SCADA systems, which control all water and wastewater treatment processes, potentially remotely and automatically. He said there is new security software, and they are implementing a new CityWorks asset management software program. He said the IT Administrator, along with the rest of the IT team, would be supporting those new programs.

Mr. Mawyer said the additional Facility Coordinator will help Rivanna implement an asset management business process in terms of how to get the data from their assets into their system. He said an asset could be a pump, pipe, or motor, and data includes when it was put in, its voltage, and how long they expect it to last, adding up to when they think they will need to replace it so that they can proactively plan for budgets and predict rates.

Mr. Mawyer said there are minor health insurance increases. He said Rivanna received a new proposal from Anthem, and the health insurance costs did increase. He said they do not propose to pass any of those increases onto staff but rather, they propose that Rivanna absorb those increases.

Mr. Mawyer said there is equipment that needs to be replaced, engineering studies to conduct on digesters, and continued optimization of GAC. He said there is also arc flash, which is a safety

issue where there are high-voltage electric panels, and people could be injured if they are working too closely and do not have the correct personal protective equipment. He said there are also software licenses for CityWorks.

Mr. Mawyer said the Observatory Water Treatment Plant lease will increase $75,000 this year. He said they have also proposed funds to manage the Buck Mountain property.

Mr. Mawyer presented Rivanna's organizational chart. He said the pink blocks were the three proposed positions – two under Mr. Wood, Director of Finance and Administration, and one under Ms. Whitaker as the Director of Engineering and Maintenance. He said this will give a total of 96.4 positions in the Water and Sewer Authority.

Mr. Mawyer said regarding the charges and financial summary, in FY 21, they had a zero charge increase to the City and ACSA. He said that with the programs and bond and debt obligations Rivanna has, they are proposing a 7.6% increase to the City and a 14.3% increase to the ACSA. He said for the next four years, the City's rates stay similar, but the ACSA rates substantially come down. He said the ACSA does have a large funding obligation in paying 100% for Beaver Creek, 80% for the Rivanna-to-Ragged Pipeline, and 100% of the Crozet Flow Equalization Tank, which is driving their rates above the City's rates.

Mr. Mawyer said the budget increase for FY 22 is 4.9% above the current year. He said Rivanna proposes to use $516,000 in cash reserves to help buffer the rates for FY 22. He said much of this money had been programmed to support the GAC program and replacement of the GAC media, which is a fairly expensive process each year. He said the capital budget for FY 22 is $25.8 million, and the FY 22-26 CIP is $170.1 million, with new debt anticipated.

Mr. Mawyer said that in summary, the total budget proposed is $38.9 million. He said the City's charges would be about $15.9 million, and the ACSA's charges would be $21.1 million.

Mr. Mawyer said that with the board's authorization, Rivanna advertised the water and wastewater rates that support this budget on April 28 and May 5, in the newspaper. He said they advertised to have a public hearing on May 25 on the rates and budget. He offered to answer questions and invited Mr. Gaffney to hold the public hearing.

Hearing no questions from the board, Mr. Gaffney opened the public hearing. As there were no public comments, he closed the public hearing and asked a board member to make a motion.

**Mr. Snook moved that the board approve the Rivanna Water and Sewer Authority Operating Budget and Rate Schedule for FY 2021-2022. The motion was seconded by Dr. Palmer and passed unanimously (7-0).**

Mr. Snook left the meeting.

*c. Presentation: Options for the North Rivanna WTP; Engineering Manager, Scott Schiller*

Mr. Schiller said the North Rivanna Water Treatment Plant, which is located along the north fork of the Rivanna River, was built in 1974 and treats around 300,000 to 400,000 gallons per day, on average. He said as the plant is approaching its end of useful life, Rivanna performed a needs assessment at the facility and found a number of improvements they would have to perform in order to make sure the plant continues to operate appropriately.

Mr. Schiller said some of the improvements were operational-related, and some were required due to regulatory concerns. He said the main waterline that leaves the treatment plant and supplies the North Rivanna Pressure Zone runs along the river, and they have had a number of issues with this waterline. He said they need to relocate the waterline to St. Ives Road. He said these make for a number of improvements that will be costly.

Mr. Schiller said that at the same time, Rivanna has been designing the Airport Road Pump Station, which will allow them to convey water from the Urban Pressure Zone into the North Rivanna Pressure Zone. He said this pump station will take the place of the temporary Kohls pump that is currently located by the department store. He said this is an important part of making sure there is redundancy in water supply to the North Rivanna Pressure Zone.

Mr. Schiller said that while they saw all the needs required at the North Rivanna Treatment Plant, they considered whether these plant upgrades were necessary or if they could proceed solely with the Airport Road Pump Station to serve future needs in that area.

Mr. Schiller presented an image of the treatment plant. He said one could see two lagoons, which are on the southern side of the plant, as well as the north fork of the Rivanna River and a low head dam, where they have the intake. He said among the issues and regulatory concerns with this plant, those two lagoons are located within the actual floodway, meaning that when the river is high, the water actually flows over the lagoons, and DEQ indicated that this needs to be resolved. He said at this point, the plan would be to build some form of backwash tank similar to what was done in Crozet.

Mr. Schiller said there are also concerns with water withdrawals from the river. He said that during the dry record, it was about a 0.7-mgd safe yield that they could pull from the river, and they have a 2-mgd treatment plant, indicating the water supply can be insufficient.

Mr. Schiller said in addition, they will need to increase the amount of chlorine contact in the future. He said currently, this is handled through the finished water pipeline, and this will require some type of additional facility. He said there are significant improvements to the plant that would require additional land acquisition as well.

Mr. Schiller said that in addition to those issues with the treatment process itself, the North Fork Rivanna River water quality can change very quickly, which can cause issues, with no notice as far as how to treat the water. He said the design of the intake screens in the low head dam is such that it can very quickly plugged depending on what kind of material comes through the river.

Mr. Schiller said they are looking to relocate the finished water main from the river over to St. Ives to improve the reliability of the line.

Mr. Schiller said when pulling all these improvements together, including construction contingencies, this comes to approximately $14.7 million as a total project cost. He said this is an expensive cost for a fairly small treatment plant.

Mr. Schiller said they have been designing the Airport Road Pump Station and plan to have this project advertised in the fall. He said Rivanna thought there may be an opportunity to use this pump station, as opposed to the treatment plant, to feed the North Rivanna Pressure Zone with water.

Mr. Schiller said as shown in the image on the slide, the Airport Road Pump Station is located at the end of Timberwood Blvd at Berkmar Drive before getting to Airport Road, and Route 29 also appears in the image. He said the purpose of the pump station would be to provide water to the North Rivanna Pressure Zone from the Urban zone from the Urban zone.

Mr. Schiller said in the past, if there has been an issue at the North Rivanna Water Treatment Plant, a line break, or something that segregated a portion of the pressure zone from the treatment plant or some other source, Rivanna has used the Kohls pump, to supply the pressure zone. He said unfortunately, the Kohls pump takes time to set up.

Mr. Schiller said the purpose of the pump station was to provide a permanent facility where remotely, they could activate the pump station if needed to make sure they kept water going to the pressure zone. He said it is being designed with a 1.5-mgd firm capacity initially, but it will be expandable up to 4.4 mgd as needs increase in the future. He said its presence allows the opportunity to decommission the North Rivanna Water Treatment Plant.

Mr. Schiller said as Rivanna has been investigating what issues or concerns there may be as they consider the decommissioning of the water treatment plant, they have talked with the City and ACSA to get their thoughts. He said one thing that came up was fire flow in the North Rivanna Pressure Zone. He said a number of modeling runs were performed, as depicted on the graph on the slide, and in summary, by putting the Airport Road Pump Station online and by turning off the treatment plant, they will have improved fire flow within that area with no other

improvements in the system. He said they would discuss additional improvements later that will further expand the fire flow capabilities.

Mr. Schiller said another point of importance is that the Airport Road Pump Station will be pulling water from the Urban zone, so there is a concern about what the suction side conditions of the pump station would be, meaning that if they are not able to pump the water out of the urban zone, there is zero fire flow. He said through some modeling efforts, they determined that as long as there is any sort of usable water or water at minimum levels in the Urban zone, then the North Rivanna Pressure Zone would have water as well. He said they are therefore in good shape as far as fire flow, given these conditions.

Mr. Schiller said there were also redundancy and reliability concerns. He said the North Rivanna Water Treatment Plant is on the north fork of the river, and there is a separate water source that could serve that area. He said if they decommission the plant, that water source would no longer be available for that purpose. He said there were concerns associated with system breaks and with the plant offline, how it could potentially isolate the North Rivanna Pressure Zone from the Urban Pressure Zone. He said the main issues there are river crossings, where the pipeline crosses the river to get to that pressure zone.

Mr. Schiller said there is a second South Fork Rivanna River crossing planned. He said there is an existing 12-inch line that crosses that river, and they will be adding a 24-inch line. He said there is also another second crossing at the north fork of the Rivanna River, and so both of those will directly speak to redundancy at those weak points to make sure that they could always transmit water to that pressure zone.

Mr. Schiller said that in addition, there are other, general urban zone improvements, such as the Central Waterline and the raw water system improvements from Ragged Mountain to Observatory as well as South Rivanna to Ragged Mountain. He said these speak more to overall reliability of the Urban Pressure Zone, and as long as the Urban Pressure Zone has water, the North Rivanna Pressure Zone will have water, given the proposed setup.

Mr. Schiller said another concern with the North Rivanna system is the condition of the waterline that goes along Route 29. He said there have been several breaks over the past few years on that line, and if there were to be a break, that would isolate portions of the North Rivanna Pressure Zone from the water supply from through Airport Road Pump Station. He said generally speaking, it has been Rivanna's thought that those breaks have been due to surge pressures in that system. He said one thing they will do is a surge analysis in that system, then look at what system components can be added to try to reduce the impacts of some of the surges that may be created.

Mr. Schiller said the Airport Road Pump Station itself will be designed such that when the pumps turn on, they will have slow start-ups, variable frequency drives, and other equipment to minimize any surge pressures that Rivanna could create from its own infrastructure, so this will be taken care of already. He said they will look to analyze any other impacts from the rest of the customers in the system to see what else they can do there to improve.

Mr. Schiller said when there have been breaks in the line there, they have looked at the condition of the pipe, and the majority of the wall thickness is there. He said the pipe is in good condition, assuming they can get some of the surge pressures down. He said they will continue to monitor the pipe conditions and scheduled pipeline replacements when necessary.

Mr. Schiller said the system operates at a relatively high pressure, which exacerbates the surge pressure. He said another option is the eventual creation of the Airport Pressure Zone, which would decrease pressures throughout the majority of the Northern pressure zone and reduce the likelihood of breaks. He said that in addition, there are many ACSA pipelines that run parallel to Rivanna's, and Rivanna believes that with a few strategic interconnections, they can further eliminate any sections that would lose service, should they have a break on their line. He said these things will all be evaluated as they progress, should they further consider this decommissioning process.

Mr. Schiller said Rivanna has identified the regulatory concerns, as shown on the chart on the slide. He said this was to indicate that these are current concerns that they have to deal with, not issues in the future. He said if they determine they want to move forward with decommissioning the water treatment plant, the need to overhaul the lagoon, chlorine contact tank, and other things begin to fade away. He said there have been preliminary discussions with DEQ with regard to the lagoon, and should they determine that decommissioning is the way to go, DEQ would support Rivanna through that process.

Mr. Schiller said as far as the general schedule, the Airport Road Pump Station construction is the critical component, as this would be the future water source for that pressure zone. He said they have also identified that the second South Rivanna River crossing would be critical to make sure that they have enough reliability with those river crossings to feed water to the pump station. He said after the second South Rivanna River crossing, they could consider decommissioning the water treatment plant.

Mr. Schiller said the other items on the plan show the already-planned projects that would continue to increase the reliability and redundancy of the overall unified system.

Mr. Schiller said as far as the benefits of decommissioning, in general, it would avoid the cost of improvements to the treatment plant that would be needed for its long-term reliability. He said

this would cost $14.7 million if they were to improve the plant as needed for its long-term use. He said as part of the decommissioning process, they would be removing the low head dam on the North Fork Rivanna River, which would return the river to its natural state.

Mr. Schiller said there are a number of projects already in place that will improve reliability and redundancy. He said fortunately, decommissioning would take full advantage of those already-active or planned CIP projects that they will be doing anyway.

Mr. Schiller said finally, decommissioning will take funds that would have gone towards North Rivanna and put it into the Urban system, where water treatment is more cost effective.

Mr. Schiller said as far as the actual decommissioning of the plant, he pulled together a cost estimate for what that would entail. He said going through a complete clearing of the property, as well as removal of the dam and other features and adding in engineering contingencies, he came up with a total estimated project cost of about $2.6 million.

Mr. Schiller noted that GAC facilities were included on the slide, and those facilities were installed in 2018. He said the GAC vessel itself is the primary component of that system, and they are fortunate that the vessel located at North Rivanna is the same size as the other vessels in the Observatory and South Rivanna plants. He said the plan would be to pull that vessel out of the facility, then include it in future plant upgrades to make best use of that vessel.

Mr. Schiller said to compare those two capital costs, they wanted to look at two operating scenarios as well to look at more of a long-range cost analysis. He said Scenario 1 was what they had planned to do from the start, which is to upgrade the North Rivanna Treatment Plant, relocate the waterline on St. Ives, operate the plant five days a week and the pump station two days a week. He said Scenario 2 would be to proceed with the decommission and run the pump station all seven days as opposed to just over the weekend. He said the two days per week was to allow the operator some flexibility to move between the plants and not have to be at North Rivanna over the weekend. He said with Scenario 2, this would not be necessary as they would be running the pump station all seven days.

Mr. Schiller said as shown on the slide, by taking into account capital costs, present worth costs of operating, and maintenance expenses, there is a significant difference between the cost per million gallons treated – $5,200 under Scenario 1 with the upgraded plant versus just around $1,000 with Scenario 2 with the decommissioning of the plant.

Mr. Schiller said in summary, the planned construction of the pump station has allowed Rivanna the opportunity to consider this decommissioning. He said they began with the needs assessment process in looking at what they needed to do to upgrade the treatment plant, but as they got a

better feel for what those costs would be, with a $14.7-million estimate, they began to recognize some of the potential value to decommission the plant instead and to put the money towards other uses.

Mr. Schiller said some of the planned urban water system upgrades and improvements would resolve the majority of the decommissioning concerns. He said concerns related to the waterline itself could be resolved through the surge analysis, adding some surge-related components to the system as well as dealing with some systemic connections. He said eventually, the creation of the airport zone will reduce the pressure overall in that system.

Mr. Schiller said another point is that decommissioning will allow Rivanna to take some of the $14.7 million and apply it to more cost-effective uses within the urban system. He said the entire process generally supports what they consider to be a unified water system, where they aim to improve the overall system redundancy and reliability and place investments in that system where they are most cost effective, using dollars-per-million-gallon cost metric to determine that.

Mr. Schiller offered to take any questions.

Dr. Palmer commented she was thrilled that Rivanna is looking at decommissioning the plant. She said she looked forward to hearing the vote and that she was sorry she would not be on the board to vote for it. She said she became lost, however, on the timing. She asked Mr. Schiller when the things that need to be done are expedited to complete.

Mr. Schiller presented the schedule again. He said he was trying to show construction timeframes and not necessarily design timeframes. He said as Mr. Mawyer mentioned earlier, they are looking at construction of the Airport Road Pump Station beginning in FY 22 and expect this to complete in FY 23. He said they are also in the midst of designing the second South Rivanna River crossing and anticipate this going into construction in FY 23, with completion in FY 24.

Mr. Schiller said recognizing that when those two construction projects are completed, with use of those facilities are substantially complete and ready for them to put into operation, they thought that at that point, in FY 25, it would be possible for them to begin decommissioning the water treatment plant, meaning that they had the redundancy associated with the second South Rivanna River crossing so that the water could be provided to the Airport Road Pump Station, which would supply water into the North Rivanna Pressure Zone.

Dr. Palmer asked what the span of the GAC vessel is, adding that they look to be indestructible.

Mr. Schiller replied that this likely has a 20-year to 25-year timeframe, but he could find more specific information about this. He said these will be fairly lengthy in timeframe.

Dr. Palmer asked if they are planning on storing the vessel or selling it, or if they would look at it at that point in time. She said she suspected that a slightly used one would be marketable.

Mr. Schiller replied the initial thought is that they would like to use it elsewhere. He said as to whether or not it is stored somewhere and wrapped properly and protected from the elements, or whether the vessel is used to increase GAC capacity at anther facility would be evaluated. He said assuming they do determine they want to proceed with the decommissioning of the facility, they will have to go into a more substantial analysis of the decommissioning process, and they will take a look at the best way to utilize the vessel.

Dr. Palmer said this is wonderful and she is glad it is being looked at.

Mr. Gaffney asked Mr. Mawyer when he anticipates asking the board to vote on whether to improve or decommission.

Mr. Mawyer replied that he would ask for this immediately, unless there was a need for more information. He said there was not much additional information, however, to provide in the future.

Mr. O'Connell said from an ACSA standpoint, when he first heard about this, there were concerns about service reliability, and fire flows in particular. He said that thanks to the Rivanna staff, who went through a detailed analysis and modeling work, ACSA is convinced not only from a cost standpoint, but from a system reliability standpoint (i.e., quality of water and fire flows) that this will be a good thing for the ACSA customers in the northern system. He said as Mr. Schiller mentioned, this ties together the entire urban system where they can take advantage of the expansions at Observatory Plant and the work that is going on at South Rivanna.

Mr. O'Connell said ACSA staff are supportive of this proposal and would encourage it to go forward, authorizing the staff to move forward to the 2025 timeframe.

Mr. O'Connell added as a comment that the other improvements being in place before the decommissioning is something everyone thinks is important, and he thinks that the schedule Mr. Schiller laid out helps accomplish that. He said ACSA is supportive of the sequencing as well.

**Mr. O'Connell moved that the board authorize the decommissioning of the North Rivanna Water Treatment Plant after completion of the necessary urban water system**

**improvements. The motion was seconded by Dr. Palmer and passed unanimously (6-0). (Mr. Snook left the meeting early and was absent from the vote.)**

***10. OTHER ITEMS FROM BOARD/STAFF NOT ON AGENDA***

There were no items.

***11. CLOSED MEETING***

There was no closed meeting.

***12. ADJOURNMENT***

**At 3:19 p.m., Dr. Palmer moved to adjourn the meeting of the Rivanna Water and Sewer Authority. The motion was seconded by Mr. O'Connell and passed unanimously (6-0). (Mr. Snook left the meeting early and was absent from the vote.)**

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:** **JUNE 22, 2021**

*STRATEGIC PLAN GOAL: WORKFORCE DEVELOPMENT*

**Classification and Compensation Study**

With assistance from Evergreen Solutions, we have initiated a classification and compensation study primarily focused on internal and external equity of both the structure by which employees are compensated, as well as the way positions related and compare to one another across the organization.

**Team Building 2021**

We will hold our first Team Building event this week since December 2019. This event will be for all staff, in-person, and outdoors in our parking lot.

**Interns**

This year we have one intern, in the Water Department. His name is Zachary Mountjoy and he is working as our Water Quality Assistant. He is a rising fourth year student at James Madison University where he is studying Engineering. Zachary calls Stafford, VA his home when not at school. He enjoys being out on the water and has his own boat.

*STRATEGIC PLAN GOAL: INFRASTRUCTURE AND MASTER PLANNING*

**Central Water Line**

We have substantially defined a route through the City for this 24 - 30" finished water distribution pipe needed to strengthen the urban drinking water system. Detailed considerations continue to be reviewed with City and ACSA staff. A funding allocation agreement is also under discussion.

**Ragged Mtn Reservoir to Observatory WTP Water Line and Pump Station**

Easement negotiations with two private owners, UVA, the UVA Foundation, and the Virginia Department of Forestry are in progress for about 3 miles of 36" raw water pipeline

and a pumping station.

**S. Rivanna to Ragged Mtn Reservoir Water Line**

We have obtained agreements with VDOT and easements for 6 miles of the 8 mile long 36" raw water pipeline from SRR to the new raw water pump station located near RMR. Our focus in now with the UVA Foundation and 3 private owners for the remaining 2 miles.

**Schenks Branch Sewer Line Replacement**

We are coordinating with City and County staff to renew the planning for this pipe replacement project to be located near McIntire Road and the County Office Building.

*STRATEGIC PLAN GOAL: OPERATIONAL OPTIMIZATION*

**Drought Monitoring**

Conditions in central Virginia are Normal, as reported by the VDEQ and our Water Resources Manager, Andrea Bowles Additional reservoir, rainfall and drought-related information has been provided this month in the Consent Agenda.

**Exceeding Water Treatment Standards**

The following Water Treatment Plants received several Virginia Optimization Program awards from the Va Department of Health:

| | 2020 | 2019 |
|---|---|---|
| North Rivanna: | Gold | Bronze |
| Scottsville: | Gold | Silver |
| Crozet: | Silver | Bronze |
| Observatory: | Silver | Bronze |
| South Rivanna: | Silver | Silver |

The mission of Virginia's Optimization Program (VOP) is to encourage waterworks to provide drinking water with a quality that exceeds minimum regulatory standards and to operate water systems in an exemplary manner. VOP attempts to accomplish this mission by establishing optimization goals, communicating the goals to affected waterworks, and measuring performance.

The purpose of VOP is to reduce the risks to public health associated with drinking water beyond the risk reduction inherent by adherence to regulatory standards. VOP is currently focused on enhanced particulate removal at surface water treatment plants with gravity flow and granular media filters.

There are three components to the VOP; Clarification, Individual Filter Effluent and Filter backwash goals. The highest compliance is Gold, the second is Silver, and third place is Bronze. It is important to note that all of these standards exceed the minimum regulatory

standards.

VOP awards in 2019 and 2020. It is a compliment to our staff to see the improvements from 2019 to 2020 during a pandemic.

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:** **APRIL MONTHLY FINANCIAL SUMMARY – FY 2021**

**DATE:** **JUNE 22, 2021**

Urban Water flow and rate revenues are 0.7% under budget through April, and Urban Wastewater flow and rate revenues are 16% over budget. Revenues and expenses are summarized in the table below:

| | Urban Water | Urban Wastewater | Total Other Rate Centers | Total Authority |
|---|---|---|---|---|
| **Operations** | | | | |
| Revenues | $ 6,466,297 | $ 8,467,355 | $ 1,904,282 | $ 16,837,934 |
| Expenses | (6,914,197) | (7,392,301) | (2,111,506) | (16,418,004) |
| Surplus (deficit) | $ (447,900) | $ 1,075,054 | $ (207,224) | $ 419,930 |
| **Debt Service** | | | | |
| Revenues | $ 5,736,891 | $ 7,080,653 | $ 1,380,521 | $ 14,198,065 |
| Expenses | (5,773,909) | (7,116,213) | (1,389,907) | (14,280,029) |
| Surplus (deficit) | $ (37,018) | $ (35,560) | $ (9,386) | $ (81,964) |
| **Total** | | | | |
| Revenues | $ 12,203,188 | $ 15,548,008 | $ 3,284,803 | $ 31,035,999 |
| Expenses | (12,688,106) | (14,508,514) | (3,501,413) | (30,698,033) |
| Surplus (deficit) | $ (484,918) | $ 1,039,494 | $ (216,610) | $ 337,966 |

When reviewing the Authority as a whole, operating revenues are $1,196,400 over budget (7.4%), and operating expenses are $695,000 over budget (4.3%).

A. Annual Transactions

Some revenues and expenses are over the prorated year-to-date budget due to one-time annual payments made or revenues received for the year. These transactions appear to be significant impacts on the budget vs. actual monthly comparisons but will even out as the year progresses. Septage receiving support revenue of $109,441 is received annually from

the County. Annual payments made for certain leases and maintenance agreements and some quarterly insurance premiums are good examples.

B. Personnel Costs (all departments) – Unbudgeted Special Award bonuses were paid to staff in October, and unbudgeted merit pool salary increases went into effect in January. Maintenance department salaries were underbudgeted this year.

C. Professional Services (Urban Water, Crozet Water, Urban Wastewater, Engineering – pages 2,3,5 and 11) – Urban Water incurred $310,000 of unbudgeted professional fees, but $153,000 of that amount has been billed to by UVA pursuant to our Supplemental Water Treatment Systems Study, Design and Construction Agreement, and recorded as miscellaneous revenue. The remaining unbudgeted costs include fees for engineering and technical services related to Virginia Water Permit renewal and Buck Mountain land use planning. Urban Wastewater has spent $57,000 on unbudgeted engineering and technical services related to updating the flow model. Crozet Water is $21,600 over the annual budget for engineering and technical services primarily related to an interim water system needs evaluation. The Engineering Department is $17,000 over the prorated budget for professional services related to project management software selection.

D. Other Services and Charges (Urban Water, Scottsville Water, Urban Wastewater and Scottsville Wastewater – pages 2,4,5 and 7) – Scottsville Water and Wastewater are only slightly over budget in this category. Urban Water incurred $58,000 of unbudgeted watershed management costs due to unexpected charges related to mitigation plan compliance at the Moores Creek wetland site. Urban Water and Urban Wastewater utilities are running higher than anticipated.

E. Operations and Maintenance (Urban Water, Crozet Water, all Wastewater and Administration – pages 2,3 and 5-8) – Urban Water is $367,000 over its total annual budget for Pipeline and Appurtenances repairs due to several major line breaks, and Urban Wastewater has exceeded its budget for line break repair costs by $175,000. Glenmore had some unexpected equipment repair costs, and the Administration building underwent $30,000 of unbudgeted remodeling costs to create more offices for staff. Crozet Water incurred $12,000 of unbudgeted instrumentation and metering costs. Scottsville Wastewater will be significantly over budget due to the lagoon cleaning which will cost a total of $220,000. This was unbudgeted, however, the contract for cleaning the Moores Creek AWRRF lagoon cleaning had available unused contract and this was done to take advantage of that unused contract amount for efficiency and effectiveness purposes. The ACSA has agreed to fund the resulting deficit budget in Scottsville WW for this work.

