




# Board of Directors Meeting


November 19, 2019


2:15pm



695 Moores Creek Lane | Charlottesville, Virginia 22902-9016

434.977.2970 

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www.rivanna.org 

## **BOARD OF DIRECTORS**

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

**DATE:** November 19, 2019

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

**TIME:** 2:30 p.m.

## **AGENDA**

- 1. CALL TO ORDER**
- 2. MINUTES OF PREVIOUS BOARD MEETINGS**
  - a. Minutes of Regular Board Meeting on October 22, 2019*
- 3. RECOGNITION**
- 4. EXECUTIVE DIRECTOR'S REPORT**
- 5. ITEMS FROM THE PUBLIC**
- 6. RESPONSES TO PUBLIC COMMENTS**
- 7. CONSENT AGENDA**
  - a. Staff Report on Finance*
  - b. Staff Report on Ongoing Projects*
  - c. Staff Report on Operations*
  - d. Approval of Board Meeting Schedule for Calendar Year 2020*
  - e. Approval of Work Authorization and Capital Improvement Plan Amendment – Urban Water Demand and Safe Yield Study; Hazen and Sawyer Engineers*
- 8. OTHER BUSINESS**

(JOINT SESSION WITH THE RSWA)

  - a. Presentation: Strategic Plan Update; Katie McIlwee, Communications Manager*

(COMPLETE THE RSWA MEETING)

*b. Presentation: Comprehensive Annual Financial Report Fiscal Year Ending June 30, 2019; Mr. Robert Huff, CPA: Robinson, Farmer, Cox Associates*

*c. Presentation: Observatory and S. Rivanna WTP Construction Project Update: Scott Schiller, Engineering Manager*

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

**10. CLOSED MEETING:** *Lease or Acquisition of Real Property*

**11. ADJOURNMENT**

## GUIDELINES FOR PUBLIC COMMENT AT RIVANNA BOARD OF DIRECTORS MEETINGS

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

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

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

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

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

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





**RWSA BOARD OF DIRECTORS**  
**Minutes of Regular Meeting**  
**October 22, 2019**

A regular meeting of the Rivanna Water and Sewer Authority (RWSA) Board of Directors was held on Tuesday, October 22, 2019 at 2:30 p.m. in the 2<sup>nd</sup> floor conference room, Administration Building, 695 Moores Creek Lane, Charlottesville, Virginia.

**Board Members Present:** Lauren Hildebrand, Kathy Galvin, Mike Gaffney, Dr. Liz Palmer.

**Board Members Absent:** Jeff Richardson, Dr. Tarron Richardson, Gary O'Connell.

**Rivanna Staff Present:** David Tungate, Michelle Simpson, Austin Marrs, Andrea Terry, Victoria Fort, Jennifer Whitaker, Scott Schiller, Lonnie Wood, Dr. Bill Morris, Dyon Vega, Katie McIlwee, Bill Mawyer.

**Attorney(s) Present:** Kurt Krueger, RWSA counsel

**Also Present:** Members of the public and media representatives.

**1. CALL TO ORDER**

Mr. Gaffney called the meeting to order at 2:36 p.m.

**2. MINUTES OF PREVIOUS BOARD MEETINGS**

*a. Minutes of Regular Board Meeting on September 24, 2019*

Mr. Gaffney invited members to comment or to offer changes.

Mr. Mawyer stated that there was a correction on line 251 of the minutes which previously stated "Mr. Gaffney suggested they hold a work session" and it was more appropriately restated to "Mr. Gaffney stated that discussion could be part of a work session discussed at the Rivanna Solid Waste Authority Board meeting."

Dr. Palmer stated she had also sent a typographical correction to staff.

**Dr. Palmer moved that the Board approve the minutes of the September 24 meeting as amended. The motion was seconded by Ms. Galvin and passed unanimously (4-0). Mr. Richardson, Dr. Richardson, and Mr. O'Connell were absent from the meeting and the vote.**

**3. RECOGNITION**

There were no recognitions.

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

46 Mr. Mawyer reported that Andrea Terry had participated in the Rivanna Renaissance  
47 Conference, where she spoke about algae and talked to the Boys & Girls Club about the local  
48 water supply. He stated that she also attended the Rivanna River Flow Fest to bring people closer  
49 to the river, and the RWSA appreciates her community outreach.

50  
51 Mr. Mawyer stated that graduate students from the Darden School of Business had recently taken  
52 a tour of the wastewater treatment facility, and he and Dave Tungate had attended a Virginia  
53 Biosolids Council meeting in Richmond during which they heard national speakers from the  
54 EPA and Virginia DEQ discuss industry trends on biosolids, the PFAS<sup>1</sup> issue and pending  
55 regulations. He stated that he, David Tungate, Phil McKalips, and David Rhoades had toured the  
56 McGill Environmental Composting Facility at Waverly. He stated that David Tungate was  
57 invited to a conference in Ohio where he talked about client expectations. He stated that they  
58 continued to move forward with strategic plan goals of infrastructure planning and master  
59 planning and had been working with UVA on the Observatory Treatment Plant's lease, and the  
60 Board could expect a report in November when more members would be in attendance.

61  
62 Mr. Mawyer reported that Ms. Whitaker and her staff have been working hard on the Wholesale  
63 Water Master Metering Project and that 23 out of the 25 meters were working. He stated that the  
64 other two meters would be tested on October 24 and that a report would be produced to show the  
65 monthly usage of water by both the City and Albemarle County Service Authority over the 30-  
66 day period. He explained that the purpose of the report was to keep track of the terms of the  
67 Ragged Mountain Agreement and the allocation of the extra water storage that was created by  
68 construction of the Ragged Mountain Reservoir Dam and the cost allocation that was agreed  
69 upon to pay for that work,<sup>2</sup> and for the pipeline from South Fork Rivanna to Ragged Mountain  
70 reservoirs in the future.

71  
72 Mr. Mawyer stated that Augusta Health would be in the office on October 24 to provide flu shots  
73 for staff and that Employee Appreciation Day would be held at Michie Tavern on October 31,  
74 which the Board was invited to attend. He stated that the next two meetings would be on  
75 November 19 and December 17 – the third Tuesdays of those months – due to holiday schedules.

76  
77 **5. ITEMS FROM THE PUBLIC**

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79 **6. RESPONSES TO PUBLIC COMMENTS**

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81 **7. CONSENT AGENDA**

82 *a. Staff Report on Finance*

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84 *b. Staff Report on Ongoing Projects*

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<sup>1</sup> Ed. Note: PFAS: perfluoroalkyl and polyfluoroalkyl substances

<sup>2</sup> Ed. Note: The metering plan and cost allocation was done pursuant to the Water Cost Allocation Agreement dated January 1, 2012 among the City, ACSA and the Authority

86 c. *Staff Report on Operations*

87  
88 d. *Recommendation for Disposition of FY 2019 Year-End Results*

89  
90 e. *Approval of Capital Improvement Plan Amendment –Valve Repair-Replacement (Phase 2)*

91  
92 f. *Authorization of Professional Engineering Services for Additional Temporary Sewer Flow*  
93 *Metering – Frazier Engineering*

94  
95 Mr. Gaffney asked Board members if there were any items they would like to pull from the  
96 Consent Agenda.

97  
98 **Dr. Palmer moved that the Board approve the consent agenda as presented. The motion**  
99 **was seconded by Ms. Hildebrand and passed unanimously (4-0). Mr. Richardson, Dr.**  
100 **Richardson, and Mr. O’Connell were absent from the meeting and the vote.**

101  
102 **8. OTHER BUSINESS**

103 *Presentation: Drought Update; Director of Engineering & Maintenance, Jennifer Whitaker*

104  
105 Ms. Whitaker stated that the presentation she would be giving was slightly different than the one  
106 in the Board’s packet, noting that it was updated with rainfall data from the past few days. She  
107 stated that RWSA has a Drought Response and Contingency Plan, which was in response to state  
108 legislation for community water supply planning. She noted that the plan was a regional  
109 cooperative document that addresses regional drought response and includes Rivanna, the City of  
110 Charlottesville, Albemarle County Service Authority, and Albemarle County staff to look at key  
111 indicators in dry weather, as part of a regional drought response.

112  
113 Ms. Whitaker stated that the Rivanna Regional Drought Response Committee convened the  
114 week prior, and she outlined the five guiding points of the plan that assess whether a drought  
115 watch, warning, or emergency would need to be issued for the regional water supply. She  
116 continued to say that the information utilized for this included the Virginia Drought Monitoring  
117 Task Force, the state subcommittee’s monthly report which uses information from the DEQ,  
118 declarations by the Governor, weather forecasts, a local Oasis hydrologic model, and USGS  
119 DEQ stream flow data. She referenced a map and stated that as of October 15, there was a high  
120 level of concern regarding the amount of precipitation and drought conditions throughout the  
121 state — and the Governor had declared a drought watch for the entire state of Virginia.

122  
123 Ms. Whitaker stated that precipitation at that time was in an emergency state, groundwater and  
124 stream flows were in a watch state, and reservoirs were in a normal conditions state. She stated  
125 that the day prior to the meeting there were still watch areas in the state, but most regions had  
126 recovered back to a normal state due to recent rain.