F. Communications (Urban Water, Crozet Water – pages 2-3) – Urban Water and Crozet Water data lines were upgraded to fiber, and the annual costs will be much higher going forward.

G. Miscellaneous Revenue (Urban Water – page 2) – Urban Water's Miscellaneous Revenue is mostly legal settlement revenue ($128,000) and UVA's reimbursement of professional fees ($153,000 as explained in Note C).

Attachments

**Rivanna Water & Sewer Authority**
**Monthly Financial Statements - April 2021**
**Fiscal Year 2021**

## *Consolidated*
## *Revenues and Expenses Summary*

## *Operating Budget vs. Actual*

| | Notes | *Budget FY 2021* | *Budget Year-to-Date* | *Actual Year-to-Date* | *Budget vs. Actual* | *Variance Percentage* |
|---|---|---|---|---|---|---|
| **Revenues** | | | | | | |
| Operations Rate Revenue | | $ 17,381,293 | $ 14,484,411 | $ 15,529,090 | $ 1,044,679 | 7.21% |
| Lease Revenue | | 105,000 | 87,500 | 96,556 | 9,056 | 10.35% |
| Admin., Maint. & Engineering Revenue | | 545,000 | 454,167 | 512,201 | 58,034 | 12.78% |
| Other Revenues | C, G | 542,788 | 452,323 | 874,603 | 422,280 | 93.36% |
| Use of Reserves-GAC | | 535,220 | 446,017 | 128,400 | (317,617) | -71.21% |
| Rate Stabilization Reserves | | 240,027 | 200,023 | 200,023 | - | 0.00% |
| Interest Allocation | | 35,100 | 29,250 | 9,263 | (19,987) | -68.33% |
| ***Total Operating Revenues*** | | **$ 19,384,428** | **$ 16,153,690** | **$ 17,350,136** | **$ 1,196,446** | **7.41%** |
| **Expenses** | | | | | | |
| Personnel Cost | B | $ 8,913,257 | $ 7,509,263 | $ 7,599,305 | $ (90,043) | -1.20% |
| Professional Services | C | 602,700 | 502,250 | 853,783 | (351,533) | -69.99% |
| Other Services & Charges | D | 3,136,780 | 2,613,983 | 2,694,218 | (80,234) | -3.07% |
| Communications | F | 161,020 | 134,183 | 177,691 | (43,507) | -32.42% |
| Information Technology | | 392,950 | 327,458 | 251,821 | 75,637 | 23.10% |
| Supplies | | 47,045 | 39,204 | 33,415 | 5,789 | 14.77% |
| Operations & Maintenance | A, E | 4,918,416 | 4,098,680 | 4,383,586 | (284,906) | -6.95% |
| Equipment Purchases | | 352,250 | 293,542 | 219,719 | 73,823 | 25.15% |
| Depreciation | | 860,000 | 716,667 | 716,667 | (0) | 0.00% |
| Reserve Transfers | | - | - | - | - | |
| ***Total Operating Expenses*** | | **$ 19,384,418** | **$ 16,235,230** | **$ 16,930,205** | **$ (694,975)** | **-4.28%** |
| ***Operating Surplus/(Deficit)*** | | **$ 10** | **$ (81,540)** | **$ 419,931** | | |

## *Debt Service Budget vs. Actual*

| | | | | | | |
|---|---|---|---|---|---|---|
| **Revenues** | | | | | | |
| Debt Service Rate Revenue | | $ 15,861,016 | $ 13,217,513 | $ 13,217,520 | $ 7 | 0.00% |
| Use of Reserves | | 954,652 | 795,543 | 795,543 | - | |
| Septage Receiving Support - County | | 109,440 | 91,200 | 109,441 | 18,241 | 20.00% |
| Buck Mountain Lease Revenue | | 1,600 | 1,333 | - | (1,333) | -100.00% |
| Trust Fund Interest | | 135,900 | 113,250 | 14,375 | (98,875) | -87.31% |
| Reserve Fund Interest | | 666,000 | 555,000 | 61,185 | (493,815) | -88.98% |
| ***Total Debt Service Revenues*** | | **$ 17,728,608** | **$ 14,773,840** | **$ 14,198,065** | **$ (575,775)** | **-3.90%** |
| **Debt Service Costs** | | | | | | |
| Total Principal & Interest | | $ 14,380,219 | $ 11,983,516 | $ 11,983,516 | $ - | 0.00% |
| Reserve Additions-Interest | | 666,000 | 555,000 | 61,185 | 493,815 | 88.98% |
| Debt Service Ratio Charge | | 725,000 | 604,167 | 604,167 | - | 0.00% |
| Reserve Additions-CIP Growth | | 1,957,394 | 1,631,162 | 1,631,162 | - | 0.00% |
| ***Total Debt Service Costs*** | | **$ 17,728,613** | **$ 14,773,844** | **$ 14,280,030** | **$ 493,815** | **3.34%** |
| ***Debt Service Surplus/(Deficit)*** | | **$ (5)** | **$ (4)** | **$ (81,965)** | | |

### Summary

| | | | | | |
|---|---|---|---|---|---|
| **Total Revenues** | $ 37,113,036 | $ 30,927,530 | $ 31,548,200 | $ 620,670 | 2.01% |
| **Total Expenses** | 37,113,031 | 31,009,074 | 31,210,235 | (201,161) | -0.65% |
| **Surplus/(Deficit)** | **$ 5** | **$ (81,544)** | **$ 337,966** | | |

**Rivanna Water & Sewer Authority**
**Monthly Financial Statements - April 2021**

***Urban Water Rate Center***
**Revenues and Expenses Summary**

| | Notes | *Budget FY 2021* | *Budget Year-to-Date* | *Actual Year-to-Date* | *Budget vs. Actual* | *Variance Percentage* |
|---|---|---|---|---|---|---|
| ***Operating Budget vs. Actual*** | | | | | | |
| **Revenues** | | | | | | |
| Operations Rate Revenue | | $ 7,118,541 | $ 5,932,118 | $ 5,893,086 | $ (39,031) | -0.66% |
| Lease Revenue | | 75,000 | 62,500 | 71,491 | 8,991 | 14.39% |
| Miscellaneous | C, G | - | - | 290,921 | 290,921 | |
| Use of Reserves-GAC | | 500,000 | 416,667 | 128,400 | (288,267) | -69.18% |
| Rate Stabilization Reserves | | 94,254 | 78,545 | 78,545 | - | 0.00% |
| Interest Allocation | | 14,600 | 12,167 | 3,853 | (8,313) | -68.33% |
| ***Total Operating Revenues*** | | **$ 7,802,395** | **$ 6,501,996** | **$ 6,466,297** | **$ (35,699)** | **-0.55%** |
| **Expenses** | | | | | | |
| Personnel Cost | B | $ 1,918,361 | $ 1,614,778 | $ 1,657,494 | $ (42,717) | -2.65% |
| Professional Services | C | 134,000 | 111,667 | 462,157 | (350,490) | -313.87% |
| Other Services & Charges | D | 738,130 | 615,108 | 713,244 | (98,136) | -15.95% |
| Communications | F | 76,000 | 63,333 | 87,472 | (24,139) | -38.11% |
| Information Technology | | 85,500 | 71,250 | 41,381 | 29,869 | 41.92% |
| Supplies | | 5,745 | 4,788 | 6,335 | (1,548) | -32.33% |
| Operations & Maintenance | A, E | 2,159,300 | 1,799,417 | 1,776,162 | 23,255 | 1.29% |
| Equipment Purchases | | 28,000 | 23,333 | 18,289 | 5,044 | 21.62% |
| Depreciation | | 300,000 | 250,000 | 250,000 | - | 0.00% |
| Reserve Transfers | | - | - | - | - | |
| ***Subtotal Before Allocations*** | | $ 5,445,036 | $ 4,553,674 | $ 5,012,535 | $ (458,861) | -10.08% |
| Allocation of Support Departments | | 2,357,359 | 1,984,419 | 1,901,663 | 82,756 | 4.17% |
| ***Total Operating Expenses*** | | **$ 7,802,395** | **$ 6,538,093** | **$ 6,914,197** | **$ (376,104)** | **-5.75%** |
| ***Operating Surplus/(Deficit)*** | | **$ 0** | **$ (36,097)** | **$ (447,900)** | | |
| ***Debt Service Budget vs. Actual*** | | | | | | |
| **Revenues** | | | | | | |
| Debt Service Rate Revenue | | $ 6,178,645 | $ 5,148,871 | $ 5,148,830 | $ (41) | 0.00% |
| Trust Fund Interest | | 49,000 | 40,833 | 5,189 | (35,644) | -87.29% |
| Reserve Fund Interest | | 339,600 | 283,000 | 31,205 | (251,795) | -88.97% |
| Use of Reserves | | 662,000 | 551,667 | 551,667 | - | 0.00% |
| Lease Revenue | | 1,600 | 1,333 | - | (1,333) | -100.00% |
| ***Total Debt Service Revenues*** | | **$ 7,230,845** | **$ 6,025,704** | **$ 5,736,891** | **$ (288,814)** | **-4.79%** |
| **Debt Service Costs** | | | | | | |
| Total Principal & Interest | | $ 5,215,445 | $ 4,346,204 | $ 4,346,204 | $ - | 0.00% |
| Reserve Additions-Interest | | 339,600 | 283,000 | 31,205 | 251,795 | 88.97% |
| Debt Service Ratio Charge | | 400,000 | 333,333 | 333,333 | - | 0.00% |
| Reserve Additions-CIP Growth | | 1,275,800 | 1,063,167 | 1,063,167 | - | 0.00% |
| ***Total Debt Service Costs*** | | **$ 7,230,845** | **$ 6,025,704** | **$ 5,773,909** | **$ 251,795** | **4.18%** |
| ***Debt Service Surplus/(Deficit)*** | | **$ -** | **$ -** | **$ (37,018)** | | |

**Rate Center Summary**

| | | | | | |
|---|---|---|---|---|---|
| **Total Revenues** | $ 15,033,240 | $ 12,527,700 | $ 12,203,187 | $ (324,513) | -2.59% |
| **Total Expenses** | 15,033,240 | 12,563,797 | 12,688,106 | (124,309) | -0.99% |
| **Surplus/(Deficit)** | **$ 0** | **$ (36,097)** | **$ (484,918)** | | |
| **Costs per 1000 Gallons** | $ 2.30 | | $ 2.46 | | |
| **Operating and DS** | $ 4.42 | | $ 4.51 | | |
| **Thousand Gallons Treated** | 3,397,700 | 2,831,417 | 2,812,928 | (18,489) | -0.65% |
| **or** | | | | | |
| **Flow (MGD)** | 9.309 | | 9.253 | | |

**Rivanna Water & Sewer Authority**
**Monthly Financial Statements - April 2021**

***Crozet Water Rate Center***
**Revenues and Expenses Summary**

## *Operating Budget vs. Actual*

| | Notes | Budget FY 2021 | Budget Year-to-Date | Actual Year-to-Date | Budget vs. Actual | Variance Percentage |
|---|---|---|---|---|---|---|
| **Revenues** | | | | | | |
| Operations Rate Revenue | | $ 1,028,808 | $ 857,340 | $ 857,340 | $ - | 0.00% |
| Lease Revenues | | 30,000 | 25,000 | 25,065 | 65 | 0.26% |
| Use of Reserves-GAC | | 26,000 | 21,667 | - | (21,667) | -100.00% |
| Interest Allocation | | 2,100 | 1,750 | 547 | (1,203) | -68.77% |
| ***Total Operating Revenues*** | | **$ 1,086,908** | **$ 905,757** | **$ 882,951** | **$ (22,806)** | **-2.52%** |
| **Expenses** | | | | | | |
| Personnel Cost | **B** | $ 302,598 | $ 254,722 | $ 264,050 | $ (9,327) | -3.66% |
| Professional Services | **C** | 15,000 | 12,500 | 36,633 | (24,133) | -193.06% |
| Other Services & Charges | | 142,360 | 118,633 | 84,094 | 34,539 | 29.11% |
| Communications | **F** | 5,600 | 4,667 | 15,141 | (10,474) | -224.45% |
| Information Technology | | 2,250 | 1,875 | 3,292 | (1,417) | -75.58% |
| Supplies | | 1,350 | 1,125 | 1,317 | (192) | -17.06% |
| Operations & Maintenance | **E** | 353,292 | 294,410 | 303,592 | (9,182) | -3.12% |
| Equipment Purchases | | 3,000 | 2,500 | 3,025 | (525) | -21.00% |
| Depreciation | | 40,000 | 33,333 | 33,333 | 0 | 0.00% |
| Reserve Transfers | | - | - | - | - | |
| ***Subtotal Before Allocations*** | | $ 865,450 | $ 723,766 | $ 744,476 | $ (20,711) | -2.86% |
| Allocation of Support Departments | | 221,456 | 186,408 | 179,604 | 6,804 | 3.65% |
| ***Total Operating Expenses*** | | **$ 1,086,906** | **$ 910,173** | **$ 924,080** | **$ (13,907)** | **-1.53%** |
| ***Operating Surplus/(Deficit)*** | | **$ 2** | **$ (4,417)** | **$ (41,129)** | | |

## *Debt Service Budget vs. Actual*

| | Budget FY 2021 | Budget Year-to-Date | Actual Year-to-Date | Budget vs. Actual | Variance Percentage |
|---|---|---|---|---|---|
| **Revenues** | | | | | |
| Debt Service Rate Revenue | $ 1,311,312 | $ 1,092,760 | $ 1,092,760 | $ - | 0.00% |
| Trust Fund Interest | 11,600 | 9,667 | 1,222 | (8,445) | -87.36% |
| Use of Reserves | 198,252 | 165,210 | 165,210 | - | 0.00% |
| Reserve Fund Interest | 15,700 | 13,083 | 1,468 | (11,615) | -88.78% |
| ***Total Debt Service Revenues*** | **$ 1,536,864** | **$ 1,280,720** | **$ 1,260,660** | **$ (20,060)** | **-1.57%** |
| **Debt Service Costs** | | | | | |
| Total Principal & Interest | $ 1,217,569 | $ 1,014,641 | $ 1,014,641 | $ - | 0.00% |
| Reserve Additions-Interest | 15,700 | 13,083 | 1,468 | 11,615 | 88.78% |
| Reserve Additions-CIP Growth | 303,600 | 253,000 | 253,000 | - | 0.00% |
| ***Total Debt Service Costs*** | **$ 1,536,869** | **$ 1,280,724** | **$ 1,269,109** | **$ 11,615** | **0.91%** |
| ***Debt Service Surplus/(Deficit)*** | **$ (5)** | **$ (4)** | **$ (8,449)** | | |

## Rate Center Summary

| | Budget FY 2021 | Budget Year-to-Date | Actual Year-to-Date | Budget vs. Actual | Variance Percentage |
|---|---|---|---|---|---|
| **Total Revenues** | $ 2,623,772 | $ 2,186,477 | $ 2,143,611 | $ (42,865) | -1.96% |
| **Total Expenses** | 2,623,775 | 2,190,897 | 2,193,189 | (2,292) | -0.10% |
| **Surplus/(Deficit)** | **$ (3)** | **$ (4,421)** | **$ (49,578)** | | |
| **Costs per 1000 Gallons** | $ 5.47 | | $ 4.87 | | |
| **Operating and DS** | $ 13.20 | | $ 11.57 | | |
| **Thousand Gallons Treated** | 198,830 | 165,692 | 189,581 | 23,889 | 14.42% |
| **Flow (MGD)** | 0.545 | | 0.624 | | |

**Rivanna Water & Sewer Authority**
**Monthly Financial Statements - April 2021**

***Scottsville Water Rate Center***
**Revenues and Expenses Summary**

| | Notes | *Budget FY 2021* | *Budget Year-to-Date* | *Actual Year-to-Date* | *Budget vs. Actual* | *Variance Percentage* |
|---|---|---|---|---|---|---|
| ***Operating Budget vs. Actual*** | | | | | | |
| **Revenues** | | | | | | |
| Operations Rate Revenue | | $ 520,812 | $ 434,010 | $ 434,010 | $ - | 0.00% |
| Use of Reserves-GAC | | 9,220 | 7,683 | - | $ (7,683) | -100.00% |
| Interest Allocation | | 1,000 | 833 | 269 | (565) | -67.76% |
| ***Total Operating Revenues*** | | **$ 531,032** | **$ 442,527** | **$ 434,279** | **$ (8,248)** | **-1.86%** |
| **Expenses** | | | | | | |
| Personnel Cost | **B** | $ 184,031 | $ 154,931 | $ 161,075 | $ (6,145) | -3.97% |
| Professional Services | | 71,000 | 59,167 | 15,781 | 43,385 | 73.33% |
| Other Services & Charges | **D** | 22,780 | 18,983 | 24,165 | (5,181) | -27.29% |
| Communications | | 4,600 | 3,833 | 7,370 | (3,537) | -92.26% |
| Information Technology | | 650 | 542 | 2,184 | (1,642) | -303.18% |
| Supplies | | 200 | 167 | 42 | 124 | 74.53% |
| Operations & Maintenance | | 87,662 | 73,052 | 52,860 | 20,192 | 27.64% |
| Equipment Purchases | | 2,500 | 2,083 | 2,083 | (0) | 0.00% |
| Depreciation | | 20,000 | 16,667 | 16,667 | (0) | 0.00% |
| Reserve Transfers | | - | - | - | - | |
| ***Subtotal Before Allocations*** | | $ 393,423 | $ 329,424 | $ 282,227 | $ 47,196 | 14.33% |
| Allocation of Support Departments | | 137,604 | 115,795 | 113,413 | 2,381 | 2.06% |
| ***Total Operating Expenses*** | | **$ 531,027** | **$ 445,219** | **$ 395,641** | **$ 49,578** | **11.14%** |
| ***Operating Surplus/(Deficit)*** | | **$ 5** | **$ (2,692)** | **$ 38,638** | | |
| ***Debt Service Budget vs. Actual*** | | | | | | |
| **Revenues** | | | | | | |
| Debt Service Rate Revenue | | $ 128,749 | $ 107,291 | $ 107,290 | $ (1) | 0.00% |
| Trust Fund Interest | | 1,200 | 1,000 | 129 | (871) | -87.06% |
| Reserve Fund Interest | | 8,300 | 6,917 | 734 | (6,182) | -89.38% |
| ***Total Debt Service Revenues*** | | **$ 138,249** | **$ 115,208** | **$ 108,154** | **$ (7,054)** | **-6.12%** |
| **Debt Service Costs** | | | | | | |
| Total Principal & Interest | | $ 126,032 | $ 105,027 | $ 105,027 | $ - | 0.00% |
| Reserve Additions-Interest | | 8,300 | 6,917 | 734 | 6,182 | |
| Reserve Additions-CIP Growth | | 3,917 | 3,264 | 3,264 | - | |
| ***Total Debt Service Costs*** | | **$ 138,249** | **$ 115,208** | **$ 109,025** | **$ 6,182** | **5.37%** |
| ***Debt Service Surplus/(Deficit)*** | | **$ -** | **$ -** | **$ (871)** | | |
| **Rate Center Summary** | | | | | | |
| **Total Revenues** | | $ 669,281 | $ 557,734 | $ 542,432 | $ (15,302) | -2.74% |
| **Total Expenses** | | 669,276 | 560,426 | 504,666 | 55,760 | 9.95% |
| **Surplus/(Deficit)** | | **$ 5** | **$ (2,692)** | **$ 37,766** | | |
| **Costs per 1000 Gallons** | | $ 30.79 | | $ 23.05 | | |
| **Operating and DS** | | $ 38.81 | | $ 29.40 | | |
| **Thousand Gallons Treated** | | 17,245 | 14,371 | 17,168 | 2,797 | 19.46% |
| **or** | | | | | | |
| **Flow (MGD)** | | 0.047 | | 0.056 | | |

**Rivanna Water & Sewer Authority**
**Monthly Financial Statements - April 2021**

***Urban Wastewater Rate Center***
**Revenues and Expenses Summary**

| | Notes | *Budget FY 2021* | *Budget Year-to-Date* | *Actual Year-to-Date* | *Budget vs. Actual* | *Variance Percentage* |
|---|---|---|---|---|---|---|
| ***Operating Budget vs. Actual*** | | | | | | |
| **Revenues** | | | | | | |
| Operations Rate Revenue | | $ 8,033,620 | $ 6,694,683 | $ 7,778,394 | $ 1,083,710 | 16.19% |
| Stone Robinson WWTP | | 22,788 | 18,990 | 12,240 | (6,750) | -35.55% |
| Septage Acceptance | | 475,000 | 395,833 | 482,220 | 86,387 | 21.82% |
| Nutrient Credits | | 45,000 | 37,500 | 86,999 | 49,499 | 132.00% |
| Rate Stabilization Reserve | | 121,233 | 101,028 | 101,028 | - | 0.00% |
| Miscellaneous Revenue | | - | - | 2,224 | 2,224 | |
| Interest Allocation | | 16,100 | 13,417 | 4,252 | (9,165) | -68.31% |
| ***Total Operating Revenues*** | | **$ 8,713,741** | **$ 7,261,451** | **$ 8,467,355** | **$ 1,205,905** | **16.61%** |
| **Expenses** | | | | | | |
| Personnel Cost | | $ 1,299,876 | $ 1,094,880 | $ 1,056,469 | $ 38,411 | 3.51% |
| Professional Services | C | 143,400 | 119,500 | 206,856 | (87,356) | -73.10% |
| Other Services & Charges | D | 2,020,300 | 1,683,583 | 1,715,893 | (32,310) | -1.92% |
| Communications | | 10,700 | 8,917 | 11,654 | (2,738) | -30.70% |
| Information Technology | | 69,500 | 57,917 | 17,876 | 40,041 | 69.14% |
| Supplies | | 1,900 | 1,583 | 1,714 | (130) | -8.24% |
| Operations & Maintenance | E | 1,767,000 | 1,472,500 | 1,640,856 | (168,356) | -11.43% |
| Equipment Purchases | | 125,250 | 104,375 | 56,738 | 47,637 | 45.64% |
| Depreciation | | 470,000 | 391,667 | 391,667 | (0) | 0.00% |
| Reserve Transfers | | - | - | - | - | |
| ***Subtotal Before Allocations*** | | $ 5,907,926 | $ 4,934,921 | $ 5,099,724 | $ (164,802) | -3.34% |
| Allocation of Support Departments | | 2,805,815 | 2,361,512 | 2,292,577 | 68,935 | 2.92% |
| ***Total Operating Expenses*** | | **$ 8,713,741** | **$ 7,296,434** | **$ 7,392,301** | **$ (95,867)** | **-1.31%** |
| ***Operating Surplus/(Deficit)*** | | **$ (0)** | **$ (34,983)** | **$ 1,075,055** | | |
| ***Debt Service Budget vs. Actual*** | | | | | | |
| **Revenues** | | | | | | |
| Debt Service Rate Revenue | | $ 8,229,090 | $ 6,857,575 | $ 6,857,620 | $ 45 | 0.00% |
| Septage Receiving Support - County | | 109,440 | 91,200 | 109,441 | 18,241 | 20.00% |
| Trust Fund Interest | | 74,000 | 61,667 | 7,820 | (53,847) | -87.32% |
| Use of Reserves | | 94,400 | 78,667 | 78,667 | - | 0.00% |
| Reserve Fund Interest | | 295,200 | 246,000 | 27,105 | (218,895) | -88.98% |
| ***Total Debt Service Revenues*** | | **$ 8,802,130** | **$ 7,335,108** | **$ 7,080,653** | **$ (254,455)** | **-3.47%** |
| **Debt Service Costs** | | | | | | |
| Total Principal & Interest | | $ 7,812,130 | $ 6,510,108 | $ 6,510,108 | $ - | 0.00% |
| Reserve Additions-Interest | | 295,200 | 246,000 | 27,105 | 218,895 | 88.98% |
| Debt Service Ratio Charge | | 325,000 | 270,833 | 270,833 | - | 0.00% |
| Reserve Additions-CIP Growth | | 369,800 | 308,167 | 308,167 | - | 0.00% |
| ***Total Debt Service Costs*** | | **$ 8,802,130** | **$ 7,335,108** | **$ 7,116,213** | **$ 218,895** | **2.98%** |
| ***Debt Service Surplus/(Deficit)*** | | **$ -** | **$ -** | **$ (35,561)** | | |
| **Rate Center Summary** | | | | | | |
| **Total Revenues** | | $ 17,515,871 | $ 14,596,559 | $ 15,548,008 | $ 951,449 | 6.52% |
| **Total Expenses** | | 17,515,871 | 14,631,542 | 14,508,514 | 123,028 | 0.84% |
| **Surplus/(Deficit)** | | **$ (0)** | **$ (34,983)** | **$ 1,039,494** | | |
| **Costs per 1000 Gallons** | | $ 2.57 | | $ 2.25 | | |
| **Operating and DS** | | $ 5.17 | | $ 4.42 | | |
| **Thousand Gallons Treated** | | 3,390,400 | 2,825,333 | 3,283,407 | 458,074 | 16.21% |
| **or** | | | | | | |
| **Flow (MGD)** | | 9.289 | | 10.801 | | |