127  
128 Ms. Galvin asked how many inches of rain had fallen since October 15<sup>th</sup>.

Ms. Whitaker responded that it was coming up in her presentation. She continued to say that there was a U.S. Drought Monitor report that showed on October 8, there were increasing areas of Virginia under severe drought — but she expected most of that to retreat when the updated drought map is provided. She noted that the Governor’s watch advisory had been declared on October 11, referencing the map provided.

Ms. Whitaker stated that her staff had made a report on the precipitation from the past few days as well as a forecast for the next few days, with about an inch of rain in the area on October 16; 2-2.5 inches of rain on October 20, and forecasts for a half inch total on October 22, as well as a wet forecast for October 25-28 and 30-31. She stated that as of October 14, there had been virtually no rain for the month in this region, and September was also extremely dry – the driest September in historical record for some locations in the state. Ms. Whitaker noted that the region was about 5.5 inches below normal, and as of this morning they were about 3.75 inches below, based on the National Weather Service data.

Ms. Whitaker reported that within a week, the reservoir volumes had increased from 91% capacity to 92%. She stated that it was important to note that South Fork was at 100% for both the current and previous weeks – with almost a foot of water going over the dam two days before the Board meeting. She presented the Oasis hydrologic watershed model that uses data as to how the reservoir system operates – running all 120 years of history through the model – then it predicts the next 12 weeks of rainfall based on that entire history. She noted that if there was greater than a 20% chance that the total urban reservoir storage would be below 75% in 12 weeks, this triggers concern and it becomes a potential drought watch. She stated that at the beginning of October, the model showed only a 2% chance of being below the 75%, and she predicted that if the model were run today, there was a 0% chance of being below that 75%.

Mr. Gaffney asked if this was because in October there was more rainfall.

Ms. Whitaker confirmed that and stated that late October to early November was the start of the rainy season locally.

Ms. Whitaker reported that stream flow data and gauging data suggested that although they were lower than the median daily stream flow, and today the Mechums gauge today shows 40 CFS versus a median of 35. She summarized that there were adverse climate conditions in September and October that were leading to a significant drought period and that if it had not rained in the past week, there would be greater concern for drought conditions. She noted that as of the previous week, all urban reservoirs were above 90% total volume – and that has improved even further, with ample water supply for the community. She stated that the reservoirs have been monitored with different parameters of water intake to the treatment plants to optimize the reservoirs, and staff presented this information with the hope that the Board would have future guidance for the issue.

Ms. Galvin commented that the public has not reached out to her about drought concerns.

Dr. Palmer stated that she had received comments about how dry it had been, but that everyone knew how rainy it had been in the past week. She asked what they suggested for the future.

176  
177 Mr. Mawyer responded that his suggestion was to continue to monitor the drought conditions. He  
178 stated that the Authority's protocol is for staff to come before the Board and ask for authority to  
179 notify the City, the Service Authority, and the County to implement voluntary water restrictions,  
180 which was not currently necessary because the South Fork Rivanna Reservoir has a significant  
181 overflow. He noted that they would monitor conditions until the November meeting and report  
182 back to the Board, and if dry conditions returned and South Fork Rivanna Reservoir went below  
183 the top of the dam, staff would request action from the Board at the November 19 meeting.

184  
185 Ms. Hildebrand commented that on the map of drought conditions in the state, even though there  
186 was a large area affected by dry weather conditions, the reservoir levels were normal. She noted  
187 that the primary concerns were for agriculture.

188  
189 Mr. Mawyer stated that in their research, they found that the rainfall from 2018 was still  
190 benefiting the state – particularly groundwater levels – and they weren't getting the water losses  
191 they would typically get otherwise, which lead to drought conditions.

192  
193 Mr. Gaffney stated that he recalled the 2002 drought in Virginia was caused partially by the very  
194 low groundwater levels, and anything that rained went into the ground instead of the reservoir –  
195 which was the result of three years of little rain.

196  
197 Dr. Palmer stated that although the evidence may be anecdotal, the spring on her property  
198 stopped running during the drought of 2002 and had not stopped running at all this year.

199  
200 Mr. Mawyer stated that they had entered a period where the vegetation was not absorbing as  
201 much water, so the runoff amounts are greater – and the evapotranspiration is not as high now as  
202 it would be in the spring and summer. He continued to say that the recommendation was to  
203 continue to monitor the situation and discuss the topic further in November, meeting with the  
204 Drought Committee (comprised of him, Ms. Hildebrand, Mr. O'Connell, and Lance Stewart  
205 from Albemarle County). He noted that they had only met once in his three years with Rivanna.

206  
207 *Presentation: Series 2019 Refunding Revenue Bond; Director of Finance, Lonnie Wood*

208  
209 Mr. Wood presented to the Board and stated that a few months ago, long term interest rates took  
210 a steep decline in the bond market, so the outstanding debts were reanalyzed to determine if there  
211 were any candidates to refinance. He stated they identified the Series 2012A bond, which was  
212 issued through the Virginia Resource Authority's pooled-fund bond program. He stated that the  
213 call date for the bond is 2022, when it can be paid off early, and his recommendation was to  
214 refinance about \$17.7 million of the Series 2012A bond. He stated that if the interest rates stay  
215 where they are currently, the potential savings would be around \$2.1 million in cash flow savings  
216 and \$1.5 million in net present value savings, measured over time. He noted that the bond would  
217 still have the same term of 24 years.

218  
219 Mr. Wood stated that the resolution in the Board packet recommends approving a not to exceed  
220 the amount of \$19 million, and it was higher than the \$17 million figure because the bond buyers  
221 could potentially bid the bond at a higher rate under a discount scenario. He stated the other "not

to exceed parameters” are that the cumulative bond interest is not to go over 4.5% and if it does, Rivanna will pull its bond out of that deal, and if it has a net present value savings of less than 7%, they would not participate in the bond. He stated that the resolution also authorizes the supplemental trust amendment, which brings the bond into standing with all the other bonds in parity so there is not preference for any bond, and the second is the VRA financing agreement. He stated that Mr. Krueger and several other attorneys, as well as the bond council, have approved the agreement. He noted that November 6 was the date for signing the bond agreement.

Mr. Mawyer asked if they needed to approve the resolution.

Mr. Wood confirmed that they did.

Ms. Galvin asked if they tracked the interest rates in order to know when it’s time to call.

Mr. Wood stated that it was a combination of the interest rate and the call date, and several years ago there was a change in law that prohibits refinancing untaxed bonds. He stated that the bond in question would be replaced with a taxable bond so that it could be refinanced, which further shows how low the current interest rates are.

Mr. Mawyer stated that the Authority’s financial advisor, Davenport & Company, helped advise on when it was a good time to refinance.

Mr. Krueger stated there is a five-page resolution to approve the 31st Supplemental Agreement of Trust of the Local Bond Sale and Financing Agreement. He stated that bond counsel, Mr. Wood, and he had all reviewed it, and that the Board would be authorizing the Authority to enter into those agreements and authorizing Mr. Gaffney to execute those agreements on behalf of the Authority.

**Dr. Palmer moved that the Board approve the resolution authorizing the issuance, sale, and award of the taxable regional water and sewer refunding bonds and the amount to not exceed \$19,545,000.**

**Mr. Gaffney asked if there was any discussion.**

**Mr. Krueger asked for a roll call vote, which was given as follows: Ms. Hildebrand, aye; Ms. Galvin, aye; Mr. Gaffney, aye; Dr. Palmer, aye. Mr. Richardson, Dr. Richardson, and Mr. O’Connell were absent from the meeting and the vote.**

*Presentation: Corrosion Control Inhibitor Update; Director of Operations, Dave Tungate*

Mr. Tungate presented to the Board and stated that Rivanna has studied corrosion control products for the past two years to look at current practices as part of operations, with the inhibitor added to finished water to prevent lead and copper from leaching from pipes and plumbing fixtures into the drinking water. He noted that they have been adding a corrosion control product to drinking water in the region for the past 30 years. He stated that as part of operational optimization, it was decided that they would look at the corrosion inhibitor program

— and historically, the water levels had shown very low amounts of copper and lead.

Mr. Tungate stated that a consultant performed an analysis of the corrosion control program to evaluate the effectiveness of the corrosion inhibitors for all five of the Rivanna water plants, which was done in a laboratory setting to evaluate the impacts of switching from a polyphosphate product to an orthophosphate corrosion inhibitor. He stated that they used finished water from all five plants, which is something unique they do as part of their experimental design. He noted that they also analyzed for unintended consequences of switching products, such as discolored water.

Mr. Tungate stated that this analysis was done by taking water samples from the five Rivanna plants to test for lead and copper. He explained that they took the samples twice a week, analyzing it for lead and copper concentrations, then changing the water out and putting new water in. He stated that they would then let it sit and analyze how much of the metals were leached into the water samples. Mr. Tungate emphasized that this was a relative comparison, but the water treated with the polyphosphate corrosion inhibitor had higher concentrations of lead and copper than an orthophosphate polyphosphate blend or an orthophosphate alone. He stated that the results of the test were specifically for the water samples from the lab, not a general overview of what was in the community's drinking water, so these concentrations could not be applied across the board.