**Rivanna Water & Sewer Authority**
**Monthly Financial Statements - April 2021**

***Glenmore Wastewater Rate Center***
**Revenues and Expenses Summary**

| | Notes | *Budget FY 2021* | *Budget Year-to-Date* | *Actual Year-to-Date* | *Budget vs. Actual* | *Variance Percentage* |
|---|---|---|---|---|---|---|
| ***Operating Budget vs. Actual*** | | | | | | |
| **Revenues** | | | | | | |
| Operations Rate Revenue | | $ 370,524 | $ 308,770 | $ 308,770 | $ - | 0.00% |
| Rate Stabilization Reserve | | 24,540 | 20,450 | 20,450 | - | 0.00% |
| Interest Allocation | | 700 | 583 | 185 | (398) | -68.24% |
| ***Total Operating Revenues*** | | **$ 395,764** | **$ 329,803** | **$ 329,405** | **$ (398)** | **-0.12%** |
| **Expenses** | | | | | | |
| Personnel Cost | | $ 97,804 | $ 82,360 | $ 77,089 | $ 5,272 | 6.40% |
| Professional Services | | 24,200 | 20,167 | 87 | 20,079 | |
| Other Services & Charges | | 36,800 | 30,667 | 32,971 | (2,304) | -7.51% |
| Communications | | 3,200 | 2,667 | 2,993 | (327) | -12.25% |
| Information Technology | | 4,050 | 3,375 | 9,289 | (5,914) | -175.22% |
| Supplies | | - | - | 654 | (654) | |
| Operations & Maintenance | **E** | 109,100 | 90,917 | 110,731 | (19,814) | -21.79% |
| Equipment Purchases | | 3,700 | 3,083 | 3,083 | 0 | 0.00% |
| Depreciation | | 10,000 | 8,333 | 8,333 | 0 | 0.00% |
| ***Subtotal Before Allocations*** | | $ 288,854 | $ 241,569 | $ 245,230 | $ (3,661) | -1.52% |
| Allocation of Support Departments | | 106,907 | 89,937 | 89,118 | 819 | 0.91% |
| ***Total Operating Expenses*** | | **$ 395,761** | **$ 331,506** | **$ 334,349** | **$ (2,842)** | **-0.86%** |
| ***Operating Surplus/(Deficit)*** | | **$ 3** | **$ (1,703)** | **$ (4,943)** | | |
| ***Debt Service Budget vs. Actual*** | | | | | | |
| **Revenues** | | | | | | |
| Debt Service Rate Revenue | | $ 3,778 | $ 3,148 | $ 3,150 | $ 2 | 0.05% |
| Trust Fund Interest | | - | - | - | - | |
| Reserve Fund Interest | | 3,000 | 2,500 | 306 | (2,194) | -87.76% |
| ***Total Debt Service Revenues*** | | **$ 6,778** | **$ 5,648** | **$ 3,456** | **$ 2** | **0.03%** |
| **Debt Service Costs** | | | | | | |
| Total Principal & Interest | | $ 1,579 | $ 1,316 | $ 1,316 | $ - | 0.00% |
| Reserve Additions-CIP Growth | | 2,199 | 1,833 | 1,833 | - | 0.00% |
| Reserve Additions-Interest | | 3,000 | 2,500 | 306 | 2,194 | 87.76% |
| ***Total Debt Service Costs*** | | **$ 6,778** | **$ 5,648** | **$ 3,454** | **$ 2,194** | **38.84%** |
| ***Debt Service Surplus/(Deficit)*** | | **$ -** | **$ -** | **$ 2** | | |
| **Rate Center Summary** | | | | | | |
| **Total Revenues** | | $ 402,542 | $ 335,452 | $ 332,861 | $ (2,590) | -0.77% |
| **Total Expenses** | | 402,539 | 337,154 | 337,803 | (648) | -0.19% |
| **Surplus/(Deficit)** | | **$ 3** | **$ (1,703)** | **$ (4,942)** | | |
| **Costs per 1000 Gallons** | | $ 9.51 | | $ 9.09 | | |
| **Operating and DS** | | $ 9.67 | | $ 9.19 | | |
| **Thousand Gallons Treated** | | 41,629 | 34,691 | 36,774 | 2,083 | **6.00%** |
| **or** | | | | | | |
| **Flow (MGD)** | | 0.114 | | 0.121 | | |

**Rivanna Water & Sewer Authority**
**Monthly Financial Statements - April 2021**

***Scottsville Wastewater Rate Center***
**Revenues and Expenses Summary**

## *Operating Budget vs. Actual*

| | Notes | Budget FY 2021 | Budget Year-to-Date | Actual Year-to-Date | Budget vs. Actual | Variance Percentage |
|---|---|---|---|---|---|---|
| **Revenues** | | | | | | |
| Operations Rate Revenue | | $ 308,988 | $ 257,490 | $ 257,490 | $ - | 0.00% |
| Interest Allocation | | 600 | 500 | 157 | (343) | -68.51% |
| ***Total Operating Revenues*** | | **$ 309,588** | **$ 257,990** | **$ 257,647** | **$ (343)** | **-0.13%** |
| **Expenses** | | | | | | |
| Personnel Cost | | $ 97,317 | $ 81,954 | $ 77,089 | $ 4,866 | 5.94% |
| Professional Services | | 2,100 | 1,750 | 912 | 838 | 47.87% |
| Other Services & Charges | **D** | 23,710 | 19,758 | 26,633 | (6,874) | -34.79% |
| Communications | | 3,720 | 3,100 | 3,249 | (149) | -4.79% |
| Information Technology | | 1,500 | 1,250 | 478 | 772 | 61.77% |
| Supplies | | 500 | 417 | 0 | 416 | 99.92% |
| Operations & Maintenance | **E** | 57,812 | 48,177 | 246,953 | (198,777) | -412.60% |
| Equipment Purchases | | 3,700 | 3,083 | 3,083 | 0 | 0.00% |
| Depreciation | | 20,000 | 16,667 | 16,667 | (0) | 0.00% |
| ***Subtotal Before Allocations*** | | $ 210,359 | $ 176,156 | $ 375,064 | $ (198,908) | -112.92% |
| Allocation of Support Departments | | 99,228 | 83,483 | 82,372 | 1,110 | 1.33% |
| ***Total Operating Expenses*** | | **$ 309,587** | **$ 259,639** | **$ 457,437** | **$ (197,798)** | **-76.18%** |
| ***Operating Surplus/(Deficit)*** | | **$ 1** | **$ (1,649)** | **$ (199,789)** | | |

## *Debt Service Budget vs. Actual*

| | Budget FY 2021 | Budget Year-to-Date | Actual Year-to-Date | Budget vs. Actual | Variance Percentage |
|---|---|---|---|---|---|
| **Revenues** | | | | | |
| Debt Service Rate Revenue | $ 9,442 | $ 7,868 | $ 7,870 | $ 2 | 0.02% |
| Trust Fund Interest | 100 | 83 | 14 | (69) | -82.84% |
| Reserve Fund Interest | 4,200 | 3,500 | 367 | (3,133) | -89.51% |
| ***Total Debt Service Revenues*** | **$ 13,742** | **$ 11,452** | **$ 8,251** | **$ (3,200)** | **-27.95%** |
| **Debt Service Costs** | | | | | |
| Total Principal & Interest | $ 7,464 | $ 6,220 | $ 6,220 | $ - | 0.00% |
| Reserve Additions-Interest | 4,200 | 3,500 | 367 | 3,133 | 89.51% |
| Estimated New Principal & Interest | 2,078 | 1,732 | 1,732 | - | 0.00% |
| ***Total Debt Service Costs*** | **$ 13,742** | **$ 11,452** | **$ 8,319** | **$ 3,133** | **27.36%** |
| ***Debt Service Surplus/(Deficit)*** | **$ -** | **$ -** | **$ (67)** | | |

## Rate Center Summary

| | Budget FY 2021 | Budget Year-to-Date | Actual Year-to-Date | Budget vs. Actual | Variance Percentage |
|---|---|---|---|---|---|
| **Total Revenues** | $ 323,330 | $ 269,442 | $ 265,899 | $ (3,543) | -1.31% |
| **Total Expenses** | 323,329 | 271,091 | 465,755 | (194,665) | -71.81% |
| **Surplus/(Deficit)** | **$ 1** | **$ (1,649)** | **$ (199,856)** | | |
| **Costs per 1000 Gallons** | $ 13.39 | | $ 17.63 | | |
| **Operating and DS** | $ 13.98 | | $ 17.95 | | |
| **Thousand Gallons Treated** | 23,126 | 19,272 | 25,946 | 6,674 | **34.63%** |
| **or** | | | | | |
| **Flow (MGD)** | 0.063 | | 0.085 | | |

**Rivanna Water & Sewer Authority**
**Monthly Financial Statements - April 2021**

## Administration

### *Operating Budget vs. Actual*

| | Notes | *Budget FY 2021* | *Budget Year-to-Date* | *Actual Year-to-Date* | *Budget vs. Actual* | *Variance Percentage* |
|---|---|---|---|---|---|---|
| **Revenues** | | | | | | |
| Payment for Services SWA | | $ 543,000 | $ 452,500 | $ 452,500 | $ - | 0.00% |
| Miscellaneous Revenue | | 2,000 | 1,667 | 47,090 | 45,423 | 2725.40% |
| ***Total Operating Revenues*** | | **$ 545,000** | **$ 454,167** | **$ 499,590** | **$ 45,423** | **10.00%** |
| **Expenses** | | | | | | |
| Personnel Cost | **B** | $ 1,906,136 | $ 1,607,067 | $ 1,617,800 | $ (10,732) | -0.67% |
| Professional Services | | 183,000 | 152,500 | 89,071 | 63,429 | 41.59% |
| Other Services & Charges | | 80,600 | 67,167 | 65,221 | 1,945 | 2.90% |
| Communications | | 21,500 | 17,917 | 17,634 | 282 | 1.58% |
| Information Technology | | 177,000 | 147,500 | 138,667 | 8,833 | 5.99% |
| Supplies | | 24,250 | 20,208 | 17,989 | 2,219 | 10.98% |
| Operations & Maintenance | **E** | 75,200 | 62,667 | 91,004 | (28,337) | -45.22% |
| Equipment Purchases | | 24,000 | 20,000 | 11,667 | 8,333 | 41.67% |
| Depreciation | | - | - | - | - | |
| ***Total Operating Expenses*** | | **$ 2,491,686** | **$ 2,095,026** | **$ 2,049,053** | **$ 45,972** | **2.19%** |

### Department Summary

| | | | | | | |
|---|---|---|---|---|---|---|
| **Net Costs Allocable to Rate Centers** | | **$ (1,946,686)** | **$ (1,640,859)** | **$ (1,549,463)** | **$ (91,396)** | **5.57%** |
| **Allocations to the Rate Centers** | | | | | | |
| **Urban Water** | 44.00% | **$ 856,542** | **$ 721,978** | **$ 681,764** | **$ 40,214** | |
| **Crozet Water** | 4.00% | **$ 77,867** | **65,634** | **61,979** | **3,656** | |
| **Scottsville Water** | 2.00% | **$ 38,934** | **32,817** | **30,989** | **1,828** | |
| **Urban Wastewater** | 48.00% | **$ 934,409** | **787,612** | **743,742** | **43,870** | |
| **Glenmore Wastewater** | 1.00% | **$ 19,467** | **16,409** | **15,495** | **914** | |
| **Scottsville Wastewater** | 1.00% | **$ 19,467** | **16,409** | **15,495** | **914** | |
| | 100.00% | **$ 1,946,686** | **$ 1,640,859** | **$ 1,549,463** | **$ 91,396** | |

**Rivanna Water & Sewer Authority**
**Monthly Financial Statements - April 2021**

## Maintenance

### *Operating Budget vs. Actual*

| | Notes | *Budget FY 2021* | *Budget Year-to-Date* | *Actual Year-to-Date* | *Budget vs. Actual* | *Variance Percentage* |
|---|---|---|---|---|---|---|
| **Revenues** | | | | | | |
| Payment for Services SWA | | $ - | $ - | $ - | $ - | |
| Miscellaneous Revenue | | - | - | 3,101 | 3,101 | |
| ***Total Operating Revenues*** | | **$ -** | **$ -** | **$ 3,101** | **$ 3,101** | |
| **Expenses** | | | | | | |
| Personnel Cost | **B** | $ 1,233,605 | $ 1,039,127 | $ 1,132,669 | $ (93,543) | -9.00% |
| Professional Services | | - | - | - | - | |
| Other Services & Charges | | 50,700 | 42,250 | 18,013 | 24,237 | 57.37% |
| Communications | | 17,400 | 14,500 | 17,949 | (3,449) | -23.79% |
| Information Technology | | 8,500 | 7,083 | 6,024 | 1,059 | 14.96% |
| Supplies | | 2,000 | 1,667 | 186 | 1,481 | 88.84% |
| Operations & Maintenance | | 84,550 | 70,458 | 74,990 | (4,532) | -6.43% |
| Equipment Purchases | | 139,000 | 115,833 | 102,500 | 13,333 | 11.51% |
| Depreciation | | - | - | - | - | |
| ***Total Operating Expenses*** | | **$ 1,535,755** | **$ 1,290,919** | **$ 1,352,331** | **$ (61,412)** | **-4.76%** |

### Department Summary

| | | | | | | |
|---|---|---|---|---|---|---|
| **Net Costs Allocable to Rate Centers** | | **$ (1,535,755)** | **$ (1,290,919)** | **$ (1,349,230)** | **$ 64,514** | **-5.00%** |
| **Allocations to the Rate Centers** | | | | | | |
| **Urban Water** | 30.00% | **$ 460,727** | **$ 387,276** | **$ 404,769** | **$ (17,493)** | |
| **Crozet Water** | 3.50% | **53,751** | **45,182** | **47,223** | **(2,041)** | |
| **Scottsville Water** | 3.50% | **53,751** | **45,182** | **47,223** | **(2,041)** | |
| **Urban Wastewater** | 56.50% | **867,702** | **729,369** | **762,315** | **(32,946)** | |
| **Glenmore Wastewater** | 3.50% | **53,751** | **45,182** | **47,223** | **(2,041)** | |
| **Scottsville Wastewater** | 3.00% | **46,073** | **38,728** | **40,477** | **(1,749)** | |
| | 100.00% | **$ 1,535,755** | **$ 1,290,919** | **$ 1,349,230** | **$ (58,311)** | |

**Rivanna Water & Sewer Authority**
**Monthly Financial Statements - April 2021**

## Laboratory

## *Operating Budget vs. Actual*

| | Notes | *Budget FY 2021* | *Budget Year-to-Date* | *Actual Year-to-Date* | *Budget vs. Actual* | *Variance Percentage* |
|---|---|---|---|---|---|---|
| **Revenues** | | | | | | |
| **N/A** | | | | | | |
| **Expenses** | | | | | | |
| Personnel Cost | | $ 404,171 | $ 340,687 | $ 333,312 | $ 7,376 | 2.16% |
| Professional Services | | - | - | - | - | |
| Other Services & Charges | | 7,600 | 6,333 | 6,019 | 314 | 4.96% |
| Communications | | 2,100 | 1,750 | 1,193 | 557 | |
| Information Technology | | 2,500 | 2,083 | 6,588 | (4,504) | -216.20% |
| Supplies | | 1,300 | 1,083 | 1,264 | (181) | -16.71% |
| Operations & Maintenance | | 97,250 | 81,042 | 53,492 | 27,550 | 33.99% |
| Equipment Purchases | | 1,600 | 1,333 | 1,333 | 0 | 0.00% |
| Depreciation | | - | - | - | - | |
| ***Total Operating Expenses*** | | **$ 516,521** | **$ 434,312** | **$ 403,201** | **$ 31,111** | **7.16%** |

### Department Summary

| | | | | | | |
|---|---|---|---|---|---|---|
| **Net Costs Allocable to Rate Centers** | | **$ (516,521)** | **$ (434,312)** | **$ (403,201)** | **$ (31,111)** | **7.16%** |
| **Allocations to the Rate Centers** | | | | | | |
| **Urban Water** | 44.00% | **$ 227,269** | **$ 191,097** | **$ 177,409** | **$ 13,689** | |
| **Crozet Water** | 4.00% | **20,661** | **17,372** | **16,128** | **1,244** | |
| **Scottsville Water** | 2.00% | **10,330** | **8,686** | **8,064** | **622** | |
| **Urban Wastewater** | 47.00% | **242,765** | **204,127** | **189,505** | **14,622** | |
| **Glenmore Wastewater** | 1.50% | **7,748** | **6,515** | **6,048** | **467** | |
| **Scottsville Wastewater** | 1.50% | **7,748** | **6,515** | **6,048** | **467** | |
| | 100.00% | **$ 516,521** | **$ 434,312** | **$ 403,201** | **$ 31,111** | |

**Rivanna Water & Sewer Authority**
**Monthly Financial Statements - April 2021**

## Engineering

### *Operating Budget vs. Actual*

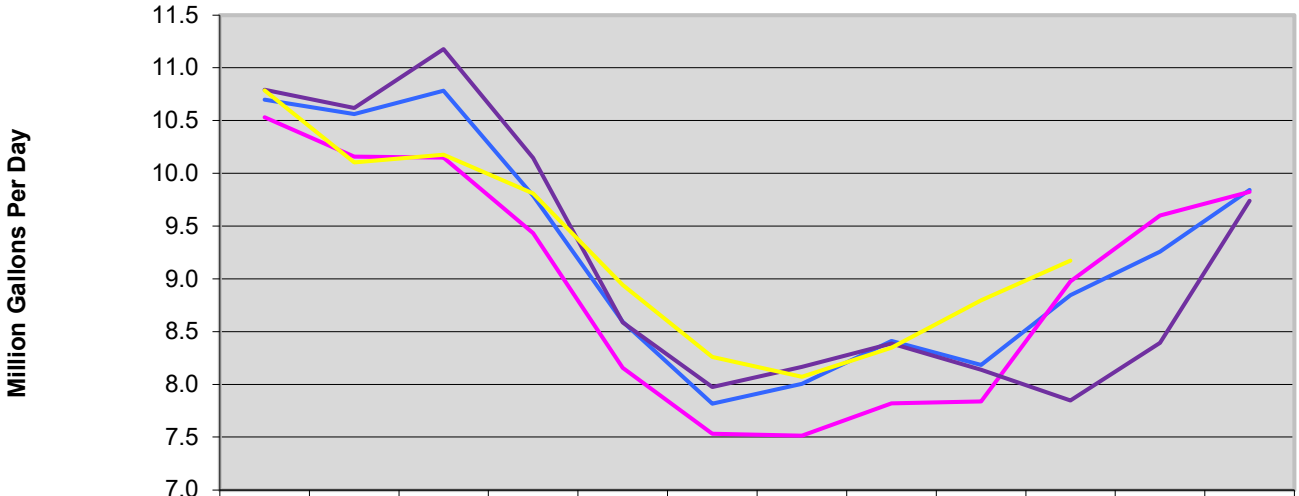
| | Notes | *Budget FY 2021* | *Budget Year-to-Date* | *Actual Year-to-Date* | *Budget vs. Actual* | *Variance Percentage* |
|---|---|---|---|---|---|---|
| **Revenues** | | | | | | |
| Payment for Services SWA | | $ - | $ - | $ 9,510 | $ 9,510 | |
| ***Total Operating Revenues*** | | **$ -** | **$ -** | **$ 9,510** | **$ 9,510** | |
| **Expenses** | | | | | | |
| Personnel Cost | | $ 1,469,358 | $ 1,238,756 | $ 1,222,259 | $ 16,497 | 1.33% |
| Professional Services | C | 30,000 | 25,000 | 42,286 | (17,286) | -69.14% |
| Other Services & Charges | | 13,800 | 11,500 | 7,964 | 3,536 | 30.75% |
| Communications | | 16,200 | 13,500 | 13,035 | 465 | 3.44% |
| Information Technology | | 41,500 | 34,583 | 26,043 | 8,540 | 24.69% |
| Supplies | | 9,800 | 8,167 | 3,914 | 4,253 | 52.08% |
| Operations & Maintenance | | 127,250 | 106,042 | 32,946 | 73,096 | 68.93% |
| Equipment Purchases | | 21,500 | 17,917 | 17,917 | (0) | 0.00% |
| Depreciation & Capital Reserve Transfers | | - | - | - | - | |
| ***Total Operating Expenses*** | | **$ 1,729,408** | **$ 1,455,464** | **$ 1,366,364** | **$ 89,101** | **6.12%** |

### Department Summary

| | | | | | | |
|---|---|---|---|---|---|---|
| **Net Costs Allocable to Rate Centers** | | **$ (1,729,408)** | **$ (1,455,464)** | **$ (1,356,854)** | **$ (79,591)** | **5.47%** |
| **Allocations to the Rate Centers** | | | | | | |
| **Urban Water** | 47.00% | **$ 812,822** | **$ 684,068** | **$ 637,721** | **$ 46,347** | |
| **Crozet Water** | 4.00% | **69,176** | **58,219** | **54,274** | **3,944** | |
| **Scottsville Water** | 2.00% | **34,588** | **29,109** | **27,137** | **1,972** | |
| **Urban Wastewater** | 44.00% | **760,939** | **640,404** | **597,016** | **43,388** | |
| **Glenmore Wastewater** | 1.50% | **25,941** | **21,832** | **20,353** | **1,479** | |
| **Scottsville Wastewater** | 1.50% | **25,941** | **21,832** | **20,353** | **1,479** | |
| | 100.00% | **$ 1,729,408** | **$ 1,455,464** | **$ 1,356,854** | **$ 98,610** | |

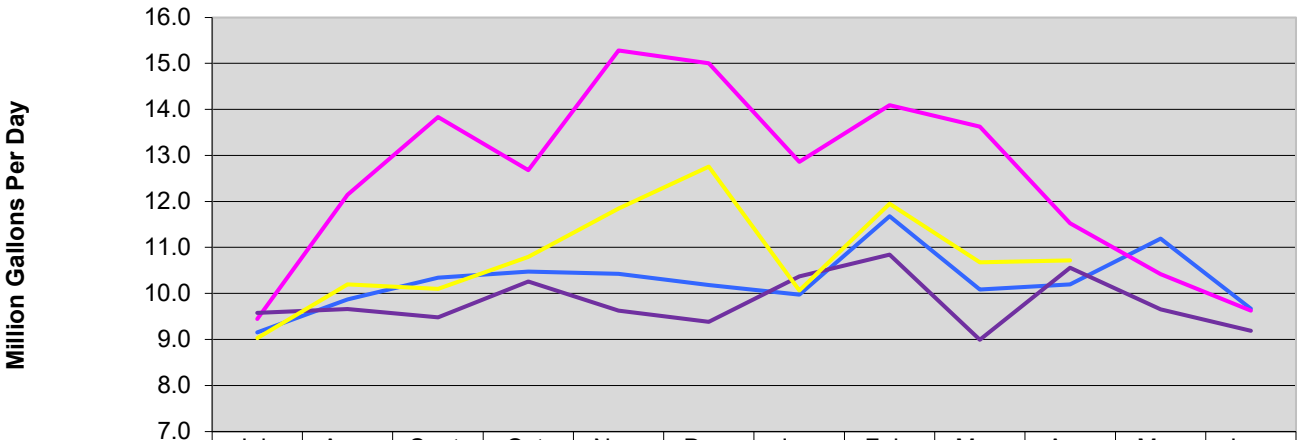
**Rivanna Water and Sewer Authority**
**Flow Graphs**

## Urban Water Flows




| | July | Aug. | Sept. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 YR AVG. | 10.70 | 10.56 | 10.78 | 9.79 | 8.59 | 7.82 | 8.00 | 8.41 | 8.18 | 8.84 | 9.26 | 9.84 |
| FY 2019 | 10.53 | 10.16 | 10.15 | 9.43 | 8.16 | 7.53 | 7.51 | 7.82 | 7.84 | 8.98 | 9.60 | 9.82 |
| FY 2020 | 10.79 | 10.62 | 11.18 | 10.14 | 8.59 | 7.98 | 8.16 | 8.39 | 8.14 | 7.85 | 8.39 | 9.74 |
| FY 2021 | 10.78 | 10.10 | 10.17 | 9.81 | 8.94 | 8.26 | 8.07 | 8.35 | 8.79 | 9.17 | | |

## Urban Wastewater Flows




| | July | Aug. | Sept. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 YR AVG | 9.15 | 9.87 | 10.35 | 10.47 | 10.43 | 10.18 | 9.97 | 11.68 | 10.08 | 10.20 | 11.19 | 9.67 |
| FY 2019 | 9.45 | 12.14 | 13.83 | 12.68 | 15.28 | 15.00 | 12.86 | 14.09 | 13.62 | 11.52 | 10.42 | 9.62 |
| FY 2020 | 9.58 | 9.66 | 9.48 | 10.26 | 9.63 | 9.38 | 10.37 | 10.84 | 8.99 | 10.56 | 9.66 | 9.19 |
| FY 2021 | 9.03 | 10.20 | 10.10 | 10.79 | 11.85 | 12.75 | 10.06 | 11.95 | 10.67 | 10.72 | | |

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 MAY 2021**

**DATE:** **JUNE 22, 2021**

**WATER OPERATIONS**:

The average daily/monthly total water distributed for May 2021 was as follows:

| ***Water Treatment Plant*** | ***Average Daily Production (MGD)*** | ***Total Monthly Production (MG)*** | ***Maximum Daily Production in the Month (MGD)*** |
|---|---|---|---|
| Observatory | 1.56 | 48.44 | 4.20 (05/04/21) |
| South Rivanna | 8.26 | 256.11 | 9.76 (05/28/21) |
| North Rivanna | 0.43 | 13.45 | 0.53 (05/22/21) |
| ***Urban Total*** | 9.17 | 318.00 | 11.91 (05/20/21) |
| Crozet | 0.72 | 22.18 | 1.03 (05/22/21) |
| Scottsville | 0.048 | 1.49 | 0.08 (05/3/21) |
| Red Hill | 0.0022 | 0.068 | 0.006 (05/22/21) |
| ***RWSA Total*** | 11.02 | 341.74 | --- |

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

Status of Reservoirs (as of June 15, 2021):

- Urban Reservoirs: 94.33 % of Total Useable Capacity
- Ragged Mountain Reservoir is not full (97.42%)
- Sugar Hollow Reservoir is not full (66.42%)*
- South Rivanna Reservoir is full (100%)
- Beaver Creek Reservoir is full (100%)
- Totier Creek Reservoir is full (100%)

*The Sugar Hollow Reservoir has been lowered for replacement of the rubber bladder on the dam.