Mr. Tungate reported that in 2019, lead concentrations were less than two parts per billion, with the action level – the point at which a water system must change its treatment process – being 15 parts per billion. He noted that the actual numbers from the water supply were significantly lower than the threshold for needing to change the corrosion inhibitor. He stated that the copper levels were higher than that of lead, but the action level is 1,300 parts per billion – with the action levels in the current local system being 97 ppb, 21 ppb, 74 ppb, and 64 ppb. Mr. Tungate noted that the decision to make the change was proactive, as it was time to upgrade the technology.

Ms. Galvin asked if it was known as to why there was such a range of numbers in the data.

Mr. Tungate responded that it was difficult to say, but all the samples were significantly lower than the federal threshold action level of 1300 ppb.

Mr. Mawyer asked if these were federal standards.

Mr. Tungate confirmed that it was the 1996 Lead and Copper rule, which limits exposure to lead and copper lining in drinking water systems.

Mr. Tungate reported that Rivanna proposes to change the corrosion inhibitor in November in Crozet to an ortho-polyphosphate blend, taking a conservative approach by not completely switching the product. He stated that Crozet is a good place to start, with a new chemical feed, equipment and room purchased as part of the GAC project. He noted that this would be followed by implementation in Scottsville, then the Urban system. He stated that Rivanna was coordinating with ACSA and the City to develop a customer communication plan and a

monitoring program to check the performance of the product as it leaves the treatment plant, as well as analyzing samples as they are distributed into the system.

Dr. Palmer asked if the main point of concern was discoloration of water.

Mr. Tungate responded that discoloration of water could be an issue because it was seen in the lab.

Dr. Palmer asked what caused the discoloration.

Mr. Tungate explained that the polyphosphate has a sequestering capacity that allows it to keep the iron and manganese solution, and reducing the polyphosphate concentration could reduce the benefits – which is why they are going with a blend.

Ms. Galvin asked if it affected taste of water.

Mr. Tungate stated that it did not.

Mr. Mawyer asked about whether it would be suitable for aquariums.

Mr. Tungate confirmed that it would, and stated there were communications with the dialysis center at UVA and at Sentara and Martha Jefferson, and that it would not impact dialysis centers.

Mr. Gaffney asked how the new inhibitor's effectiveness with lead would be measured if the lead levels were already so low.

Mr. Tungate replied that they would be taking a series of background tests in each of the systems before the change is made. He continued that once the change is made, samples will be collected once a week and they would be coordinating with the County and City that upcoming Friday to select sentinel homes to be monitored for copper and lead levels after the transition. He continued to say that VDH has given approval to make the change, but they want to see an implementation plan.

Dr. Palmer asked what part of the plan was the optimization.

Mr. Tungate stated that most utilities currently use the ortho-polyphosphate blend and it protects from corrosion more so than a polyphosphate does alone, which was typical 30 years ago. He noted that the ortho provided more protection from corrosion.

Mr. Gaffney asked what the cost of the change would be.

Mr. Tungate stated it would be a minimal change with little to no cost difference, and they would not have to mix it as it came already mixed in 55-gallon totes.

## **9. OTHER ITEMS FROM BOARD/STAFF NOT ON AGENDA**



360 There were none.

361

362 ***10. CLOSED MEETING***

363 There was none.

364

365 ***11. ADJOURNMENT***

366 **At 3:17 p.m., Ms. Galvin moved that the Board adjourn the meeting. The motion was**  
367 **seconded by Ms. Hildebrand and passed unanimously (4-0). Mr. O'Connell, Mr.**  
368 **Richardson, and Dr. Richardson were absent from the meeting and the vote.**

369



## MEMORANDUM

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

**FROM: BILL MAWYER, EXECUTIVE DIRECTOR**

**SUBJECT: EXECUTIVE DIRECTOR'S REPORT**

**DATE: NOVEMBER 19, 2019**

### *STRATEGIC PLAN GOAL: WORKFORCE DEVELOPMENT*

#### **Staff Safety and Training**

We sponsored an Excavation and Trench Safety class attended by 22 of our employees along with 8 employees from the ACSA. The instructor was provided by PVCC. With instruction from the Charlottesville Fire Department, we also sponsored Fire Extinguisher training attended by 14 of our employees.

### *STRATEGIC PLAN GOAL: COMMUNICATION AND COLLABORATION*

#### **Community Outreach**

Victoria Fort, Senior Civil Engineer, spoke at UVA's "Major Night" hosted by the Civil Engineering Department. She spoke to first year students about their choices of majors.

Dave Tungate, Lonnie Wood and I attended an informational meeting sponsored by our insurance provider, VRSA, with managers of water and wastewater authorities from northern Virginia (Loudoun, Alexandria, Fairfax, Fauquier, Prince William, Upper Occoquan) and ACSA. The agenda included discussions about risk management, safety, and human resources (recruitment, retention, merit pay).

#### **Land Use and Environmental Planning Committee (LUEPC)**

The City, County and University plan to dissolve their Planning and Coordination Council, and to establish a new working group of staff professionals to consider local land use, planning, stormwater, solid waste, sustainability and other infrastructure issues. The Rivanna Executive Director is a member of the new LUEPC.

### *STRATEGIC PLAN GOAL: INFRASTRUCTURE AND MASTER PLANNING*

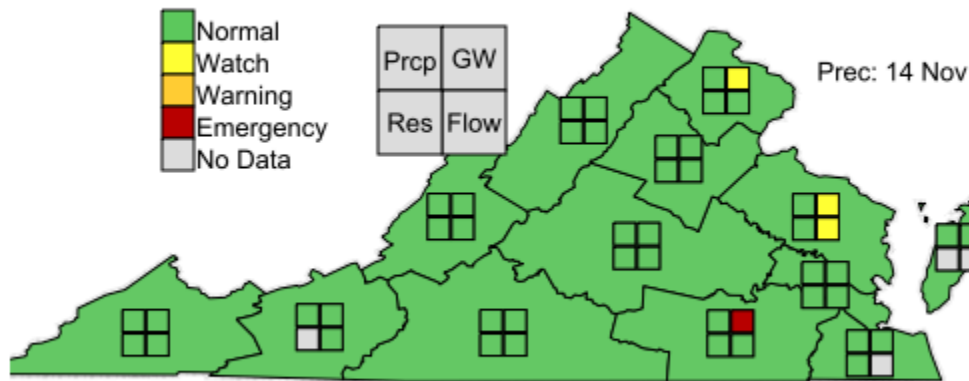
#### **Drought Update**

Significant rainfall in October has reduced the concern for drought conditions in our area and across the State. The recent widespread rains reflect the seasonal switch from

primarily scattered thunderstorm-based precipitation, to precipitation primarily associated with larger-scale storm systems and frontal passages. The growing season (with its high evapotranspiration rates) is behind us. Moving closer to winter, temperatures are dropping, days are getting shorter, the sun is lower in the sky—all leading to large reductions in the amount of moisture lost to evaporation and uptake by plants.

Charlottesville October Precipitation (in.)	
	10/31/2019
October 2019	7.51
October normal	3.74
Year-to-date	35.90
Normal for Year-to-date	35.73
Departure from normal in October	+4.40

The National Weather Service Monthly Drought Outlook (released October 31, 2019) showed a likelihood for drought removal in Virginia during November, 2019. The Virginia Drought Assessment and Response Task Force plans to recommend the removal of the current statewide drought watch advisory.



We began transferring water from the Sugar Hollow Reservoir to the Ragged Mtn Reservoir (RMR) on October 28, 2019 to regain the normal water storage capacity, which was about 130 million gallons (MG) below normal storage capacity of 1.4 billion gallons.

Note:

- We transfer about 3 million gallons per day (MGD) through the Sugar Hollow pipeline, withdraw about 1.5 MGD from RMR for treatment at the Observatory WTP for a net gain of about 1.5 MGD in RMR. With a deficit of 130 MG, it will take about 90 days to refill Ragged Mtn Reservoir ( $130/1.5=87$ ).

- With the future South Rivanna to Ragged Mtn Pipeline, we will be able to transfer about 25 MGD, and after withdrawing 1.5 MG for treatment, could refill Ragged Mtn Reservoir in about 6 days ( $25 - 1.5 = 23.5$ :  $130 \text{ MG} / 23.5 \text{ MGD} = 5.5 \text{ days}$ ).

### **Wholesale Water Master Metering**

Calibration verification for all 25 meters has been completed. The system is substantially complete and operational. An example water usage report with October data is included in the Operations Report. A presentation of this project will be provided to the Board in December.

### **Buck Mountain Property Surcharge**

If approved by the ACSA Board of Directors on November 21, 2019, termination of this surcharge on new water connections will have been approved by Rivanna, City Council and the Board of Supervisors, and will no longer be charged.

### **Bond Refinance Savings**

A refinancing of \$17.6 M of our existing revenue bonds was successfully completed through the Va Resources Authority. By gaining lower interest rates, this refinancing will save about \$95,000 annually in debt service, totaling about \$2.3 M over 24 years.

## ***STRATEGIC PLAN GOAL: OPERATIONAL OPTIMIZATION***

### **Biosolids Composting**

David Tungate, Phil McKalips, David Rhoades and I toured Spotsylvania County's biosolids composting facility at the Livingston Landfill. This facility composts and sells compost to the public. We are reviewing opportunities to partner with this facility as a destination for our biosolids.