## WASTEWATER OPERATIONS:

All RWSA Water Resource Recovery Facilities (WRRFs) were in regulatory compliance with their effluent limitations during May 2021. In May 2020, RWSA staff informed VDEQ that the new Rivanna Pump Station generator, which was installed in 2017 as part of the construction project for the new Pump Station and approved after an inspection by VDEQ, was not on the Moores Creek VDEQ Air permit. In response to our notification, we received a Notice of Violation (NOV) from the VDEQ Air Permit section in June 2020. We also received an NOV from the VDEQ Air Permit section in April 2021 for late submission (25 calendar days) of an annual report. After a phone conference with the VDEQ Air Permit section, we responded to both concerns by letter in May 2021, and are waiting for a response. Performance of the WRRFs in May 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** | 9.51 | 4.0 | 10 | <QL | 22 | <QL | 7.0 |
| **Glenmore** | 0.094 | 4.0 | 15 | 3.3 | 30 | NR | NL |
| **Scottsville** | 0.062 | 5.3 | 25 | 3.7 | 30 | NR | NL |
| **Stone Robinson** | 0.001 | NR | 30 | NR | 30 | NR | NL |

NR = Not Required
NL = No Limit
<QL: Less than analytical method quantitative level (2.0 ppm for CBOD, 1.0 ppm for TSS, and 0.1 ppm for Ammonia).

Nutrient discharges at the Moores Creek AWRRF were as follows for May 2021.

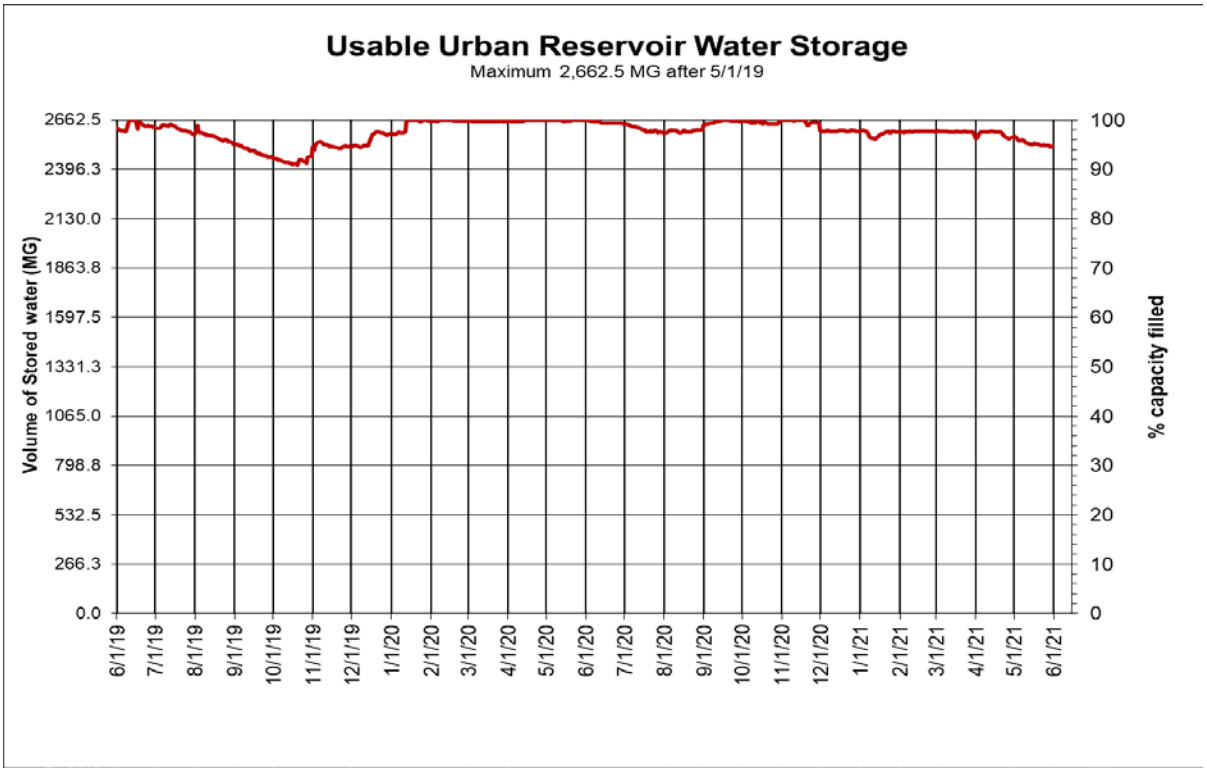
| ***State Annual Allocation (lb./yr.) Permit*** | | ***Average Monthly Allocation (lb./mo.) **** | ***Moores Creek Discharge May (lb./mo.)*** | ***Performance as % of monthly average Allocation**** | ***Year to Date Performance as % of annual allocation*** |
|---|---|---|---|---|---|
| **Nitrogen** | 282,994 | 23,583 | 5,293 | 22% | 14% |
| **Phosphorous** | 18,525 | 1,544 | 460 | 30% | 14% |

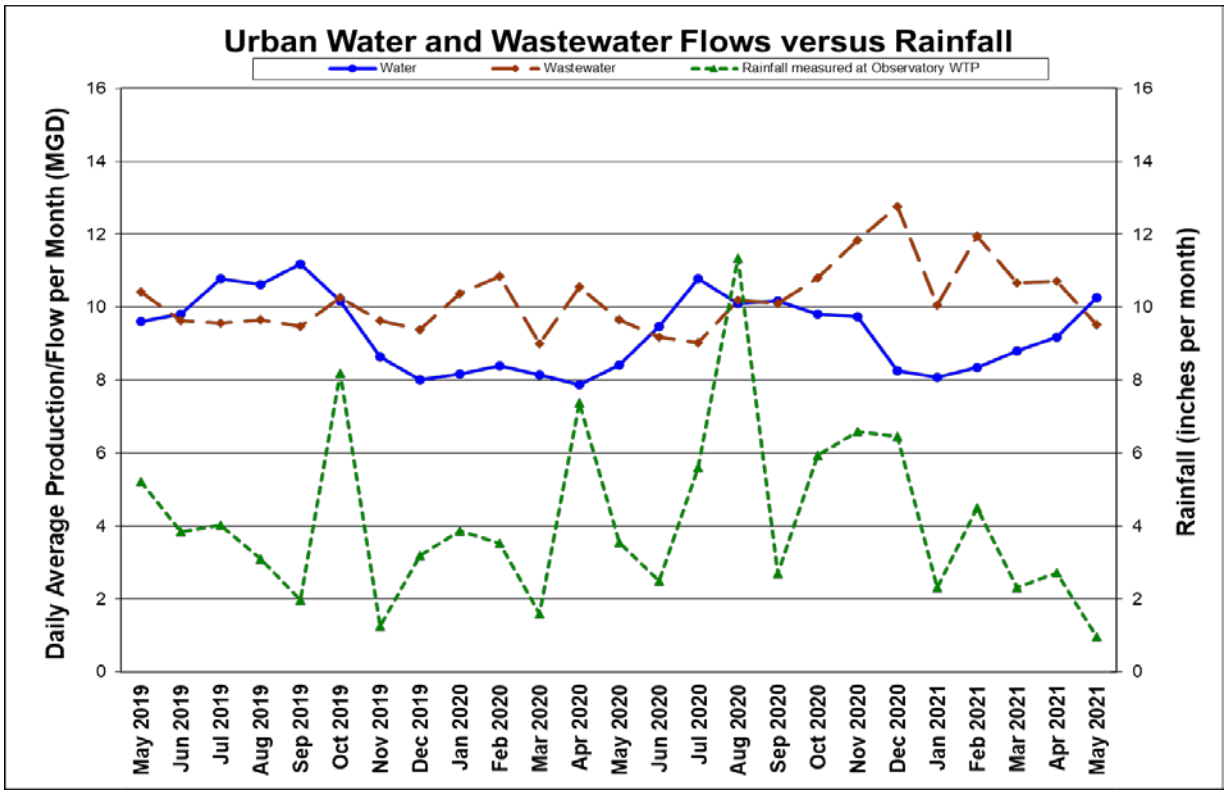
*State allocations are expressed as annual amounts. One-twelfth of that allocation is an internal monthly benchmark for comparative purposes only.

## 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 2,662.5 MG after 5/1/19
Volume of Stored water (MG)
% capacity filled
2662.5
2396.3
2130.0
1863.8
1597.5
1331.3
1065.0
798.8
532.5
266.3
0.0
100
90
80
70
60
50
40
30
20
10
0
6/1/19
7/1/19
8/1/19
9/1/19
10/1/19
11/1/19
12/1/19
1/1/20
2/1/20
3/1/20
4/1/20
5/1/20
6/1/20
7/1/20
8/1/20
9/1/20
10/1/20
11/1/20
12/1/20
1/1/21
2/1/21
3/1/21
4/1/21
5/1/21
6/1/21


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)
16
14
12
10
8
6
4
2
0
May 2019
Jun 2019
Jul 2019
Aug 2019
Sep 2019
Oct 2019
Nov 2019
Dec 2019
Jan 2020
Feb 2020
Mar 2020
Apr 2020
May 2020
Jun 2020
Jul 2020
Aug 2020
Sep 2020
Oct 2020
Nov 2020
Dec 2020
Jan 2021
Feb 2021
Mar 2021
Apr 2021
May 2021

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:** **JUNE 22, 2021**

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

For the current, approved CIP, please visit: https://www.rivanna.org/wp-content/uploads/2021/06/2022-2026-CIP-Final.pdf

Under Construction

1. South Rivanna and Observatory Water Treatment Plant Renovations
2. Crozet Flow Equalization Tank
3. MC Aluminum Slide Gate Replacements
4. Sugar Hollow Dam – Gate Replacement and Intake Tower Repairs
5. MC Exterior Lighting Improvements
6. MC Generator Fuel Expansion

Design and Bidding

7. Ragged Mtn Reservoir to Observatory WTP Raw Water Line and Pump Station
8. South Rivanna to Ragged Mtn. Raw Water Line – Birdwood to Old Garth
9. Beaver Creek Dam, Pump Station and Piping Improvements
10. Airport Road Water Pump Station and Piping
11. South Fork Rivanna River Crossing
12. MC Clarifier and Silo Demolition
13. MC Facility Renovations
14. MC 5kV Electrical System Upgrades
15. Glenmore WRRF Influent Pump & VFD Addition

Planning and Studies

16. South Rivanna Reservoir to Ragged Mtn Reservoir Water Line Right-of-Way
17. Urban Finished Water Infrastructure Master Plan
18. Upper Schenks Branch Interceptor, Phase II
19. Asset Management Plan
20. MC Facilities Master Plan
21. SRR to RMR Pipeline – Pretreatment Pilot Study
22. Central Water Line

Other Significant Projects

23. Urgent and Emergency Repairs
24. Interceptor Sewer & Manhole Repair
25. Security Enhancements

# Under Construction

## 1. South Rivanna and Observatory Water Treatment Plant Renovations

| | |
|---|---|
| Design Engineer: | Short Elliot Hendrickson, Inc. (SEH) |
| Construction Contractor: | English Construction Company (Lynchburg, VA) |
| Construction Start: | May 2020 |
| Percent Complete: | 30% |
| Base Construction Contract + Change Orders to Date = Current Value: | $36,748,500 + $474,849.89 = $37,223,349.89 |
| Completion: | March 2023 |
| Budget: | $43,000,000 |

Current Status: Work continues at the SRWTP with construction of the filter building expansion, the Alum and Fluoride Chemical Storage Building and Administration Building. Recoating of Clarifier #1 metal components is complete, with Clarifier #2 to follow. Work has also begun on additional sedimentation basin improvements. Work at the OBWTP includes rock excavation required for new electrical and process lines to the existing Pretreatment Building, installation of an electrical ductbank and coordination with Dominion Power and UVA on a new electrical service.

## 2. Crozet Flow Equalization Tank

| | |
|---|---|
| Design Engineer: | Schnabel Engineering |
| Construction Contractor: | Anderson Construction (Lynchburg, VA) |
| Construction Start: | September 2020 |
| Percent Complete: | 30% |
| Based Construction Contract + Change Orders to Date = Current Value: | $4,406,300 |

| | |
|---|---|
| Completion: | November 2022 |
| Budget: | $5,400,000 |

Current Status: All of the foundation piles having been poured and site grading for the tank construction is underway. Tank construction will begin on June 21st.

**3. MC Aluminum Slide Gate Replacements**

| | |
|---|---|
| Design Engineer: | Hazen and Sawyer |
| Construction Contractor: | Waco Incorporated (Sandston, VA) |
| Construction Start: | September 2020 |
| Percent Complete: | 60% |
| Base Construction Contract + Change Orders to Date = Current Value: | $373,600 - $30,400 = $343,200 |
| Completion: | October 2021 |
| Budget: | $675,000 |

Current Status: Awaiting delivery of materials to repair four corroded mud valves at the headworks.

**4. Sugar Hollow Dam – Gate Replacement and Intake Tower Repairs**

| | |
|---|---|
| Design Engineer: | Schnabel Engineering |
| Construction Contractor: | Allegheny Construction (Roanoke, VA) |
| Construction Start: | October 2020 |
| Percent Complete: | 90% |
| Base Construction Contract + Change Order to Date = Current Value: | $1,410,875 + $800 = $1,411,675 |
| Completion: | July 2021 |
| Budget: | $1,900,000 |

Current Status: Installation, testing, and startup of the new bladder is expected to be completed by the end of June, with final completion anticipated in July.

**5. MC Exterior Lighting Improvements**

| | |
|---|---|
| Design Engineer: | Hazen and Sawyer |
| Construction Contractor: | Pyramid Electrical Contractors (Richmond, VA) |
| Construction Start: | April 2021 |
| Percent Complete: | 30% |
| Base Construction Contract + Change Order to Date = Current Value: | $349,000 |
| Completion: | February 2022 |
| Budget: | $900,000 |

Current Status: Replacement of light fixtures will begin in late June as materials are delivered.

**6. MC Generator Fuel Storage Expansion**

| | |
|---|---|
| Design Engineer: | SEH, Inc. |
| Construction Contractor: | Waco, Inc. |
| Construction Start: | July 2021 |
| Percent Complete: | 0% |
| Base Construction Contract + Change Order to Date = Current Value: | $168,860 |
| Completion: | Fall 2021 |
| Budget: | $250,000 |

Current Status: Contract Documents are being executed with the contractor.

## Design and Bidding

**7. Ragged Mountain Reservoir to Observatory Water Treatment Plant Raw Water Line and Pump Station**

| | |
|---|---|
| Design Engineer: | Michael Baker International (Baker)/Kimley-Horn |
| Project Start: | August 2018 |
| Project Status: | Prelim Design & Easement Acquisition |
| Construction Start: | 2023 |
| Completion: | 2027 |
| Budget: | $24,000,000 |

Current Status:

Easement negotiations with two private owners, UVA, the UVA Foundation, and the Virginia Department of Forestry are in progress. A Work Authorization is under negotiation with Kimley-Horn, who will design the water line and pump station.

**8. South Rivanna Reservoir to Ragged Mtn. Reservoir Raw Water Line -Birdwood to Old Garth**

| | |
|---|---|
| Design Engineer: | Kimley-Horn |
| Project Start: | June 2021 |
| Project Status: | Prelim Design |
| Construction Start: | 2022 |
| Completion: | 2023 |
| Budget: | $1,980,000 |

Current Status:

One remaining easement is under negotiation with the UVA Foundation. The design is underway. Construction is scheduled to begin during the summer of 2022.

**9. Beaver Creek Dam, Pump Station and Piping Improvements**

| | |
|---|---|
| Design Engineer: | Schnabel Engineering (Dam) |

| | |
|---|---|
| Design Engineer: | Hazen & Sawyer (Pump Station) |
| Project Start: | February 2018 |
| Project Status: | 20% Design and Permitting Underway |
| Construction Start: | 2024 |
| Completion: | 2026 |
| Budget: | $27,000,000 |

Current Status: The NRCS planning study continues and is moving into a review of spillway upgrade alternatives. A second public meeting is anticipated in the fall of 2021.

**10. Airport Road Water Pump Station and Piping**

| | |
|---|---|
| Design Engineer: | Short Elliot Hendrickson (SEH) |
| Project Start: | July 2019 |
| Project Status: | 80% Design |
| Construction Start: | Winter 2021/2022 |
| Completion: | June 2023 |
| Budget: | $7,600,000 |

Current Status: Site Plan and ARB submittals were made to the County in early June.

**11. South Fork Rivanna River Crossing**

| | |
|---|---|
| Design Engineer: | Michael Baker International (Baker) |
| Project Start: | November 2020 |
| Project Status: | 20% Design |
| Construction Start: | Spring 2022 |
| Completion: | Fall 2023 |
| Budget: | $3,655,000 |

Current Status: RWSA is evaluating alternatives following a meeting with a property owner impacted by this work. Once the evaluation is complete, Baker will initiate survey and geotechnical work.

**12. MC Clarifier and Lime Silo Demolition**

| | |
|---|---|
| Design Engineer: | Hazen and Sawyer |
| Project Start: | October 2020 |
| Project Status: | Bidding |
| Construction Start: | October 2021 |
| Completion: | May 2022 |
| Budget: | $655,000 |

Current Status: Construction bids are due on July 1, 2021.

**13. MC Facility Renovations**

| | |
|---|---|
| Design Engineer: | SEH, Inc. |

| | |
|---|---|
| Project Start: | August 2020 |
| Project Status: | 0% Design |
| Construction Start: | Winter 2020/2021 |
| Completion: | Summer 2021 |
| Budget: | $750,000 |

Current Status: Staff is evaluating the Duty Station for conversion into office space. This conversion will require extensive cleaning and the relocation of load bearing walls. An updated cost estimate has been developed by SEH to confirm the viability of this conversion. This work is on hold pending the outcome of the Moores Creek Facility Master Plan.

**14. MC 5 kV Electrical System Upgrades**

| | |
|---|---|
| Design Engineer: | Hazen and Sawyer |
| Project Start: | August 2020 |
| Project Status: | 50% Design |
| Construction Start: | March 2022 |
| Completion: | June 2024 |
| Budget: | $4,600,000 |

Current Status: Hazen will be visiting the project site in early July to determine availability of spare conduits for 5kV cable replacements.

**15. Glenmore WRRF Influent Pump and VFD Addition**

| | |
|---|---|
| Design Consultant: | Wiley\|Wilson |
| Project Start: | August 2020 |
| Project Status: | Bidding |
| Construction Start: | October 2021 |
| Completion: | May 2022 |
| Budget: | $120,000 |

Current Status: The project was advertised and bids are due on July 8, 2021.

## Planning and Studies

**16. South Rivanna Reservoir to Ragged Mtn. Reservoir Water Line Right-of-Way**

| | |
|---|---|
| Design Engineer: | Michael Baker International (Baker) |
| Project Start: | October 2017 |
| Project Status: | Easement Acquisition |
| Completion: | 2021 |
| Budget: | $2,295,000 |

Current Status: Progress continues in our efforts to acquire the 8 miles of easements and agreements (with VDOT) for this 36" water line. Discussions continue on remaining easements with 3 private

owners and the UVA Foundation.

**17. Urban Finished Water Infrastructure Master Plan**

| | |
|---|---|
| Design Engineer: | Michael Baker International (Baker) |
| Project Start: | November 2018 |
| Project Status: | 95% complete |
| Completion: | June 2021 |
| Budget: | $253,000 |

Current Status: Baker is addressing comments on the draft report. Once the draft report is finalized, it will be circulated to stakeholders for review and comment.

**18. Upper Schenks Branch Interceptor, Phase II**

| | |
|---|---|
| Design Engineer: | Frazier Engineering, P.A. |
| Project Start: | TBD |
| Project Status: | Alignment Analysis |
| Construction Start: | TBD |
| Completion: | TBD |
| Budget: | $3,985,000 |

Current Status: Discussions about the pipe alignment have been renewed with the County and the City. Following pipe alignment determinations, the design plans will be updated, and the construction approach will be coordinated with a City project planned for the same general area.

**19. Asset Management Plan**

| | |
|---|---|
| Design Engineer: | GHD, Inc. |
| Project Start: | July 2018 |
| Project Status: | Phase 2 – 95% Complete<br>CMMS Implementation – 25% Complete |
| Completion: | 2021 |
| Budget: | $1,115,000 |

Current Status: A draft Tactical Asset Management Plan has been submitted for review. For implementation of the new CMMS, workshops continue with various departments to identify their current and future workflows for eventual incorporation into the new CMMS. GHD completed a draft of an asset register based on an export of assets from the current work order system that is being replaced. Workshops are also being held to review the draft register and initiate the software configuration process. In anticipation of upcoming configuration workshops, departments are compiling employee, equipment, vendor and material related information.

**20. MC Facilities Master Plan**

| | |
|---|---|
| Design Consultant: | Hazen and Sawyer |

| | |
|---|---|
| Project Start: | August 2019 |
| Project Status: | 85% Complete |
| Completion: | September 2021 |
| Budget: | $275,000 |

Current Status: Hazen is completing the draft Master Plan. The draft report will be circulated to the City and ACSA this summer and a workshop held to review the results.

### 21. SRR to RMR Pipeline – Pretreatment Pilot Study

| | |
|---|---|
| Design Consultant: | SEH |
| Project Start: | August 2020 |
| Project Status: | 95% Complete (Phase 1), 5% Complete (Phase 2) |
| Completion: | July 2022 |
| Budget: | $22,969 (Phase 1), $98,629 (Phase 2) |

Current Status: Phase 1 analysis of existing water quality and seasonal weather data is substantially complete. Phase 2 of the study has begun, and includes detailed reservoir water quality modeling performed by DiNatale Water Consultants.

### 22. Central Water Line Project

| | |
|---|---|
| Design Consultant: | Michael Baker International (Baker) |
| Project Start: | February 2021 |
| Project Status: | 85% Complete, Alignment Study |
| Completion: | June 2021 |
| Budget: | $63,070 |

Current Status: Baker is finalizing the Routing Study report. Request for approval of the work authorization for design and bidding of the Central Water Line is outlined in a separate Board Report this month.

## Other Significant Projects

### 23. Urgent and Emergency Repairs

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

| Project No. | Project Description | Approx. Cost |
|---|---|---|
| 2018-06 | South Rivanna Dam Apron and River Bank Repairs | $200,000 |
| 2019-07 | Urban Water Line Valve and Blow-off Repair | $175,000 |

| | | |
|---|---|---|
| 2020-14 | MCWWPS Gate Valve 205 Replacement | TBD |
| 2020-20 | Finished Water Sampling Stations | $150,000 |
| 2020-21 | PCI Erosion | $125,000 |
| 2020-23 | MCI Erosion @ Moores Creek Crossing (Near Avon Ct) | $40,000 |
| 2020-25 | Upper MRI Point Repair/New MH Installation | $175,000 |
| 2021-02 | CZI-MH-96 Slope Failure | $40,000 |
| 2021-04 | UWL-ARV-15 Settlement | $25,000 |
| 2021-08 | MCAWRRF Digester Manway Sealing | $70,000 |
| 2021-10 | UWL-ARV-10 Replacement | $7,500 |

- South Rivanna Dam Apron and River Bank Repairs: Repairs to the north and south concrete aprons were designed by Schnabel Engineering. Repair services will be procured from the on-call dam maintenance contractor and are expected to be completed by the end of June 2021.

- Urban Water Line Valve and Blow-off Repair: Faulconer Construction has completed the installation of a new drain valve at UWL-017, as well as the associated modifications to the drain line outlet and creek bank. With the installation of the new drain valve in March 2020, leakage in this location has ceased. Faulconer Construction mobilized to UWL-025 at Gasoline Alley during the week of April 5. Similar to UWL-017, a redundant valve was installed to end any leakage from the site, and the outlet was reworked by Faulconer Construction to allow for a safe and effective discharge should the assembly ever need to be used during a system emergency. Repairs at this location were completed on April 14. Relocation of a nearby ARV in a difficult to access location is still being planned, however, this has been moved to a separate project due to the anticipated depth of the water main and proximity of adjacent utilities. Staff has also been notified of a similar (slight leakage) issue at UWL-010 near Route 29. This assembly currently is blind flanged and is not actively leaking into any adjacent creeks or stormwater structures. Staff will continue planning with this repair with Faulconer Construction as availability allows.

- Moores Creek WWPS Gate Valve 205 Replacement: In July 2020, RWSA Operations staff identified a valve had become stuck in nearly the fully closed position, causing a reduction in the discharge capacity of the pumping station (PS), especially during wet weather events where both of the 24" force mains leaving the PS are required. Waco, Inc. was selected to perform the work under an Emergency Declaration by the Executive Director, and staff worked with Waco to plan for the associated force main shutdown and valve replacement. Due to excessive lead times and impending weather, a spool piece of pipe was procured for temporary installation while the replacement valve is procured. The existing gate valve was ultimately replaced with the spool piece of pipe during a planned pumping station shutdown during the early morning hours of August 2, 2020, restoring full pumping capabilities to the PS. In the preliminary attempts to shut down one of the two discharge force mains and replace the No. 205 valve, it was discovered that additional valves inside the PS are not fully holding when placed in a closed position. Staff is currently evaluating the needs associated with bypass pumping around MCWWPS, which would allow for the permanent installation of the No. 205 Gate Valve Replacement, as well as replacement of the adjacent valves mentioned above and inspections of equipment inside of the PS that normally can't be inspected due to the incoming flows.