## MEMORANDUM

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

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

**REVIEWED:** BILL MAWYER, EXECUTIVE DIRECTOR

**SUBJECT:** OCTOBER MONTHLY FINANCIAL SUMMARY – FY 2020

**DATE:** NOVEMBER 19, 2019

Urban Water flow and rate revenues are 16% over budget estimates for the first four months of this fiscal year, and Urban Wastewater flow and rate revenues are 6% over budget. Revenues and expenses are summarized in the table below:

	Urban Water	Urban Wastewater	Total Other Rate Centers	Total Authority
<b>Operations</b>				
Revenues	\$ 2,979,710	\$ 3,106,934	\$ 755,549	\$ 6,842,193
Expenses	(2,616,505)	(2,821,122)	(706,281)	(6,143,908)
Surplus (deficit)	\$ 363,205	\$ 285,812	\$ 49,268	\$ 698,285
<b>Debt Service</b>				
Revenues	\$ 2,306,057	\$ 3,011,937	\$ 502,112	\$ 5,820,106
Expenses	(2,259,759)	(2,908,215)	(499,079)	(5,667,053)
Surplus (deficit)	\$ 46,298	\$ 103,722	\$ 3,033	\$ 153,053
<b>Total</b>				
Revenues	\$ 5,285,767	\$ 6,118,871	\$ 1,257,661	\$ 12,662,299
Expenses	(4,876,264)	(5,729,337)	(1,205,360)	(11,810,961)
Surplus (deficit)	\$ 409,503	\$ 389,534	\$ 52,301	\$ 851,338

Urban Wastewater received the annual Nutrient Exchange Credit of \$78,763 and billed Albemarle County for the annual septage receiving support of \$109,441 in July.

Some expense categories are over the prorated year-to-date budget as follows, but should even out over the course of the year compared to budget estimates, unless otherwise noted:

- A. Personnel Costs (Urban Water, Administration – pages 2, 8) – The annual contributions to health savings accounts and wages paid to summer interns are causing this category to exceed the prorated budget for the year and will even out as the fiscal year progresses.
- B. Professional Services (Urban Water, Urban Wastewater – pages 2, 5) – Urban Water has spent more than the total annual amount budgeted for legal fees related to the Observatory

plant lease and Buck Mountain land issues. Urban Wastewater is over the prorated budget for engineering/technical services, but it is not over the annual budget.

- C. Other Services and Charges (Urban Water – page 2) – Urban Water is over the prorated budget due to the \$15,000 annual contribution to the Rivanna Conservation Alliance related to watershed management, and utilities are running high. These are budgeted items, so the budget vs. actual will likely even out over the fiscal year.
- D. Communications (Urban Water – page 2) – Urban Water’s telephone and data service charges are running high this year and will likely exceed the annual budget by the end of this year.
- E. Information Technology (Administration, Engineering – pages 8, 11) – Administration paid \$25,000 for the annual ArcGIS software license agreement, and Engineering made a \$15,000 purchase of a mobile form application for GIS software. These are budgeted items, so the budget vs. actual will even out over the fiscal year.
- F. Operations & Maintenance (Glenmore Wastewater, Administration, Lab – pages 6, 8, 10) – Glenmore Wastewater is over the prorated budget on equipment maintenance and repair costs. The Administration department paid \$12,600 in July for some heating and air conditioning work in the Administration building. The Lab has spent more than the prorated budget for Chemicals.
- G. Equipment Purchases (Urban Water – page 2) – Urban Water is over the prorated budget for small equipment purchases.

**2019 Bond issue update** – The refinancing (Advance Refunding) Bond presented and approved by the Board at the October meeting was very successful. The bond was sold on October 30 at a par amount of \$17.6 million. The interest savings on this refinancing over the remaining life of the original bond, which was 24 years, is \$2.280 million. The savings in the current fiscal year (FY2020) will be \$162,000, and roughly \$95,000 per year thereafter. This resulted in a 10.4% net present value savings on the existing bond.