- Finished Water Sampling Stations: As a part of its ongoing Water Quality Monitoring Program, members of the Water & Laboratory Departments collect water samples from throughout the distribution system to track parameters such as Chlorine Residuals and Disinfection Byproducts. Historically, this has meant that staff must enter local businesses to collect the samples, which takes several minutes and further exposes staff to members of the public. In order to minimize staff exposure to the public and overall impact to local businesses/offices, seven (7) pre-fabricated sampling stations will be installed along ACSA finished water lines throughout the distribution system, which will allow staff to quickly and safely retrieve water samples. Faulconer Construction is performing this work for RWSA, with ACSA providing the associated wet taps. These 7 sites were completed by the week of December 7th. In addition, RWSA staff is coordinating with ACSA, the City, and UVA on a new set of five (5) additional sites. This work is slated to be completed by Faulconer Construction in August.

- PCI Erosion: RWSA Maintenance Department staff finished its annual inspection of the Powell Creek Interceptor in early October, and a number of erosion concerns were identified throughout the interceptor alignment. Engineering and Maintenance Department staff determined that two of the repairs were more urgent, and should be performed by Faulconer Construction as soon as possible. Both of the areas in question are large drainage ditches that have caused large wash-outs over the sewer line. RWSA coordinated access through Sutherland Middle School property with ACPS, and Faulconer began these repairs during the week of October 26. The scope of these two repairs was to backfill the ditches and install a large HDPE culvert pipe to safely and effectively move the storm water across the sewer line while minimizing erosion. The two ditch lines were completed by Faulconer Construction during the week of November 2, with the site fully restored by the week of November 9. Four creek crossings along the interceptor were also identified as needing light rip-rap armament, as well as minor bank modifications to allow for enhanced access for RWSA staff. This work will also be coordinated with Faulconer Construction. A site visit was conducted on November 24, 2020, with the work being scheduled as crews have availability and site conditions allow.

- MCI Erosion @ Moores Creek Crossing (Near Avon Ct): While performing routine line maintenance activities, the RWSA Maintenance Department identified erosion along the Moores Creek Interceptor (MCI), at its creek crossing between MH-39 and MH-40. This is just downstream of the previous bank repair made in this area using imbricated stone in early 2019, which remains standing in good condition. Staff visited the site on May 21, and confirmed that no infrastructure is exposed at this time. However, the placement of large rip-rap will be required to protect the sewer line from future high flow/erosion events. Staff has begun coordinating with the appropriate regulatory agencies, and work is anticipated to begin in July.

- Upper MRI Point Repair/New MH Installation: RWSA is in the final stages of rehabilitation efforts along the upper Morey Creek Interceptor. The final piece of rehabilitation is to complete a point repair, which includes the installation of approximately 65' of new Ductile Iron Pipe, as well as a new manhole, due to a sag in the existing, Vitrified Clay Pipe. Rather than perform this work under the Sanitary Sewer Rehabilitation Contract, since that contractor generally performs no-dig style rehabilitation, RWSA has elected to shift this project to the On-Call Maintenance Construction Services Contract. Faulconer Construction mobilized on April 22nd and completed

pipe work and the installation of the associated new manhole structure on May 1st. Applicable vacuum and pressure testing was completed on May 4th, and site restoration was completed on May 6th. Dominion Energy re-installed their guy wire assembly in its original location in early June, as it was relocated to facilitate the work. All work at the project site is complete at this time, aside from installation of manhole coatings, which will take place following completion of private development around the site.

- CZI-MH-96 Slope Failure: Following recent heavy rains, the RWSA Engineering Department performed a 1-year inspection of the previous bank repair at CZI-MH-96. While the vast majority of the repair was found to be in good condition, a short stretch of the imbricated stone wall was undercut from behind, which caused a short stretch of the wall to become dislodged and fall over. Staff will coordinate the repairs with its On-Call Contractor, which will include repairs to the wall and additional erosion control measures behind the wall. Work is anticipated to begin in July, and coordination with applicable regulatory agencies is under way.

- UWL-ARV-15 Settlement: While marking a Miss Utility Ticket, the RWSA Engineering Department identified an ARV that was settling with a small section of Kenwood Lane. No immediate danger to the ARV is present, however, staff has looked at the issue with its On-Call Maintenance Contractor and is coordinating the necessary repairs for completion following some adjacent City sanitary sewer replacement.

- MCAWRRF Digester Manway Sealing: Staff has identified the immediate need to repair gas leaks in Digesters #1, #2 and #3 at the MCAWRRF. The gas leaks are a safety concern and are causing significant concrete degradation which has led to Digester #2 being taken out of service thereby reducing solids processing redundancy. Following external and internal inspections by our engineering consultants, it has been decided that installation of rubber seals in the manways and sample ports will mitigate gas leaks into the annular roof space and decrease further concrete degradation. Waco, Inc. was selected to perform the work under an Emergency Declaration by the Executive Director and is ordering materials for the work which have several weeks of lead time.

- UWL-ARV-10 Replacement: Through the Miss Utility process, staff identified that the parking lot at Northside Baptist Church, along Rio Road, was scheduled for repaving. These repaving activities were over RWSA's 30" Urban Waterline, and while no danger to the waterline was posed, the repaving activities were around an air release valve that had poor access and needed to be replaced. Staff coordinated with the Contractor and Property Owner, and the RWSA Maintenance Department was able to excavate to the corporation stop, successfully rebuild the entire air release valve, and install a new manhole structure around the air release valve, all on May 26.

**24. Interceptor Sewer and Manhole Repair**

| | |
|---|---|
| Design Engineer: | Frazier Engineering |
| Construction Contractor: | IPR/TBD |
| Construction Start: | November 2017 |
| Percent Complete: | 40% |

| | |
|---|---|
| Base Construction Contract + Change Orders to Date = Current Value: | $1,000,838.79 |
| Expected Completion: | June 2022 |
| Total Capital Project Budget: | $1,088,330 (Urban) + $880,000 (Crozet) = $1,968,330 |

Current Status: With the completion of the Upper Morey Creek Interceptor (MRI) Point Repair/New MH Installation, all rehabilitation work on the Upper MRI has been completed. Staff continues coordination on the lower Powell Creek Interceptor and a portion of the Woodbrook Interceptor, as these are the next high-priority areas to be addressed based upon the latest CCTV footage. The scope of this rehabilitation work is likely to include several sections of Cured in Place Piping, as well as manhole rehabilitation. After discussions with RWSA's current Sanitary Sewer Rehabilitation Contractor, IPR Northeast, it was determined that they were going to be unable to complete the necessary sewer cleaning and televising prior to the Substantial Completion date for the Contract. Staff is beginning work on procuring a contractor to perform the sewer cleaning and televising along the Powell Creek and Woodbrook Interceptors, with the goal of completing this work during the summer season.

**25. Security Enhancements**

| | |
|---|---|
| Design Engineer: | N/A |
| Construction Contractor: | Security 101 |
| Construction Start: | March 2020 |
| Percent Complete: | 100% WA 1, 5% WA 2 & 3 |
| Based Construction Contract + Change Orders to Date = Current Value: | $718,428.00 (WA1) + $91,130.32 (WA2) + $128,166.69 (WA3) = $937,725.01 (total) |
| Completion: | September 2021 (WA 2 & 3) |
| Approved Capital Budget: | $2,730,000 |

Current Status: Access control system installation is underway for all exterior doors at MCAWRRF, as well as all WTP motorized gates. Device installation at all sites has been completed. The Card Access System is in use at the Administration, Engineering, and Maintenance Buildings at MCAWRRF, as well as at the WTP gates. Programming has been completed by Security 101, and the only task that remains is some door/lock improvements at MCAWRRF, which will help enhance the functionality of the access control system and allow it to be placed fully online. This work will be completed under Work Authorization No. 2, along with installation of card access on 3 additional doors, and improvements to the intercom system in the Administration Building. Work Authorization No. 3 has also been executed, which will include card access installation at the Crozet and Scottsville WTPs. Equipment has been ordered for both WA No. 2 & 3, and Security 101 is awaiting the arrival of the equipment following its lead times. A Board Report is included in this month's Board Packet, which requests that the Board of Directors increase the total authorization limit for Work Authorizations under this Contract.

# History

# Under Construction

1. **South Rivanna and Observatory Water Treatment Plant Renovations**

   An informational meeting with prospective contractors was held on September 26, 2019 to maximize interest in the project. 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 8, 2019, and a memo summarizing the results has being completed. Agreed upon results were incorporated into the project. The project was advertised, and bids were received. English Construction was awarded the contract and a Notice to Proceed was issued on May 18, 2020.

   **Observatory:** This project will upgrade the plant from 7.7 to 10 MGD capacity. Costs to upgrade the plant to 12 MGD were determined to be too high at this time. Much of the Observatory Water Treatment Plant is original to the 1953 construction. 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. The flocculator systems were replaced and upgraded as part of the Drinking Water Activated Carbon and WTP Improvements project (GAC). Four additional GAC contactors will be included in the design.

   **South Rivanna:** The work herein includes 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; of new metal building to cover the existing liquid lime feed piping and tanks. The scope of this project will not increase the 12 MGD plant treatment capacity.

2. **Crozet Flow Equalization Tank**

   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 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.

   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. The construction bids were received on July 16, 2020. Anderson Construction of Lynchburg, VA was awarded the construction contract. Notice to Proceed on this project was given on October 9, 2020 and now construction is in progress.

**3. MC Aluminum Slide Gate Replacements**

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 repair the deteriorated gates, it is now necessary to replace the gates and modify the gate arrangement. There are also several deteriorated 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. Work also includes replacement of the cast iron gates in the holding pond pump station and new actuators on the headworks gates. A Notice to Proceed for these efforts was provided on October 6, 2020. The work specific to the Moores Creek Pump Station will be bid under a separate project due to the extensive bypass pumping.

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

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 has been inspected and evaluated. Recommended repairs include repair or replacement of intake trash racks and sealing/grouting of minor concrete wall cracks. This project was advertised for construction in July 2020 and Allegheny Construction was awarded the project. A Notice to Proceed was provided on October 1, 2020.

**5. MC Exterior Lighting Improvements**

The lighting at the 80-acre MCAWRRF consists of over 300 fixtures installed over the entire life of the facilities presence at Moores Creek. In 2019, Albemarle County investigated the lighting plan at the facility and issued a Zoning Notice of Violation.

RWSA and Albemarle County staff have been working together to best address the issue. A photo metric plan of existing lighting was submitted to the county for review. RWSA has submitted a minor site plan amendment and Architectural Review Board submission that will include a large scale replacement of non-compliant fixtures as well as address industrial lighting standards for the entire facility. The submission was approved by the County and design is underway.

The design has been completed by Hazen and Sawyer and the project was awarded to Pyramid Electrical Contractors, LLC. Notice to Proceed was provided on April 13, 2021.

**6. MC Generator Fuel Expansion**

The Moores Creek AWRRF south side electrical facilities have a single large system back-up power generator that was installed between 2009 – 2012 during the ENR plant upgrade. The generator has a

belly tank that allows for approximately 22 hours of operation. This project will install an ancillary fuel tank that will allow for approximately three days of operation. A Notice of Award was issued to Waco, Inc.

## Design and Bidding

**7. Ragged Mountain Reservoir to Observatory Water Treatment Plant Raw Water Line and Raw Water Pump Station**

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. Raw water is transferred from the Ragged Mountain Reservoir (RMR) to the Observatory Water Treatment Plant (WTP) 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. The new pipeline will be constructed of 36-inch ductile iron and will be approximately 2.6 miles feet in length. The segment of the project immediately east of the RMR will constitute a portion of the proposed South Rivanna Reservoir to RMR raw water main project 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. The new pump station site selection and design are being conducted in coordination with the South Rivanna Reservoir to RMR pipeline 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 SR WTP.

**8. South Rivanna Reservoir to Ragged Mtn. Reservoir Raw Water Line -Birdwood to Old Garth**

This project is the continuation of the SRR to RMR 36" raw water pipeline built on the Birdwood Golf Course. Design effort were authorized in June 2021 with construction anticipated in Summer 2022.

**9. Beaver Creek Dam and Pump Station Improvements**

Dam: 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. 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.

In 2020, staff received grant funding for a planning and environmental study from the Natural Resources Conservation Service (NRCS). The project kicked off in August 2020 and is expected to be completed in July 2022. Following completion of the study and acceptance of the Plan-Environmental document by NRCS, staff will pursue additional grant funding through NRCS that, if available, could cover up to 65% of final design and construction costs.

Pump Station: 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.

**10. Airport Road Water Pump Station and Piping**

The Rt. 29 Pump Station and Pipeline 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. The North Rivanna Transmission Main improvements included under a separate CIP project have been added to this project to allow connection of the pump station to the distribution system.

**11. South Fork Rivanna River Crossing**

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. 29 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 new 24-inch water main in Rt. 29,

there is a need to construct a new river crossing at the South Fork Rivanna River. Acquisition of right-of-way will be required at the river crossing.

**12. MC Clarifier and Lime Silo Demolition**

The two in-plant clarifiers were constructed in the late 1950's and were taken out of service as a result of the Odor Control Project at the plant. Due to the age of the tanks, various components have significantly deteriorated over time and no additional uses for these tanks have been identified. In addition, due to their out-of-service status, they remain empty and a safety concern for plant staff and visitors. There is also an abandoned lime silo currently located adjacent to the Solids Handling Building. Lime was previously used with the old plat and frame presses before centrifuges were installed for sludge dewatering purposes. This project will include the complete demolition of the in-plant clarifiers by removing all existing components, backfilling the area, and returning the area to open space and removing the lime silo from the plant and properly disposing of it. The project was advertised, and bids are due on July 1, 2021.

**13. MC Facility Renovations**

The RWSA Administration Building Board Room finishes are generally original to the facility. The proposed project will update the wall and floor coverings, alter the shelving, and update the room furnishings in order to create a more modern and useable meeting space.

The Duty Pump Station was construction in 1958 and no longer functions as an actual pump station. It currently houses electrical equipment that serves the plant, but otherwise has available space that could be beneficially used for other purposes. RWSA has a need for additional office space and has evaluated repurposing portions of the Duty Pump Station for office and work space in order to make use of all available space at the plant before proceeding with more significant administrative expansions. This project includes demolition of a select portion of the interior of the station, cleaning and sanitizing of the areas to be repurposed, and an interior upfit of the space to provide additional office and work space. Costs related to this effort have been updated and the budget is being evaluated through the CIP process.

**14. MC 5 kV Electrical System Upgrades**

After discussions through the Moores Creek Facilities Master Plan, it was identified that several areas of the MCAWRRF, including the Blower Building, Sludge Pumping Building, Grit Removal Building, Moores Creek Pumping Station, and the Administration Building are all still connected to the original 5kV switchgear in the Blower Building. This equipment, including the associated cabling, switchgear, transformers, and motor control centers (MCCs), has a useful life expectancy of 20-30 years. Most of this equipment was installed around 1980. With the equipment having well exceeded its useful life expectancy at this point, safety is a concern given the large electric loads that the cabling and other equipment are handling on a day-to-day basis. Failure of the existing 5kV infrastructure could also result in temporary outages of certain treatment processes, and repairs could take weeks to months given the lead times associated with equipment of this age. A technical memo was provided in July 2020 by Hazen & Sawyer, which recommended that a CIP Project be added immediately to encompass replacement of the original 1980s-vintage 5kV cables, switchgear, transformers, and MCCs. A CIP Amendment Recommendation and Engineering Services Work Authorization was approved during the August 2020 Board of Directors Meeting. The Design Work Authorization was executed on

October 6, 2020.

A Design Kickoff Meeting was held virtually on October 20, 2020. A site visit was attended on November 5, 2020 by Hazen & Sawyer staff, as well as RWSA Maintenance and Engineering Department staff.

**15. Glenmore WRRF Influent Pump and VFD Addition**

The 0.381-mgd water resource recovery facility, located within the Glenmore subdivision, is operated by RWSA. The facility includes an influent pumping station located immediately adjacent to the treatment facility. The Glenmore WRRF is predicted to see additional dry and wet weather flows as construction within the service area continues. Future wet weather flows will require higher influent pumping capacity and an additional pump and electrical variable frequency drive will be required to maintain firm capacity. After discussions with the Operations and Maintenance departments, installation of a new exhaust fan in the influent pump station will also be included. A work authorization for this project has been finalized and design is underway. The project was advertised, and bids are due on July 8, 2021.

## Planning and Studies

**16. South Rivanna Reservoir to Ragged Mtn. Reservoir Water Line Right-of-Way**

The approved 50-year Community Water Supply Plan includes the construction of a raw water line from the South Rivanna Reservoir to the Ragged Mountain Reservoir. This water line will replace the existing Upper Sugar Hollow Pipeline and 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 has completed the routing study. Preliminary design, plat creation and the acquisition of easements are underway. Property owners were contacted to request permission to access properties for topographical surveying. A community information meeting was held in June 2018.

**17. Urban Finished Water Infrastructure Master Plan**

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.

**18. Upper Schenks Branch Interceptor, Phase II**

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.

**19. <u>Asset Management Plan</u>**

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 also assisted RWSA with the procurement of a new CMMS software package to facilitate the overall program. Cityworks was selected and implementation has begun.

**20. <u>MC Facilities Master Plan</u>**

The majority of the Moores Creek Water Resource Recovery Facility was constructed in the early 1980's. At the time, the plant layout was developed with space held open for future process expansion. With the Enhanced Nutrient Removal (ENR) project in 2009, the operation and layout of the plant was fundamentally altered, as needed to meet the new regulation. The project did anticipate the need for future expansion and some of the processes have readily available space. However, a full expansion plan was not developed at the time. As identified in the 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. As such, this project will serve to evaluate and plan for future space and process needs to accommodate capacity expansion and/or anticipated regulatory changes.

**21. <u>SRR to RMR Pipeline – Pretreatment Pilot Study</u>**

As part of the SRR to RMR Pipeline project, the impact of sending raw water from the SRR to RMR has been previously studied and a significant amount of pretreatment was initially identified as being needed to avoid reducing the quality of the raw water contained within the RMR. With the pipeline easement acquisition process well underway and additional information now available associated with the proposed timing of this overall project based on water demand projections, the intent of this project is to update the pretreatment needs anticipated.

The study is anticipated to be completed in 4 phases: 1. Analysis and Correlation of Existing Water Quality and Seasonal Weather Data 2. Enhanced Water Quality Sampling 3. Pretreatment Piloting 4. Level Setting for the Final Pretreatment Solution. Phase 1 commenced in January 2021.

**22. Central Water Line Project – Routing Study**

Route alignment determination, hydraulic modeling, and preliminary design were underway in 2017. Due to the complicated nature of our finished water systems, it was decided at the August 2018 Board meeting that a more comprehensive approach was warranted and we should complete the Finished Water Master Plan prior to moving forward with final design and construction of the Central Water Line (formerly referred to as the Avon to Pantops Water Main). The focus of this project was 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 were a starting point for this current project. An engineering contract has been negotiated and was approved by the Board of Directors in July 2017. Recent efforts and modeling for the Urban Finished Water Infrastructure Master Plan have determined that a central water line corridor through the City is the best option to hydraulically connect the Observatory Water Treatment Plant to the Pantops area.

## Other Significant Projects

**23. Urgent and Emergency Repairs**

- 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 were completed June 3-7, 2019 under RWSA's on-call construction contract.

- Urban Water Line Valve and Blow-off Repair

  During its routine inspections of the Water System, the Maintenance Department discovered a blowoff (drain) valve along the Urban Waterline (UWL-017) that had significant leakage. In addition, during one of the numerous heavy rain events received in 2018, the water in the creek adjacent to the drain

line rose, eroding the area around the drain line and causing the headwall to become disconnected from the end of the pipe. Staff will be coordinating internally to confirm the overall scope of the project, including whether the drain line will need to be further reinforced or restrained.

**24. Interceptor Sewer and Manhole Repair**

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.

Lining work on the Upper Morey Creek Interceptor began in Fall 2019 and was completed in Fall 2020. A critical section of upper Morey Creek Interceptor under Rt. 250 was lined on August 28, 2020.

**25. Security Enhancements**

As required by the Federal Bioterrorism Act of 2002 and the American Water Infrastructure Act of 2018, 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.

RWSA Engineering staff held a meeting with Operations staff to discuss overall project needs and priorities in October 2018. Meetings with ACSA and City staff were held in Fall/Winter 2018-2019 to discuss how access control and intrusion detection systems have been implemented into to the day-to-day operations of the two utilities. A Request for Proposal (RFP) for an Implementer to facilitate selection of an access control system, confirmation of design requirements based upon RWSA's facilities and project goals, and installation of the selected system was issued on June 6, 2019. RWSA conducted a Pre-Proposal Meeting on June 14, 2019, and proposals were opened on June 27, 2019. Interviews were conducted on July 15-16, 2019, and a Contract Award Recommendation was approved by the Board on July 23, 2019. Access Control System Installation at MCAWRRF began in March 2020. Access Control System Installation was completed in the Administration and Engineering Buildings by the week of November 30, 2020, completing installation of the physical access control system across the MCAWRRF site. Training for staff was completed on November 10, 2020.

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:** **WHOLESALE METERING REPORT FOR MAY 2021**

**DATE:** **JUNE 22, 2021**

The monthly and average daily Urban water system usages by the City and the ACSA for May 2021 were as follows:

| | ***Month*** | ***Daily Average*** | |
|---|---|---|---|
| City Usage (gal) | 150,781,083 | 4,863,906 | **47.4%** |
| ACSA Usage (gal) | 167,219,631 | 5,394,182 | **52.6%** |
| ***Total (gal)*** | **318,000,714** | **10,258,088** | |

The *RWSA Wholesale Metering Administrative and Implementation Policy* requires that water use be measured based upon the annual average daily water demand of the City and ACSA over the trailing twelve (12) consecutive month period. The *Water Cost Allocation Agreement (2012)* established a maximum water allocation for each party. If the annual average water usage of either party exceeds this value, a financial true-up would be required for the debt service charges related to the Ragged Mountain Dam and the SRR-RMR Pipeline projects. Below are graphs showing the calculated monthly water usage by each party, the trailing twelve-month average (extended back to June 2020), and that usage relative to the maximum allocation for each party (6.71 MGD for the City and 11.99 MGD for ACSA).

NOTES: Annual Calibration testing of all wholesale and finished water meters is scheduled for late June, 2021.

*Figure 1: City of Charlottesville Monthly Water Usage and Allocation*

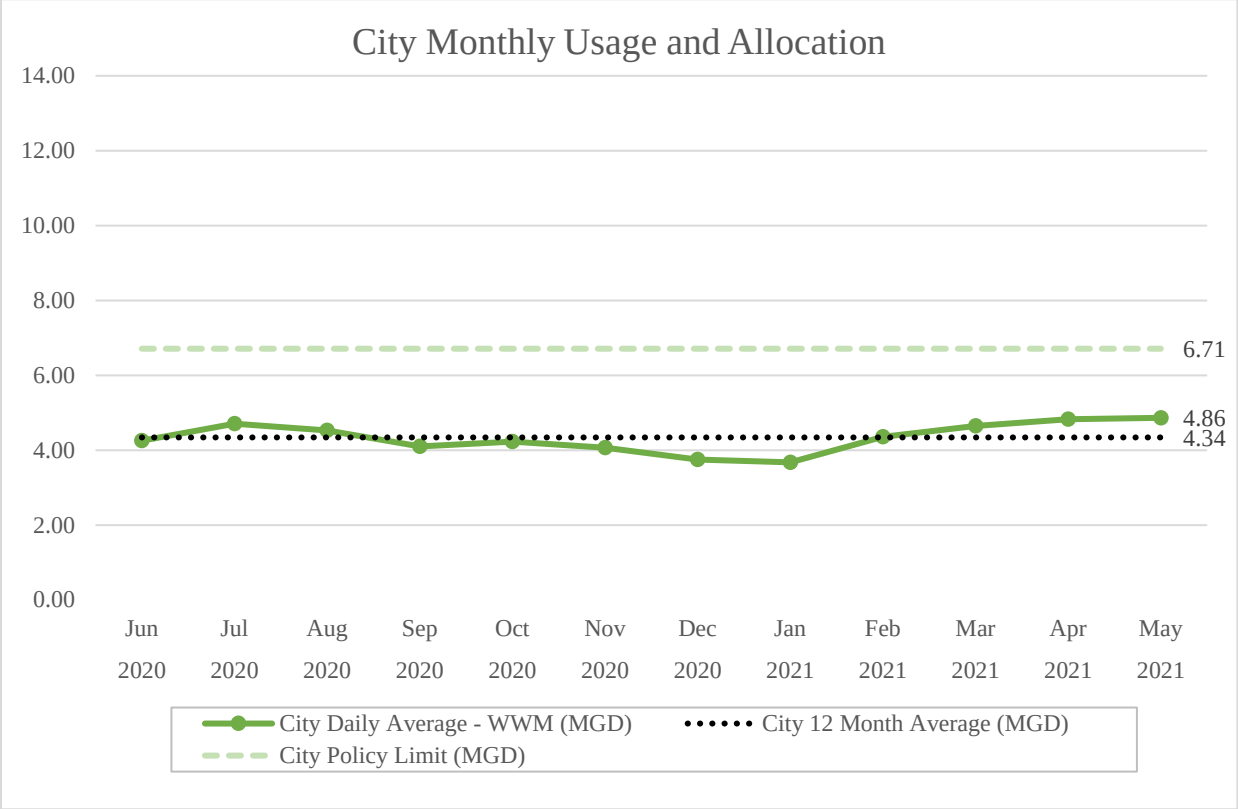
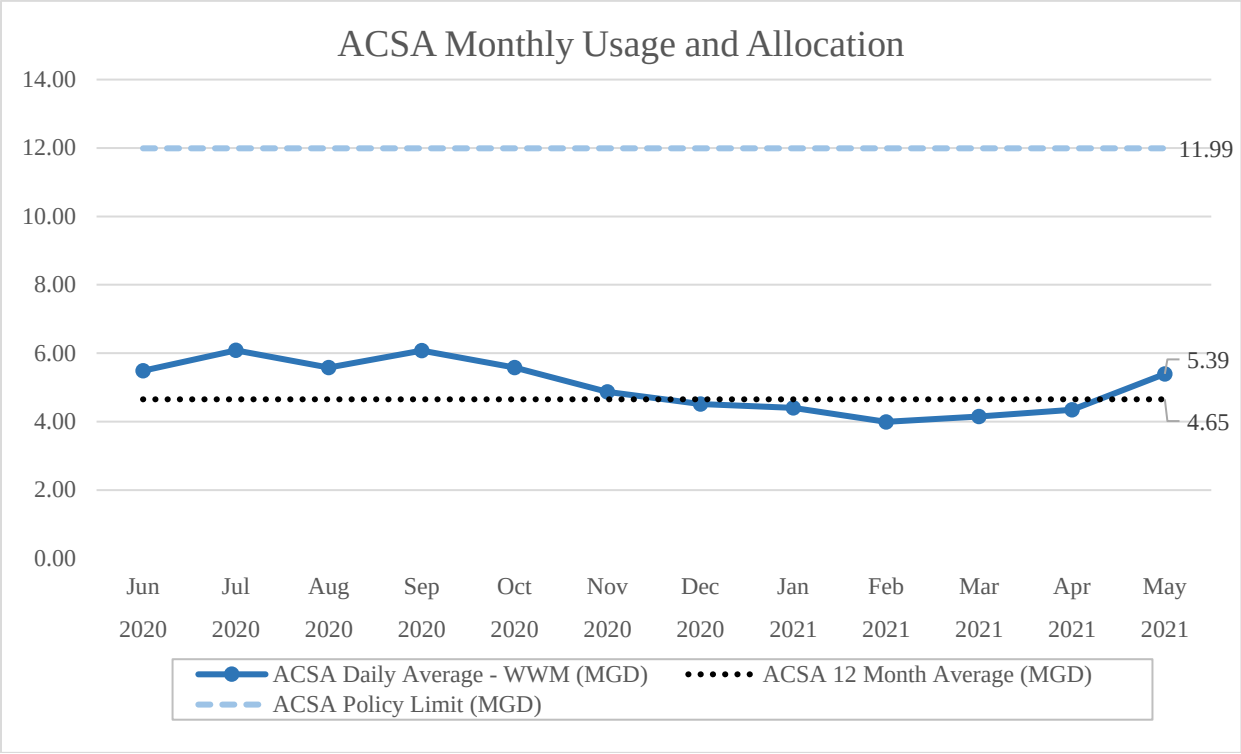



*Figure 2: Albemarle County Service Authority Monthly Water Usage and Allocation*



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 BOWLES, WATER RESOURCES MANAGER**

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

**BILL MAWYER, EXECUTIVE DIRECTOR**

**SUBJECT:** **DROUGHT MONITORING REPORT**

**DATE:** **JUNE 22, 2021**

As we have moved into the warmer months of the year, staff is carefully monitoring the weather for indications of drought. Attached is a Drought Monitoring Report which looks at DEQ and USDA drought statuses, local precipitation statistics, reservoir storage, and regional streamflows.

Current drought status is Normal.

**Board Action Requested:**

Provided for informational purposes only.

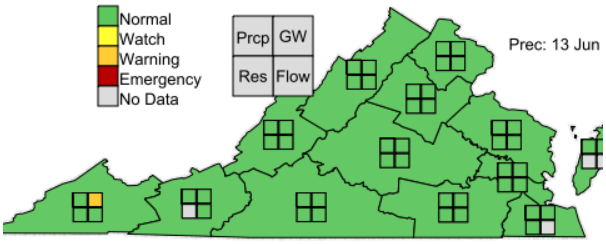
695 Moores Creek Lane | Charlottesville, Virginia 22902-9016
434.977.2970
434.293.8858
www.rivanna.org

**Memorandum**

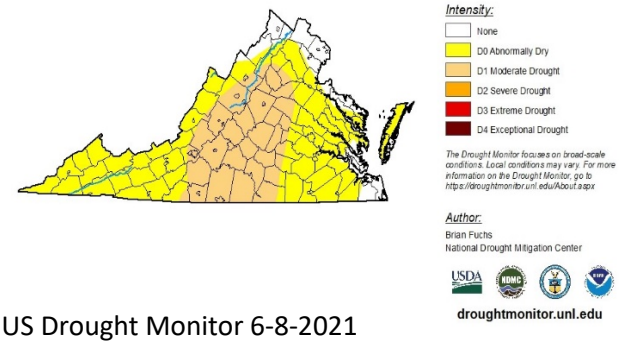
Date: 6/16/21
To: Bill Mawyer
From: Andrea Bowles
Cc: Dave Tungate; Matt Bussell; Jennifer Whitaker
Re: Drought Monitoring Report

---

## Current Status DEQ and USDA




VA DEQ Drought Status 6-13-2021




US Drought Monitor 6-8-2021

Virginia Drought Monitoring Task Force has not met this year.

DEQ Current Drought status is: Normal

## Precipitation

| Charlottesville Precipitation (in.) | |
|---|---|
| June | 2.64 |
| June normal | 1.91 |
| Year-to-date | 15.48 |
| Normal for Year-to-date | 18.10 |
| Departure from normal | -2.62 |

Source: National Weather Service, National Climatic Data Center (NCDC). Daily Climatological Report for Charlottesville, VA, June 14, 2021

Slight chance of rain next two weeks.

**Current Reservoir Status**

| Reservoir | Level (ft) | % Full | Useable Storage Volume (MG) | Rainfall (in) | Flow Release to River# |
|---|---|---|---|---|---|
| Sugar Hollow * | -8.59’ | 66.76 | 226.58 | 0.79 | 5.5 MGD |
| Ragged Mountain | -0.54’ | 97.79 | 1,411.65 | 0.30 | 0.03 MGD |
| South Rivanna | Full | 100.00 | 884.9 | 0.14 | Spillway Overflow |
| Totier Creek | Full | 100.00 | 155 | 0.13 | Spillway overflow |
| Beaver Creek | Full | 100.00 | 499.31 | 0.34 | Spillway overflow |

*Sugar Hollow Reservoir drawn down for construction. Not currently transferring to RMR

Urban Reservoirs useable capacity of 94.57%.

**USGS Gaging Stations Near Urban Area**

**Rolling 7-day avg: June 7 - 13, 2021**
**Median daily flow: June 13, 2021;** for the periodic of record (approx. 30 - 80 years)

| Gage # | Streamflow: rolling 7- day avg | | Streamflow: median daily flow | |
|---|---|---|---|---|
| | cfs | mgd | cfs | mgd |
| 1 | 58.2 | 37.62 | 67 | 43.03 |
| 2 | 55.7 | 35.99 | 39 | 25.21 |
| 3 | 184.9 | 119.50 | 48 | 31.02 |
| 4 | 237.0 | 153.18 | 160 | 103.41 |

1. 02031000 Mechums River near White Hall, VA
   https://waterdata.usgs.gov/usa/nwis/uv?02031000
2. 02032250 Moormans River near Free Union, VA
   https://nwis.waterdata.usgs.gov/va/nwis/uv?site_no=02032250
3. 02032640 N F Rivanna River near Earlysville, VA
   https://waterdata.usgs.gov/va/nwis/uv/?site_no=02032640&PARAmeter_cd=00065,00060,00062
4. 02032515 S F Rivanna River near Charlottesville, VA
   https://waterdata.usgs.gov/va/nwis/uv/?site_no=02032515&PARAmeter_cd=00065,00060,62620,62614

**Oasis Modeling**

- Drought conditions do not warrant use of the model.

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

# MEMORANDUM

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

**FROM:** **LONNIE WOOD, DIRECTOR OF FINANCE & ADMINISTRATION**
**BETSY NEMETH, HUMAN RESOURCES MANAGER**

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

**SUBJECT:** **PERSONNEL MANUAL UPDATE**
**ELIMINATION OF COMPENSATORY TIME**

**DATE:** **JUNE 22, 2021**

On July 1, 2021, the Virginia Overtime Wage Act goes into effect. This legislation specifies how wages and salaries can be paid in Virginia. While the Fair Labor Standards Act, which is federal legislation, allows employees to request compensatory time for overtime hours worked, the new Virginia Overtime Wage Act does not.

Due to the change in state law, we can no longer allow our employees to substitute compensatory time for overtime pay, so we are eliminating that from the "Compensation Plan and Administration, Other Forms of Compensation" section of our Personnel Management Plan.

**Board Action Requested:**
Approve the recommended update to the Rivanna Authorities' Personnel Management Plan.

Attached:
Redline of the Compensation Plan and Administration, Other Forms of Compensation

## D. Compensation Plan and Administration

### 7. Other Forms of Compensation

#### a. On-Call Pay

Certain positions are required to participate in an after-hours on-call schedule. In the event of an emergency, the on-call employee is expected to respond immediately and be fit for duty. Employees that are on-call will receive a wage rate of 10% of their hourly base pay rate for every hour waiting to be called outside of their normal work schedule. Lunchtime during the normal workweek is not considered on-call time. Should the employee be required to come into work during their on-call schedule, he/she will receive Unscheduled Premium pay for two hours or the actual hours worked out of schedule. In the case of an emergency operation status, as determined by the Executive Director, other positions may temporarily be included in the on-call schedule. Department Managers shall designate any employee that is in On-Call status for each pay period.

#### b. Bonuses

1) Performance Bonus. An employee who is at the maximum of his or her pay grade shall be eligible for a performance bonus. If an employee is ineligible for a salary increase because an increase would cause their annual salary to exceed to top of their pay grade; the employee may receive a performance bonus as determined by the merit based pay increases, if any.
2) Meritorious Bonus Award. The Executive Director may make a cash award to an employee(s) for extraordinary events; such as, extraordinary performance or significant money saving suggestions conceived outside the usual and normal expectations of their position(s). The award is a one-time, lump sum bonus of $100 to $3000. Only the Executive Director has the authority to award such a bonus.

#### c. Administrative Increase

An employee who performs the duties and responsibilities of his position in a consistently superior manner deserving recognition beyond what is provided through pay for performance increases, as determined by the Executive Director, shall be eligible to be considered for an administrative increase where a promotion may not be possible and/or may not be warranted. An administrative increase may also be used to adjust any inequities, which may arise from the application of these rules and regulations. An administrative increase shall have no effect upon eligibility for pay for performance increases.

An administrative increase to advance an employee when such action seems justifiable may be recommended to or by a divisional director and/or the Executive Director. Such a recommendation shall be submitted in writing to the Executive Director for approval and shall state the reason for the recommendation.

An administrative increase shall not exceed 15% within grade.

An administrative increase may be granted in the case of a temporary promotion or transfer, limited to the duration of the temporary assignment.

d. Operator License Incentive Program

Persons in an Operator position who pass a licensing exam for a higher-class license than the one currently held will be reclassified and be paid either the minimum for the new pay grade or a rate in the new range 5% above the current salary/base pay, whichever is greater, if the experience requirements have been met.

Granting of a license increase shall not be considered a promotion under these rules and regulations.

e. Overtime

Overtime shall be utilized to relieve specific occasional peak workloads or emergencies, and as a part of the Authority's day-to-day operations.

Non-exempt employees are paid overtime for hours worked in excess of 40 hours in a workweek. Overtime pay is based on the employee's base rate of pay for hours actually worked. This includes compensation for hours worked while in unscheduled premium and compensation while in on-call pay status; which is added to the base rate of pay (or blended). It also includes compensation for relief operator differential pay and nighttime shift differential pay within in any given week. It does not include compensation or time for sick, vacation, holiday or other leave granted, holiday premium pay, or discretionary bonuses received within the workweek. Pay for these items is added after overtime is calculated. This will result in non-exempt employees receiving a Blended Overtime rate each week there is applicable time worked beyond the statutorily required 40 hours per week.

Regular part-time employees and interns receive overtime pay for work hours exceeding 40 hours in a workweek.

All overtime specified above, must be preauthorized by the immediate department manager on a daily basis.

~~Vacation leave is available to non-exempt employees in lieu of overtime pay. In all instances of overtime, the employee may request in lieu of overtime pay, a vacation leave credit at a rate of 1.5 times the overtime hours worked. An employee may request up to a total of 30 hours of vacation leave time instead of overtime pay (instead of 20 hours of overtime pay) per calendar year as allowed by law. An employee's department manager must approve the request for vacation leave in lieu of overtime.~~

f. Premium Pay

Holiday Premium Pay: Hourly employees will receive premium pay at the rate of 0.5 times their hourly rate of base pay, in addition to their regular base pay for any hours worked in the workweek that are on an Authority designated regular holiday.

Unscheduled Premium Pay: Hourly employees will receive premium pay at the rate of 0.5 times their hourly base pay rate, in addition to their regular base pay, for any hours worked in the workweek that are unscheduled hours worked due to emergency call-in, special workload needs or covering another employee's work schedule. (Examples: line breaks,

plant shutdowns, special construction needs requiring nighttime work.)

### g. Pay Differential – Relief Operators

In recognition of the additional demands with the Relief Operator assignment and to implement an incentive to retain qualified operators in Relief Operator assignment, the Relief Operator will be eligible to receive a 10% pay differential above their hourly base pay rate once fully trained at all related facilities as determined by the department manager. This new pay rate becomes their base pay.

At such time when a water or wastewater operator ceases to perform the assignment of a Relief Operator, the 10% pay differential for the Relief Operator assignment will no longer be paid.

### h. Night Shift Pay Differential – Water and Wastewater Night Shift Operators

In recognition of the additional demands on water and wastewater operators who are working overnight shift schedules, these operators will be eligible to receive a 2% pay differential above their hourly base pay rate. This new pay rate becomes their base pay. Overnight shift operators must be designated by the Water and Wastewater Managers.

When a water or wastewater operator no longer works the overnight shift schedule, the 2% pay differential for the shift assignment will no longer be paid.

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:** **CAPITAL IMPROVEMENT PLAN AMENDMENT – SCOTTSVILLE WTP LAGOON LINER REPLACEMENT**

**DATE:** **JUNE 22, 2021**

The Scottville Water Treatment Plant (WTP) has two lined lagoons that receive filter backwash water, filter-to-waste water, and flow from the sedimentation basin sludge collectors. The lagoons are regulated under the Virginia DEQ VPDES permit program. The earthen lagoons are original to the plant and were lined at the request of DEQ in 2007 to prevent water infiltration out of the lagoons.

Recently, the lagoon liners have shown signs of degradation from ultraviolent sunlight. As such, a liner replacement project was added to the FY 22-26 CIP to begin in FY 23 ($140,000) and be completed in FY 24 ($175,000). Unfortunately in early June, the liner in one of the lagoons failed during a high flow event. DEQ has been notified and the lagoon taken out of service, leaving the plant with only one remaining lagoon.

In response to the failure, staff is performing an investigation and is accelerating the liner replacement project. Design is expected to start within 2 weeks and construction as soon as reasonably possible.

**Board Action Requested:**

Approve an amendment the FY 22-26 Capital Improvement Plan to accelerate the Scottsville WTP Lagoon Liner Replacement project totaling $315,000 from FY 23 and FY 24 to FY 22.

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:** **CONSTRUCTION AUTHORIZATION SECURITY ENHANCEMENT PROJECTS; SECURITY 101**

**DATE:** **JUNE 22, 2021**

As required by the Federal Bioterrorism Act of 2002, water utilities must conduct Vulnerability Assessments and have Emergency Response Plans. RWSA completed an updated Risk Assessment of its water system in collaboration with the ACSA, City of Charlottesville and UVA in 2017, and an updated Emergency Response Plan in 2020. Several security improvements were identified by these assessments including implementation of an access control program at RWSA facilities.

In July 2019, the Board of Directors authorized award of a Term Contract to a security contractor (Security 101) for up to $950,000 of expenditures for card access and other security equipment implementation. Since that time, a card access system has been implemented throughout the Moores Creek Facility as well as for all gates at the North Rivanna, South Rivanna, Observatory, Crozet, and Scottsville Water Treatment Plants (WTPs).

Staff is planning the next set of security installations, which will initially be focused on access control in the WTP buildings as well as in the county Wastewater Treatment Plants. The cost for these additional measures is included in the approved Capital Improvement Plan totaling $2.73 M.

**Board Action Requested:**

Authorize the Executive Director to execute Work Authorizations with Security 101 for implementation of access control and other security measures as needed in RWSA facilities with expenditures up to the total approved Capital Improvement Plan budget of $2.73 M.

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:** **CAPITAL IMPROVEMENT PLAN AMENDMENT AND CONTRACT AUTHORIZATION; CENTRAL WATER LINE PROJECT; MICHAEL BAKER INTERNATIONAL**

**DATE:** **JUNE 22, 2021**

Early phases of work on this project (initially referred to as the Avon to Pantops Water Main) began in 2017. Due to the complicated nature of the finished water system, and several outstanding hydraulic considerations, the water line project was placed on hold while a comprehensive Urban Finished Water Master Plan was completed. The focus of this project was 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 to connect and strengthen the urban water system in two key phases (with the first being built at the time). The 1987 Agreement and planning efforts were a starting point for this current project.

An engineering contract was negotiated with Michael Baker (MBI) and was approved by the Board of Directors in July 2017. Results for the Urban Finished Water Infrastructure Master Plan and the Central Water Line Routing Study have recently been discussed in multiple workshops with the City and ACSA staff. It was determined during these meetings that a central water line corridor through the City is the best option to hydraulically interconnect the southern half of the urban area water system, meeting the intent of the original Avon to Pantops Water Main concept.

In order to take this project from the routing study phase through bidding, staff has negotiated a scope, fee and schedule with MBI under the firm's Avon to Pantops Water Main Project professional services contract. The scope of work includes performing preliminary engineering, geotechnical investigations, subsurface utility engineering (SUE), survey, final design, permitting, plat preparation, public outreach, and bidding services for approximately 5 miles of new water line associated with the Central Water Line Project.

The current CIP does not include enough funding to cover the previous expenses, the routing study, and design and bidding for the entire project. Staff is requesting that $463,000 from the overall Capital Project, planned to begin in Fiscal Year 2024, be brought forward to cover this effort.

**Board Action Requested**:

Approve an amendment of the FY 22-26 Capital Improvement Plan to bring forward $463,000 of funding from the Central Water Line Project for use in Fiscal Year 2022. The total budget for the Central Water Line Project remains unchanged.

Authorize the Executive Director to execute a work authorization with Michael Baker International for preliminary engineering, geotechnical investigations, subsurface utility engineering, survey, final design, permitting, plat preparation, public outreach, and bidding services for the Central Water Line Project, for an amount not to exceed $1,488,000, and any amendments needed to complete the tasks identified above, not to exceed 25% of the original contract amount, provided the resulting total value is within the Board approved total CIP project budget.

# CYBER-SECURITY

## Rivanna's Layers of protection

Presented by:
Steven Miller, IS Administrator
RWSA/RSWA

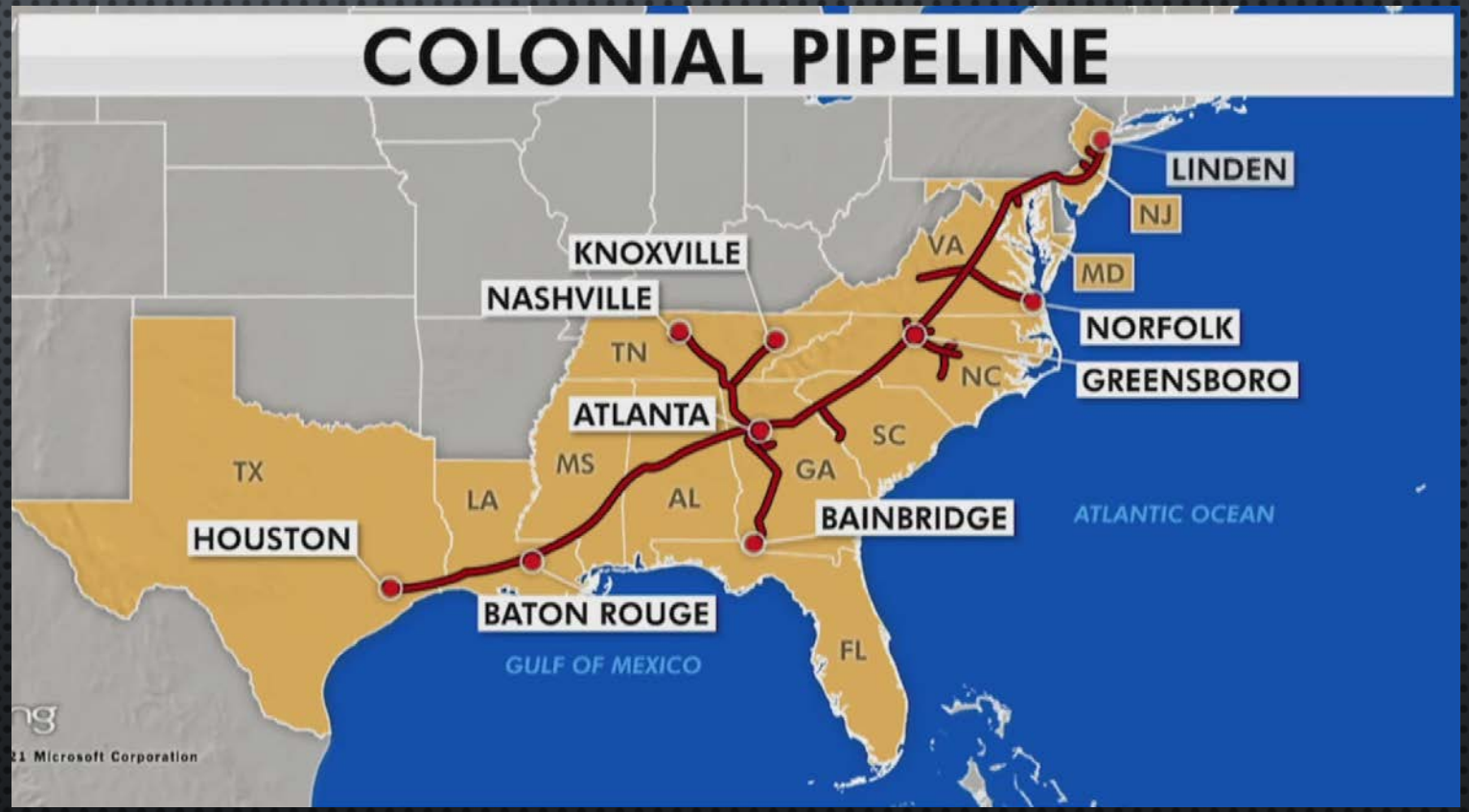

# CYBER ATTACK IS THE NUMBER ONE THREAT TO OUR WATER INFRASTRUCTURE.

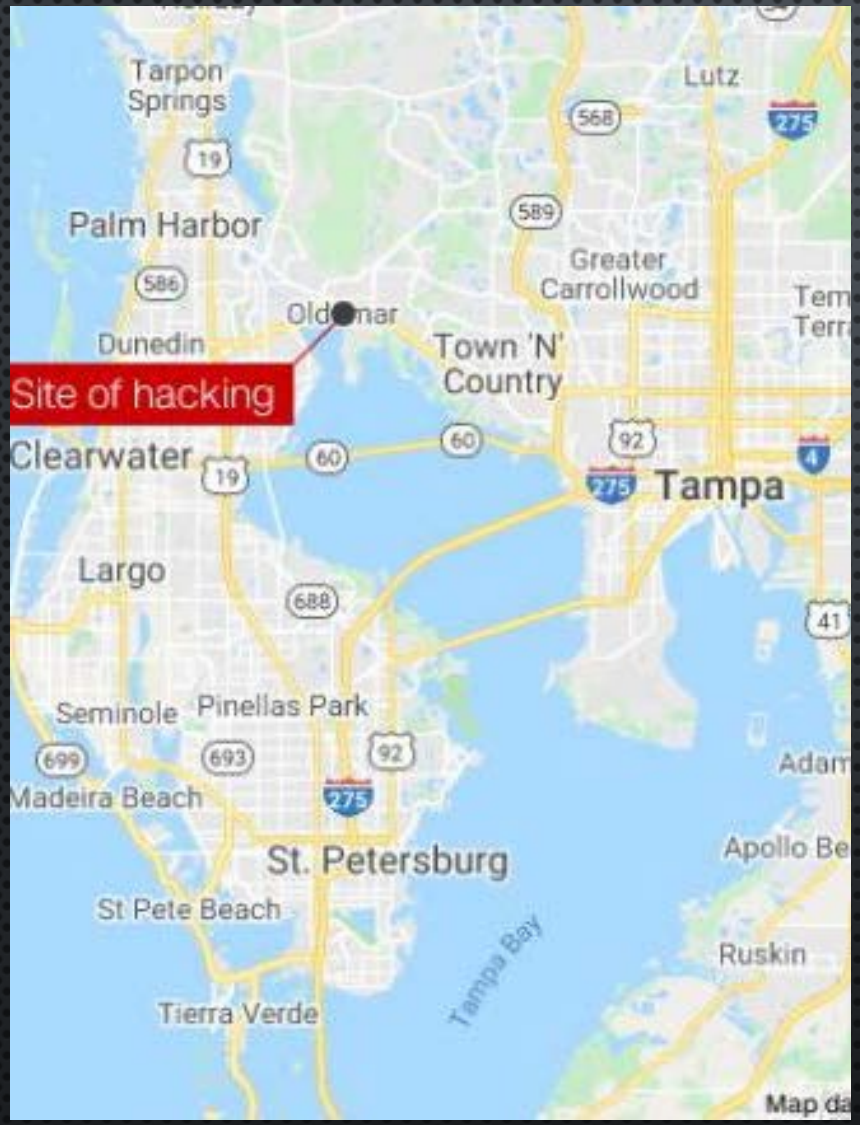
# WHAT IS CYBER-SECURITY?

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

# RECENT CYBER HIGH PROFILE INCIDENTS

- COLONIAL PIPELINE - RANSOMWARE ATTACK
- OLDSMAR FLORIDA WATER TREATMENT PLANT - CYBERINTRUSION
- JBS SA MEAT PROCESSING - RANSOMWARE ATTACK






# OLDSMAR, FLORIDA

- A HACKER ACCESSED THE OLDSMAR, FLORIDA WATER TREATMENT SYSTEM AND TRIED TO INCREASE THE LEVELS OF SODIUM HYDROXIDE, COMMONLY REFERRED TO AS LYE, IN THE CITY'S WATER TO MORE THAN 100 TIMES ITS NORMAL LEVELS
- THE OPERATOR ON DUTY NOTICED THE INTRUSION AND WATCHED THE HACKER ACCESS THE SYSTEM REMOTELY. THE OPERATOR IMMEDIATELY REDUCED THE LEVELS TO NORMAL.
- AT NO TIME WAS THERE A SIGNIFICANT ADVERSE EFFECT TO THE CITY'S WATER SUPPLY, AND THE PUBLIC WAS NEVER IN DANGER.
- IT IS UNKNOWN IF THE BREACH HAPPENED FROM SOMEONE LOCALLY, NATIONALLY OR EVEN OUTSIDE OF THE UNITED STATES.

# COMMON CYBER-SECURITY ATTACKS

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

# MITIGATIONS

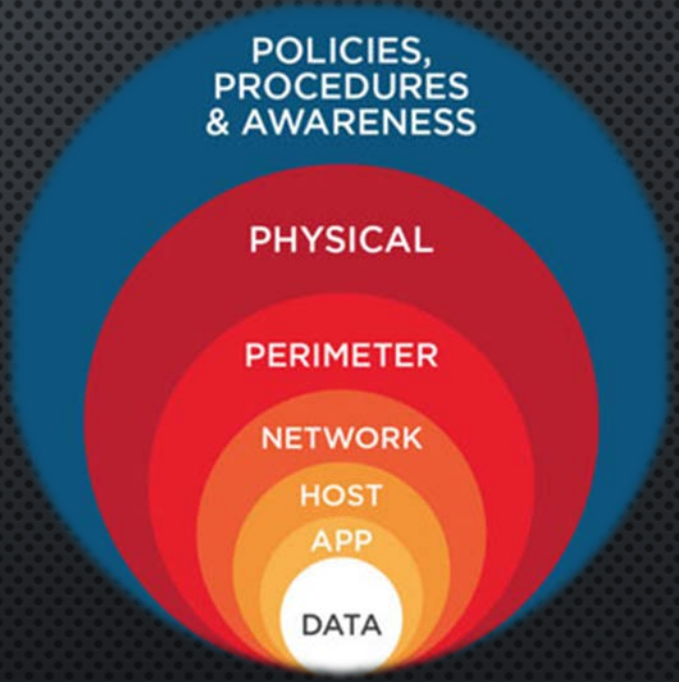
## CISA AND THE FBI URGE CRITICAL INFRASTRUCTURE OWNERS AND OPERATORS TO APPLY THE FOLLOWING MITIGATIONS TO REDUCE THE RISK OF COMPROMISE BY RANSOMWARE ATTACKS

- Require multi-factor authentication for remote access to OT and IT networks.
- Enable strong spam filters to prevent phishing emails from reaching end users.
- Implement a user training program and simulated attacks for spearphishing
- Filter network traffic to prohibit ingress and egress communications with known malicious IP addresses.
- Update software, including operating systems, applications, and firmware on IT network assets, in a timely manner.
- Limit access to resources over networks, especially by restricting RDP.
- Implement and ensure robust network segmentation between IT and OT networks
- Regularly test manual controls
- Implement regular data backup procedures, Retain backup hardware
- Maintain regularly updated "gold images" of critical systems in the event they need to be rebuilt
- Ensure user and process accounts are limited through account use policies, user account control, and privileged account management

# Defense-In-Depth

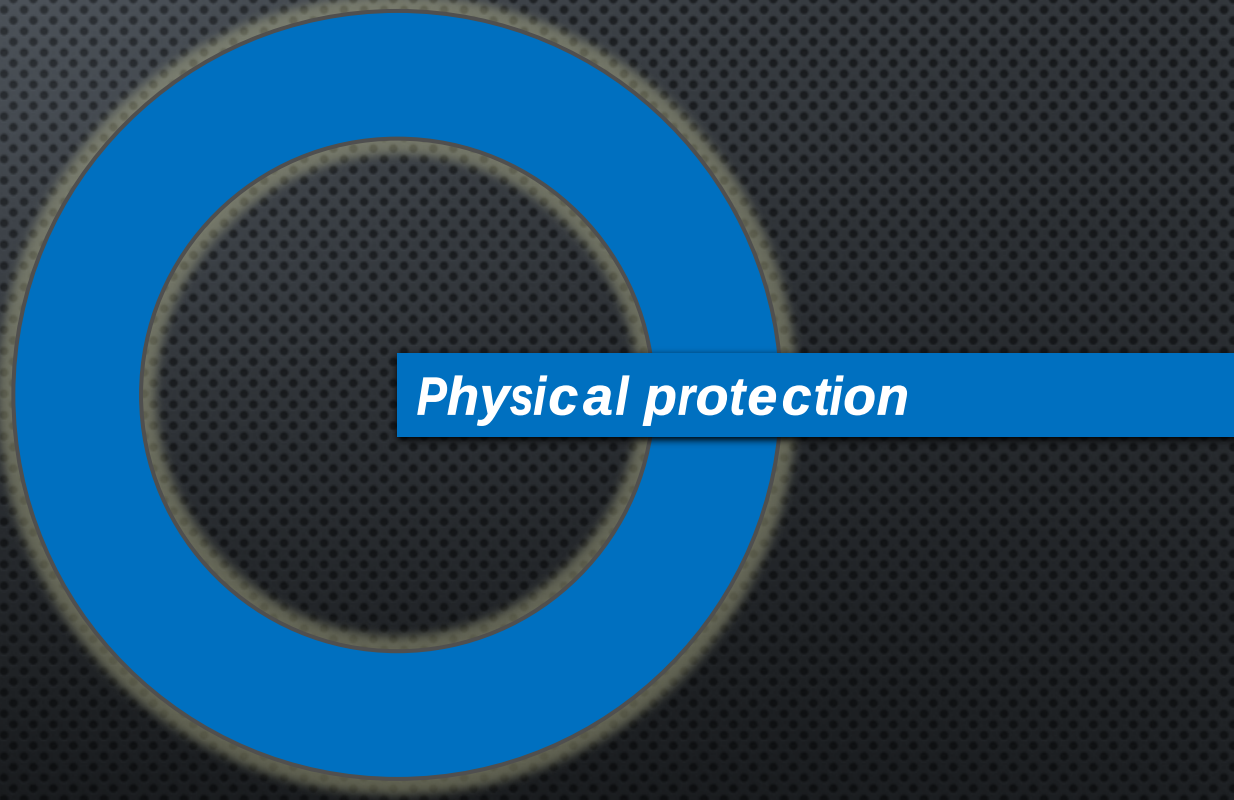
- The layered approach is called the "defense-in-depth" strategy. Defense-in-depth - no single security product can adequately protect an industrial system, which REQUIRES a properly configured combination of security technologies, controls

- "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.“



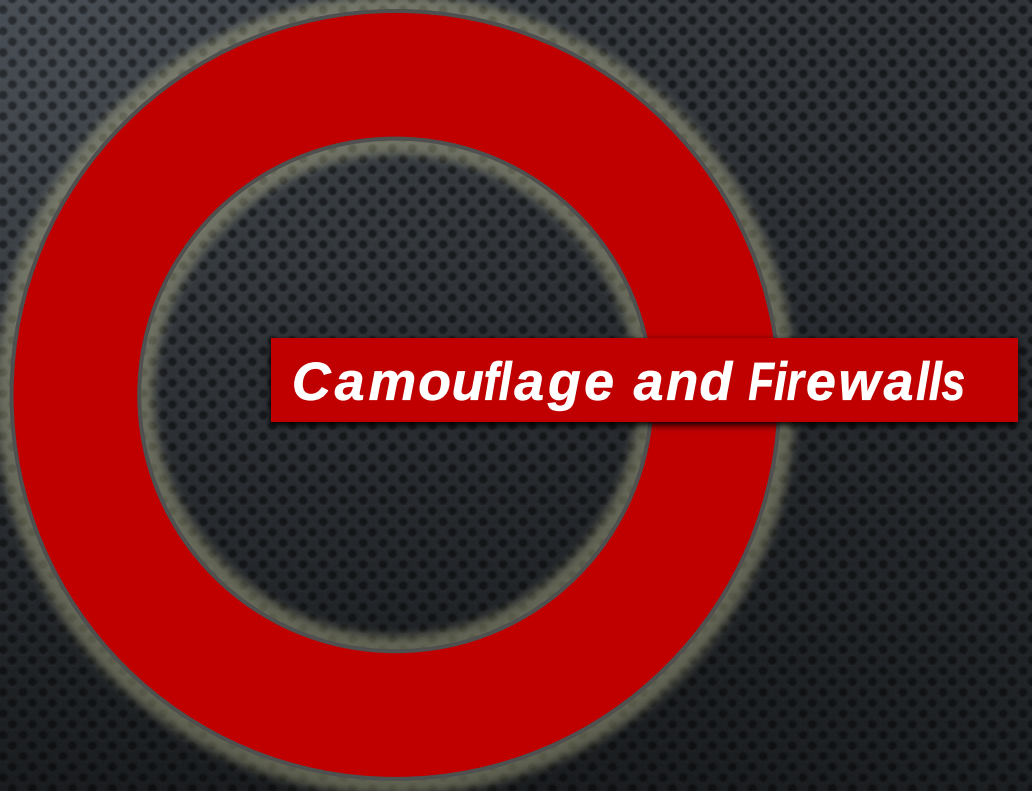
# Physical Protection

The first layer is one of physical restrictions.  We restrict access to our plants and devices.  We will also be implementing software which will allow us to block devices, users and traffic down to the port level, from a centralized dashboard.



# Next Generation Firewall and Camouflage products

- The Next layer is our firewalls working in conjunction with products that camouflage or hide our network from the outside world.
- This is the router-based public facing protection ring consisting of a Next Generation (or adaptive) Firewall.  (Outer Firewall)
- Routers - gate keepers for all internal, site to site and external (internet) traffic.  Installation of a system which camouflages our network and gives us a finer ability to block traffic by region (Geofencing).
- Will be adding PLC specific firewalls over the coming year, to create an inner firewall layer for our SCADA system (Inner Firewall)

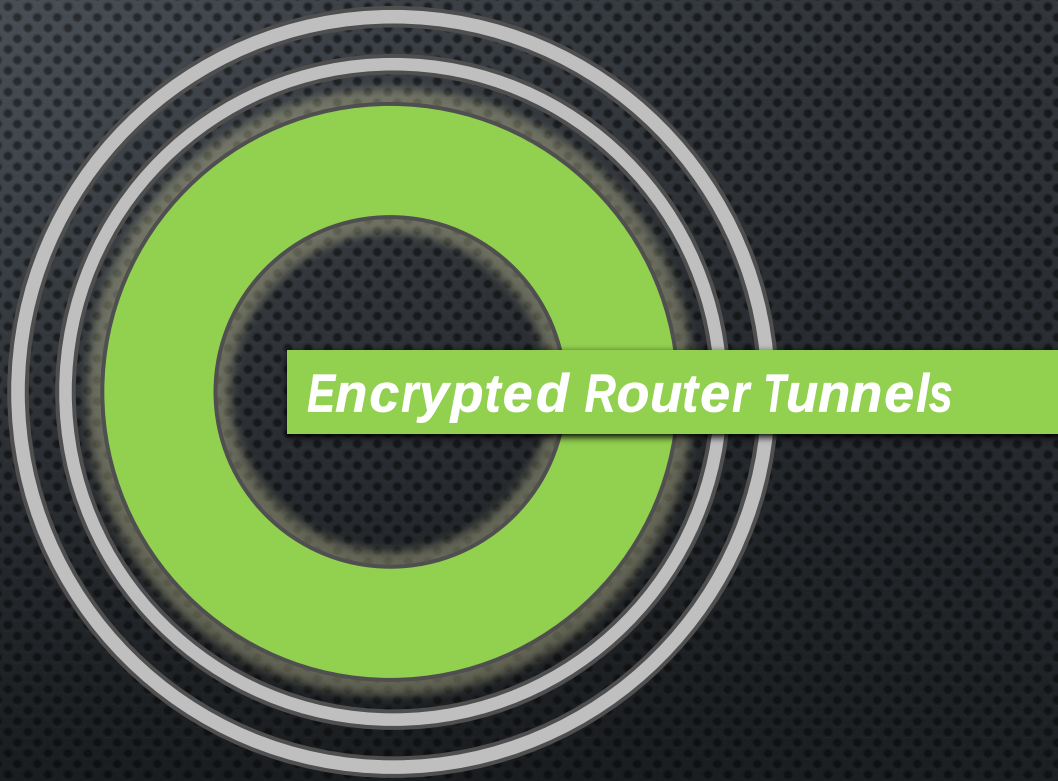


# Anti-Virus/Malware Software

- 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.
- All devices have an added layer of anti-virus/malware scanning software in addition to the router protections to form an inner layer of virus protection.

# Encrypted Router Tunnels

- Router to router inter-site data traffic uses software Encrypted tunnels.  This prevents unauthorized outside connections and interception of the data.
- Additionally, as part of our current network design, we are adding a product that allows for pinpoint control of where and what specific traffic is allowed travel.



# User Access & Restrictions

- Microsoft Active Directory is used to control access to share network resources.
- **We require 2 factor authentication for all remote access.**
- Specialized software used for daily operations requires users to provide a second unique username and password to access. This includes; SCADA, accounting software, e-mail, document management software, asset management software, GIS, etc.


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

# User Based Protection

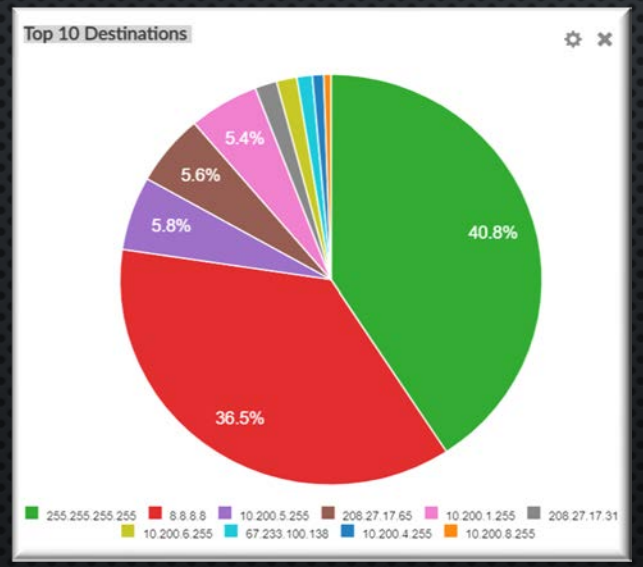
The most vulnerable part of any system is its user.  Users can allow access inadvertently in many ways. We regularly educate our users. We will be adding physical layer protection in the coming year.  This will allow us to prevent access not only based on user, but on class of device.

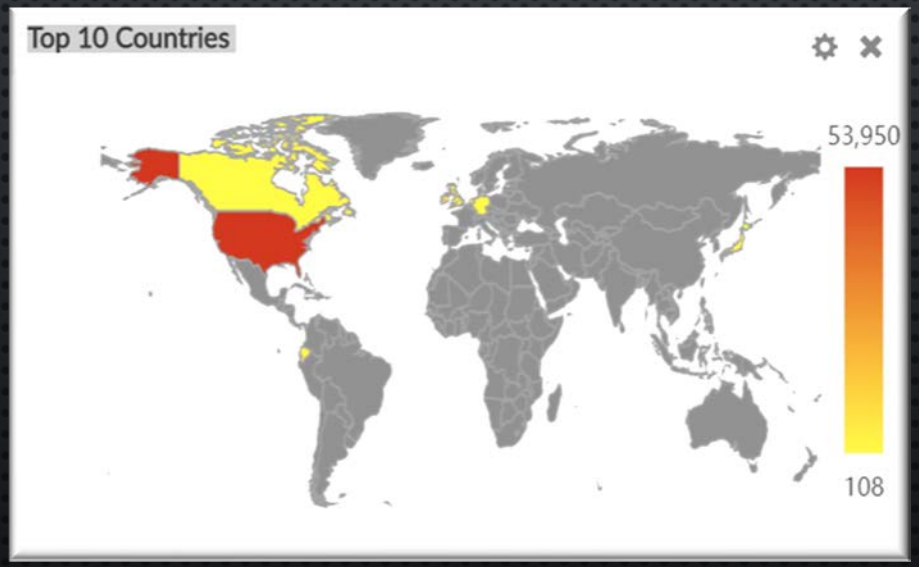
# Disaster Recovery

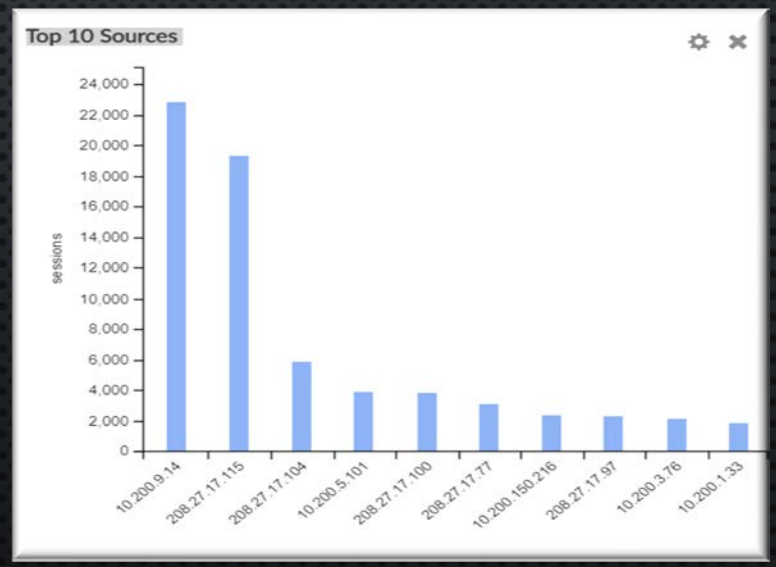
The disaster recovery/backup system provides Rivanna with several options for restoring data that has become corrupt, erased or encrypted in the event of a successful network breach/attack.  It includes off site and off network storage of backups.

# 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. It also incorporates data from the router vendor. This device is monitored at least 3 times a day by the IT/SCADA staff. Additionally, the device sends alerts if an immediate threat is detected. We also receive alerts form a number of organizations and federal agencies.

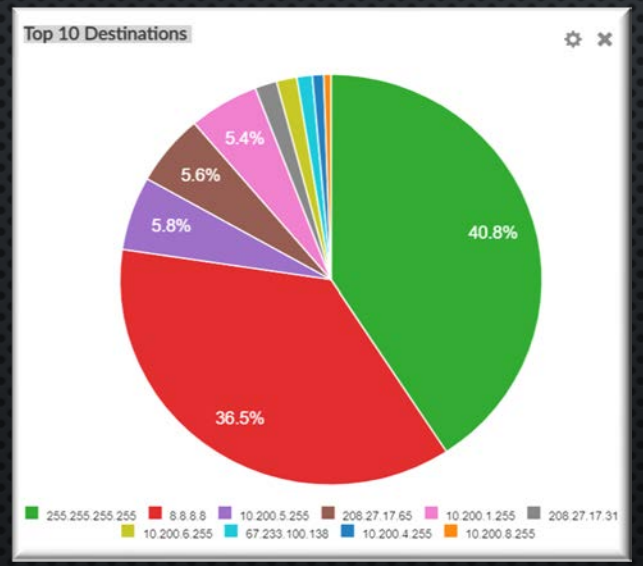


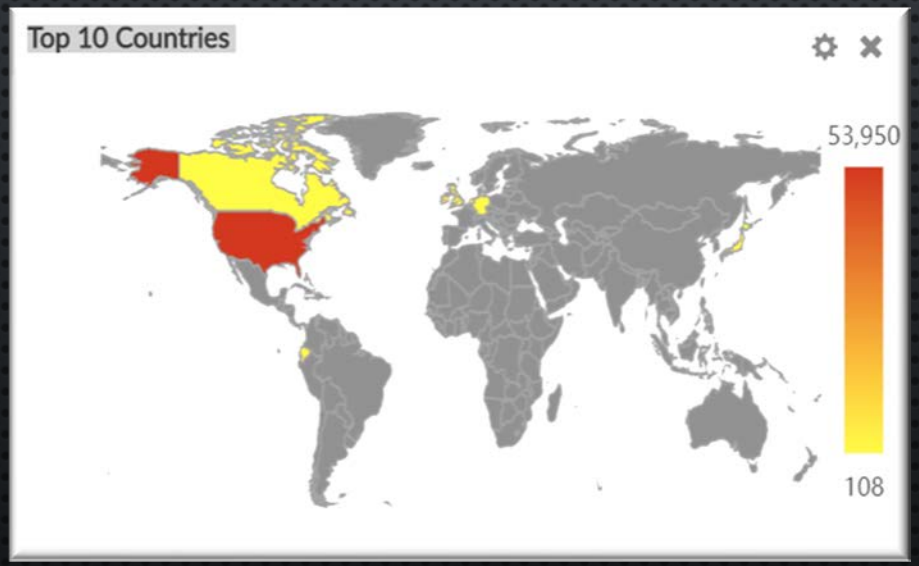



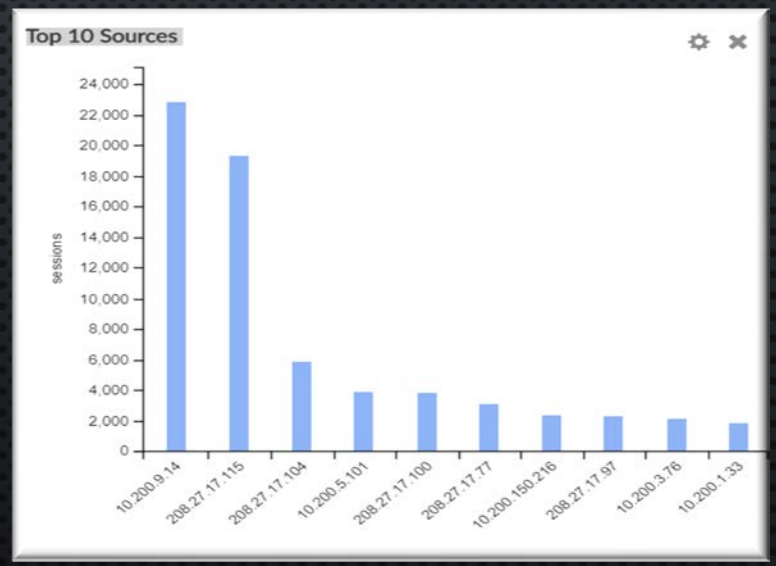



# Threat Monitoring

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. It also incorporates data from the router vendor. This device is monitored at least 3 times a day by the IT/SCADA staff. Additionally, the device sends alerts if an immediate threat is detected. We also receive alerts form a number of organizations, federal agencies and the Deloitte Cyber Detect and Respond Portal (a customizable online portal for analyzing detailed advisories on cyber threats and vulnerabilities)



# QUESTIONS?

RIVANNA
AUTHORITIES

# Urban & Crozet Water Systems - VA Water Withdrawal Permits Update

PRESENTED TO THE BOARD OF DIRECTORS

BY JENNIFER WHITAKER,

DIRECTOR OF ENGINEERING AND MAINTENANCE

JUNE 22, 2021

RIVANNA WATER & SEWER AUTHORITY

# Agenda

- Regulatory Overview
- Urban System Permits
- Crozet System Permits

# Program Overview

- The use of surface water in Virginia is regulated under the State Water Control Law via the governance of the State Water Control Board (SWCB) and the authority of the Federal Clean Water Act.
- Historically RWSA's regulatory withdrawal was overseen by the VA Dept. of Health (VDH) via the Waterworks Operation Permits.
  - North Rivanna, Crozet, and Scottsville WTP withdrawals are governed by this type of permit and are excluded from separate withdrawal permitting (9VAC25-210-310).
    - Existed before 7/1/89
    - Have not been abandoned, and
    - Do not require expansion

# Program Overview

- Surface Water Withdrawal Permits are governed by 9VAC25-210 and are issued by the Dept. of Environmental Quality (DEQ)
- Application for individual system permits are conducted via the Joint Permit Application (JPA) process, where the Virginia Marine Resources Commission (VMRC) serves as the state level clearinghouse and coordinates via the US Army Corp of Engineers with federal agencies as well as state and federally recognized Tribes.
  - **Virginia Water Protection (VWP) Permit** - issued for a 15-year Term
  - **US Army Corps of Engineers Permit** - issued for 10-year Term
  - Permits require extension and/or reissuance at the end of their term

# Urban Water System – Permit History

- 2001-2002 Drought of Record
- 2002-2012 Community Water Supply Planning Process


- DEQ VWP Permit
  - 2008 – Permit No. 06-1574 Issued
  - 2009 - Minor Permit Modification No.1
  - 2011 – Major Permit Modification
  - 2021 – Minor Permit Modification No.2
  - 2023 – VWP expires


- US ACOE Permit
  - 2008 – Permit No. 06-V1574, NAO-2006-03002 Issued
  - 2012 – Major Permit Modification
  - 2018 – 5-year Extension
  - 2023 – US ACOE permit expires

# Urban Water System

- Permits Expire 2023
- Required to submit new application 180 days before expiration
- Renewal Application and Permit Support Document were submitted in May 2021
- Currently the DEQ process is 18-24 months

*Current Plan Elements*

- ✓ Replace Ragged Mountain Dams
- ✓ Regulate Minimum Instream Flows
- ✓ Upgrade OWTP
- ✓ Upgrade SRWTP
- ✓ Design Raw Water Pipelines

*Future Plan Elements*

- ❑ Finish SR-RM Pipeline
- ❑ Construct RM-OB Pipeline
- ❑ Construct RM & SR Pump Stations
- ❑ Raise RMR Water Level
- ❑ Decommission North Rivanna WTP

# Crozet Water System

- A separate Water System serves the Community of Crozet
  - Constructed in the mid-1960's
    - Water Treatment Plant on Rt. 240
    - Beaver Creek Dam, Reservoir and Pump Station
    - Buck's Elbow Storage Tank
    - Distribution System Piping

- Crozet is designated as an Albemarle County Growth Area
- Population and water demand are rising

- In 2018-2019, RWSA completed the Crozet Drinking Water Infrastructure Plan
- Projections updated again in 2021 to reflect higher use patterns

# Crozet Water System

- As part of Master Plan, RWSA:
  - Expanded the WTP
  - Replaced the Finished Water Pump Station
  - Evaluated Future Distribution System Improvements
  - Evaluated Available Water Supply

- The Master Plan showed that Beaver Creek Reservoir has adequate water for the 50-year population projection, but that the current infrastructure needed to manage the supply is not adequate

- Concurrently, state Dam Safety Regulations require that the Beaver Creek Dam be upgraded to withstand larger storm events

# Crozet Water System

- Crozet WTP is exempt from Virginia Water Protection Permitting
- With the need for future withdrawal expansion and dam upgrade, RWSA will need to apply for a VWP and US ACOE permit
- Any new permit will require Minimum Instream Flows (MIF), which are currently unregulated

Next Steps

- Select new Raw Water Pump Station Site (3-6 months, 2021)
- Prepare Final Joint Permit Application and Supporting Documents
- Submit Permit Application to DEQ/VMRC/USACOE (late 2021)
- Finalize Permit (2023)
- Construct Dam, Pump Station and MIF Infrastructure (2023-2027)

# Questions?

# Emerging Contaminants in Drinking Water and Wastewater

PRESENTED BY: BILL MORRIS, PH.D.

LABORATORY MANAGER

BOARD OF DIRECTORS MEETING

JUNE 22, 2021

RIVANNA WATER & SEWER AUTHORITY

# Cuyahoga River Fire 1952

- Cuyahoga River near Cleveland Ohio reportedly caught fire 13 times from 1868 to 1969

**Original Caption: Firemen stand on a bridge over the Cuyahoga River to spray water on the tug Arizona, as a fire, started in an oil slick on the river, sweeps the docks at the Great Lakes Towing Company site in Cleveland Nov., 1st. The blaze destroyed three tugs, three buildings, and the ship repair yards. ( Bettmann / Contributor via Getty Images)**

# History of Drinking Water and Wastewater Regulations

- Environmental Protection Agency was established by President Richard Nixon in 1970

- Clean Water Act of 1972 regulated pollutants discharging into the Waters of the U.S.

- Safe Drinking Water Act of 1974 established national standards for treatment of drinking water

# Clean Water Act of 1972

- Established the basic structure for regulating pollutant discharges into the waters of the United States.

- Gave EPA the authority to implement pollution control programs such as setting wastewater standards for industry.

- Funded the construction of sewage treatment plants under the construction grants program.

# Safe Drinking Water Act of 1974

- Authorizes EPA to set national standards for drinking water to protect against health effects from exposure to naturally-occurring and man-made contaminants

- Standards apply to public water systems
  - Which have at least 15 water service connections or serve at least 25 people at least 60 days a year
  - Over 150,000 public water systems in US serve > 300 million people

# Unregulated Contaminant Monitoring Rule (UCMR)

- EPA collects data for contaminants that are suspected to be present in drinking water and do not have health-based standards set by the Safe Drinking Water Act (SDWA)
- All large systems serving greater than 10,000 people are required to complete testing for contaminants on the UCMR list at their own expense
- Results are stored in a National Occurrence Database (NCOD)

# UCMR4

- Data collection took place between 2018 and 2020
- We tested for:
  - 3 brominated Haloacetic Acid (HAA) Groups
  - 10 Cyanotoxins
  - Two metals (germanium and manganese)
  - 8 pesticides and 1 pesticide manufacturing byproduct
  - 3 alcohols
  - 3 semivolatile organic compounds (SVOCs)
- All non-detects except for HAAs (<40 ppb) in the distribution system and some manganese (<2 ppb) in the Observatory and South Rivanna raw water

# Contaminant Candidate List (CCL)

- Contaminant Candidate List 4
  - On February 22, 2021: EPA reissued final regulatory determinations for CCL 4 contaminants
  - Final determinations are being made to regulate 2 contaminants in drinking water

# Contaminant Candidate List 4 November 2016

| Substance Name | Substance Name | Substance Name |
|---|---|---|
| 1,1-Dichloroethane | Cumene hydroperoxide | N-nitrosodimethylamine (NDMA) |
| 1,1,1,2-Tetrachloroethane | Cyanotoxins | N-nitroso-di-n-propylamine (NDPA) |
| 1,2,3-Trichloropropane | Dicrotophos | N-Nitrosodiphenylamine |
| 1,3-Butadiene | Dimethipin | N-nitrosopyrrolidine (NPYR) |
| 1,4-Dioxane | Diuron | Nonylphenol[2] |
| 17alpha-estradiol | Equilenin | Norethindrone (19-Norethisterone) |
| 1-Butanol | Equilin | n-Propylbenzene |
| 2-Methoxyethanol | Erythromycin | o-Toluidine |
| 2-Propen-1-ol | Estradiol (17-beta estradiol) | Oxirane, methyl |
| 3-Hydroxycarbofuran | Estriol | Oxydemeton-methyl |
| 4,4'-Methylenedianiline | Estrone | Oxyfluorfen |
| Acephate | Ethinyl estradiol (17-alpha ethynyl estradiol) | Perfluorooctanesulfonic acid (PFOS) |
| Acetaldehyde | Ethoprop | Perfluorooctanoic acid (PFOA) |
| Acetamide | Ethylene glycol | Permethrin |
| Acetochlor | Ethylene oxide | Profenofos |
| Acetochlor ethanesulfonic acid (ESA) | Ethylene thiourea | Quinoline |
| Acetochlor oxanilic acid (OA) | Formaldehyde | RDX (Hexahydro-1,3,5-trinitro-1,3,5-triazine) |
| Acrolein | Germanium | sec-Butylbenzene |
| Alachlor ethanesulfonic acid (ESA) | HCFC-22 | Tebuconazole |
| Alachlor oxanilic acid (OA) | Halon 1011 (bromochloromethane) | Tebufenozide |
| alpha-Hexachlorocyclohexane | Hexane | Tellurium |
| Aniline | Hydrazine | Thiodicarb |
| Bensulide | Manganese | Thiophanate-methyl |
| Benzyl chloride | Mestranol | Toluene diisocyanate |
| Butylated hydroxyanisole | Methamidophos | Tribufos |
| Captan | Methanol | Triethylamine |
| Chlorate | Methyl bromide (bromomethane) | Triphenyltin hydroxide (TPTH) |
| Chloromethane (Methyl chloride) | Methyl tert-butyl ether (MTBE) | Urethane |
| Clethodim | Metolachlor | Vanadium |
| Cobalt | Metolachlor ethanesulfonic acid (ESA) | Vinclozolin |
| | Metolachlor oxanilic acid (OA) | Ziram |
| | Molybdenum | |
| | Nitrobenzene | |
| | Nitroglycerin | |
| | N-Methyl-2-pyrrolidone | |
| | N-nitrosodiethylamine (NDEA) | |

# Drinking Water Standards

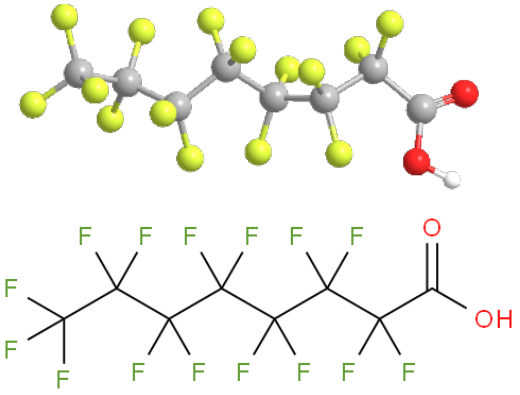
- National primary drinking water regulations or Maximum Contaminant Level
  - Legally enforceable standards that apply to public drinking water systems
  - 87 chemical contaminants have limits that when exceeded can adversely affect public health

# Emerging Contaminants in Drinking Water

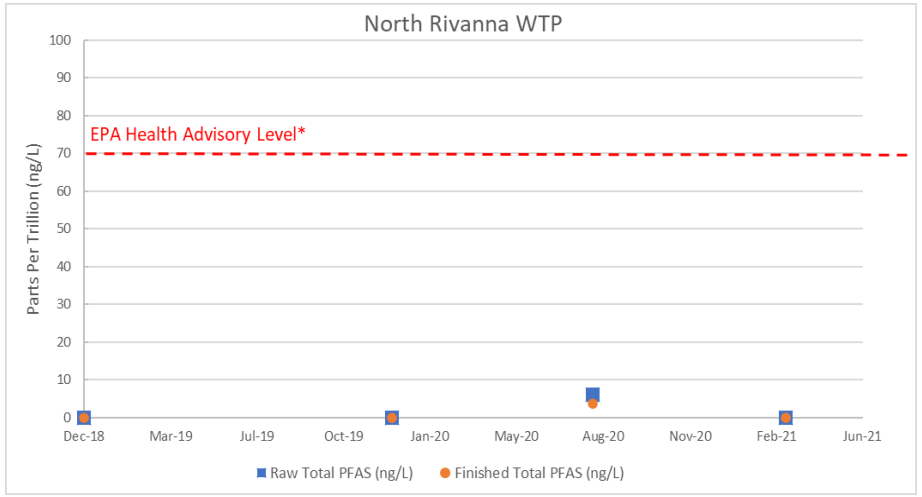
- Per-and polyfluoroalkyl substances (PFAS)
  - More than 3,000 man-made chemicals that can be found in many consumer products and industrial processes (dental floss, pizza boxes, clothes, carpets)
- Cyanotoxins
  - Produced by harmful algal blooms in drinking water sources
  - Pro-actively managed by our reservoir monitoring program
- Microplastics
  - Used in many industries including cosmetics, personal care, and clothing
  - Degradation of larger plastic materials

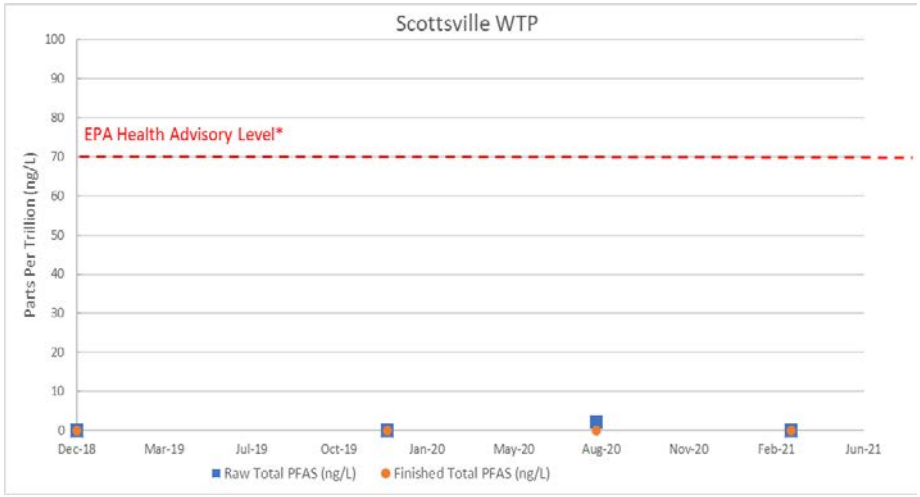
# PFAS

- PFAS: Per-and Polyfluoroalkyl substances
- Synthetic chemicals that included several different classes (e.g. PFOA, PFOS, GenX)
- Impart desirable properties to consumer products such as water repellency (clothing), stain resistance (Scotchgard™), grease-proofing, and friction reduction (“non-stick”)
- Primary ingredients in many fire-fighting foams
- PFAS compounds have long half-lives in humans (3—5 years)




# PFAS in RWSA Drinking Water

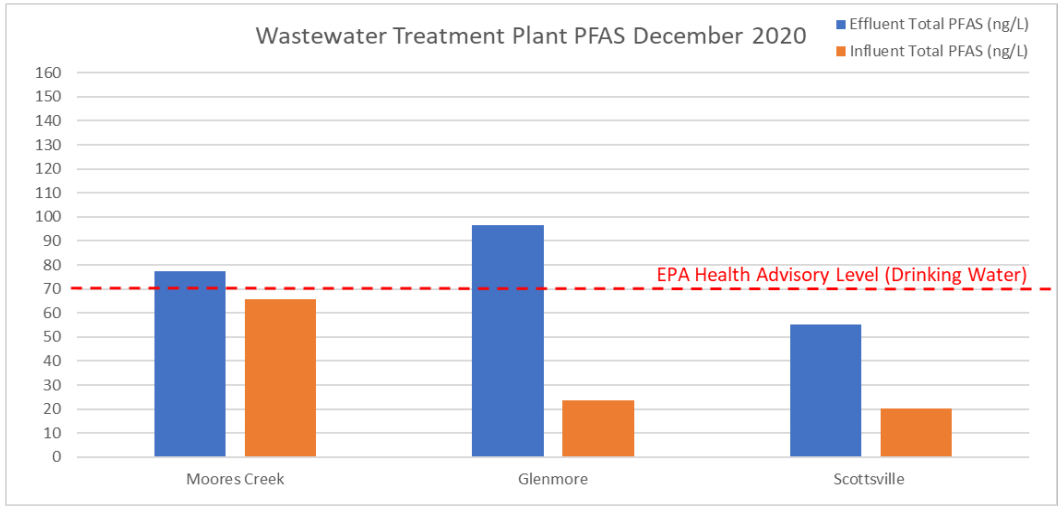


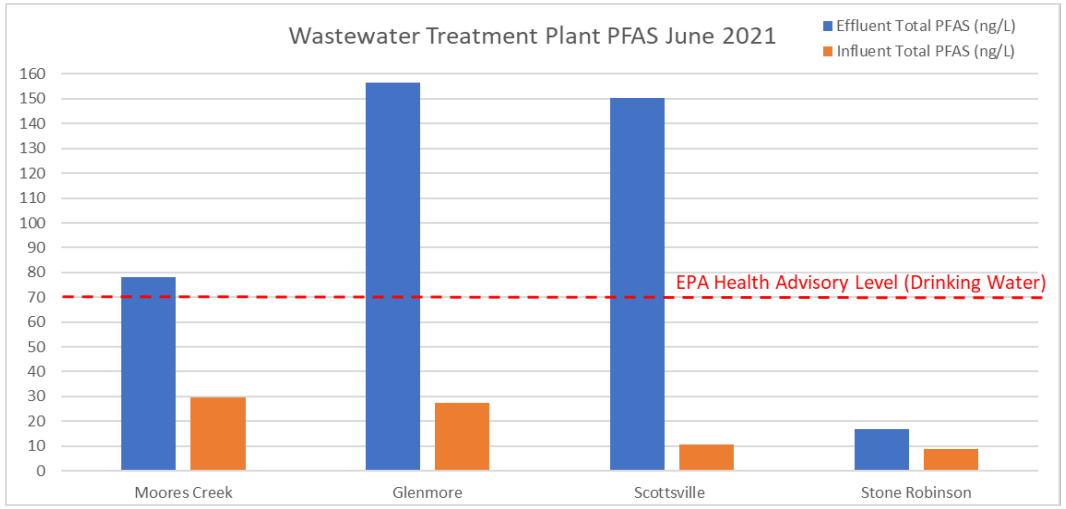




*Issued in 2016 by EPA. Health advisories are to provide information on contaminants that can cause human health effects and are known or anticipated to occur in drinking water. These are to provide Americans with a margin of protection from a life-time exposure to PFOA and PFOS from drinking water. Health advisories are not regulations, but are designed to give state, local, and tribal governments the information they need to better protect human health and the environment.

- First monitored for PFAS in finished water from South Rivanna and Observatory WTPs in 2014 as part of UCMR3
- Resumed monitoring in 2018 and added raw water as well as North Rivanna, Scottsville, and Crozet WTPs
- Starting monitoring Red Hill in 2019
- Only detections were at North Rivanna and Scottsville in August 2020. No detections in March 2021

# PFAS in Rivanna Wastewater




- PFAS compounds detected were mostly those found in firefighting foam and common commercial products such as food packaging, upholstery, clothing, and cookware
- Effluent leaving the plant was higher than influent in all cases and this could be for a couple of reasons:
  - Differences in detection limits between influent and effluent samples (influent detection limits are much higher)
  - Addition of waste from haulers, leachate, recycled flow (Moores Creek)

# Cyanotoxins

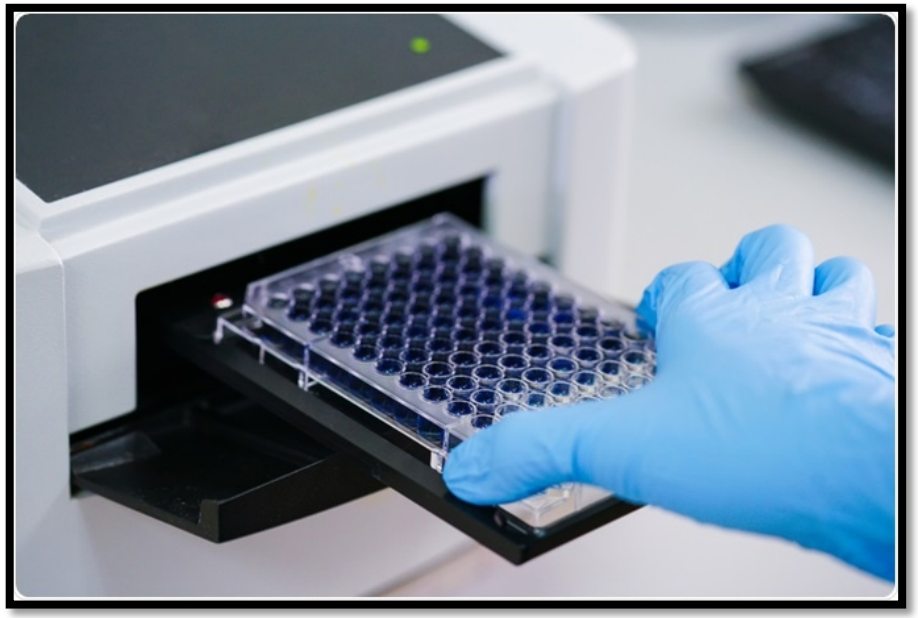
- Cyanobacteria, more commonly called blue-green algae, are often found in freshwater
- Like green algae, they can bloom and produce dense mats that cause odor problems and oxygen depletion, which is harmful to humans and aquatic life
- Unlike green algae, cyanobacteria can produce harmful toxins that can be released into the environment

# Health Effects of Cyanotoxins

- Effects from exposure to cyanotoxins can range from mild skin rash to serious illnesses
- Consuming drinking water containing elevated levels of certain cyanotoxins could cause liver and kidney damage
- Short-term exposure during recreational activities can lead to hay fever-like symptoms, skin rashes, as well as respiratory and gastrointestinal distress

# Testing for Cyanotoxins

- Last testing done in August of 2019, coinciding with detection of over 65,000 cells/mL of cyanobacteria in the South Rivanna reservoir
- Results showed no cyanotoxins present
- Additional UCMR4 testing at all plants in summer 2020 also showed no detectable cyanotoxins

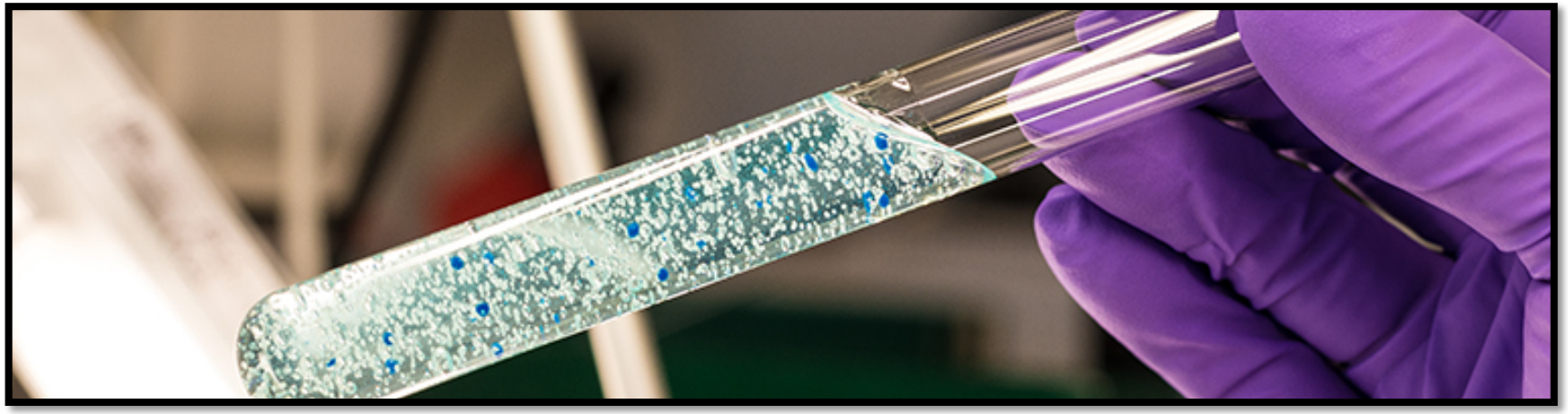


# Microplastics

- Used in many industries including agriculture, cosmetics, personal care, recreational and commercial fishing, and clothing
- Can enter water sources via runoff from land or mechanical, oxidative, and/or biological degradation of larger plastic materials
- 2018 study at Penn State revealed an average of 325 particles/liter in most brands of bottled drinking water
- Some brands contained as much 10,000 particles/liter

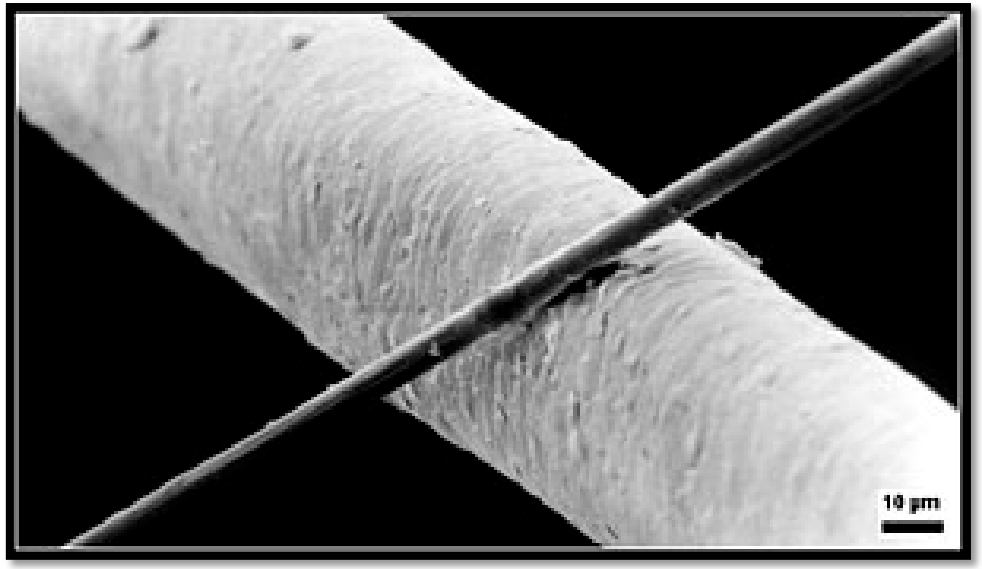
# Testing for Microplastics

- Testing methods are still being developed
- No conclusive toxicity or health effects data is available related to ingesting microplastics
- Samples must be filtered and stained with a fluorescent dye for the particles to be counted using optical microscopy
- Once quantified, particles are identified using infrared spectroscopy and comparison to a library of known plastics



# Treating for Microplastics

- Availability of studies on removal from drinking water sources is limited but it is unlikely that microplastics between 300 and 500 µm would pass through a WTP utilizing conventional filtration
- GAC filtration can remove particles about 1 – 5 µm (a strand of human hair is ~50 µm in diameter)




A 6 µm carbon filament above a 50 µm diameter human hair

# Cuyahoga River 2021

# Questions?