Attachments

**Rivanna Water & Sewer Authority**  
**Monthly Financial Statements - October 2019**  
**Fiscal Year 2020**

**Consolidated****Revenues and Expenses Summary****Operating Budget vs. Actual**

## Notes

**Revenues**

	<i>Budget</i> <i>FY 2020</i>	<i>Budget</i> <i>Year-to-Date</i>	<i>Actual</i> <i>Year-to-Date</i>	<i>Budget</i> <i>vs. Actual</i>	<i>Variance</i> <i>Percentage</i>
Operations Rate Revenue	\$ 17,381,293	\$ 5,793,764	\$ 6,335,653	\$ 541,888	9.35%
Lease Revenue	100,000	33,333	39,593	6,259	18.78%
Admin., Maint. & Engineering Revenue	478,000	159,333	167,881	8,547	5.36%
Other Revenues	562,478	187,493	449,669	262,176	139.83%
Use of Reserves	667,000	222,333	-	(222,333)	-100.00%
Interest Allocation	31,500	10,500	17,278	6,778	64.56%
<b>Total Operating Revenues</b>	<b>\$ 19,220,271</b>	<b>\$ 6,406,757</b>	<b>\$ 7,010,073</b>	<b>\$ 603,316</b>	<b>9.42%</b>

**Expenses**

Personnel Cost	<b>A</b>	\$ 8,760,078	\$ 2,757,809	\$ 2,782,825	\$ (25,016)	-0.91%
Professional Services	<b>B</b>	666,050	222,017	303,809	(81,792)	-36.84%
Other Services & Charges	<b>C</b>	2,980,612	993,537	1,011,533	(17,995)	-1.81%
Communications	<b>D</b>	142,593	47,531	66,257	(18,726)	-39.40%
Information Technology	<b>E</b>	352,750	117,583	133,156	(15,572)	-13.24%
Supplies		46,180	15,393	9,653	5,740	37.29%
Operations & Maintenance	<b>F</b>	5,069,478	1,689,826	1,585,781	104,045	6.16%
Equipment Purchases	<b>G</b>	359,550	119,850	137,776	(17,926)	-14.96%
Depreciation		843,000	281,000	281,000	-	0.00%
Reserve Transfers		-	-	-	-	
<b>Total Operating Expenses</b>		<b>\$ 19,220,291</b>	<b>\$ 6,244,546</b>	<b>\$ 6,311,788</b>	<b>\$ (67,242)</b>	<b>-1.08%</b>
<b>Operating Surplus/(Deficit)</b>		<b>\$ (20)</b>	<b>\$ 162,211</b>	<b>\$ 698,285</b>		

**Debt Service Budget vs. Actual****Revenues**

Debt Service Rate Revenue	\$ 15,861,022	\$ 5,287,007	\$ 5,287,008	\$ 1	0.00%
Septage Receiving Support - County	109,440	36,480	109,441	72,961	200.00%
Buck Mountain Surcharge	125,900	41,967	69,600	27,633	65.85%
Buck Mountain Lease Revenue	1,600	533	2,120	1,587	297.49%
Trust Fund Interest	158,200	52,733	102,871	50,137	95.08%
Reserve Fund Interest	690,000	230,000	249,066	19,066	8.29%
<b>Total Debt Service Revenues</b>	<b>\$ 16,946,162</b>	<b>\$ 5,648,721</b>	<b>\$ 5,820,106</b>	<b>\$ 171,385</b>	<b>3.03%</b>

**Debt Service Costs**

Total Principal & Interest	\$ 14,473,236	\$ 4,824,412	\$ 4,824,412	\$ -	0.00%
Reserve Additions-Interest	690,000	230,000	249,066	(19,066)	-8.29%
Debt Service Ratio Charge	725,000	241,667	241,667	-	0.00%
Reserve Additions-CIP Growth	1,055,725	351,908	351,908	-	0.00%
<b>Total Debt Service Costs</b>	<b>\$ 16,943,961</b>	<b>\$ 5,647,987</b>	<b>\$ 5,667,053</b>	<b>\$ (19,066)</b>	<b>-0.34%</b>
<b>Debt Service Surplus/(Deficit)</b>	<b>\$ 2,201</b>	<b>\$ 734</b>	<b>\$ 153,053</b>		

**Summary**

<b>Total Revenues</b>	\$ 36,166,433	\$ 12,055,478	\$ 12,830,179	\$ 774,702	6.43%
<b>Total Expenses</b>	36,164,252	11,892,533	11,978,841	(86,308)	-0.73%
<b>Surplus/(Deficit)</b>	<b>\$ 2,181</b>	<b>\$ 162,944</b>	<b>\$ 851,338</b>		

**Rivanna Water & Sewer Authority**  
**Monthly Financial Statements - October 2019**

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

<i>Budget FY 2020</i>	<i>Budget Year-to-Date</i>	<i>Actual Year-to-Date</i>	<i>Budget vs. Actual</i>	<i>Variance Percentage</i>
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**Operating Budget vs. Actual**

Notes

**Revenues**

Operations Rate Revenue	\$ 7,118,541	\$ 2,372,847	\$ 2,752,981	\$ 380,134	16.02%
Lease Revenue	70,000	23,333	29,230	5,896	25.27%
Miscellaneous	-	-	190,294	190,294	
Use of Reserves	600,000	200,000	-	(200,000)	-100.00%
Interest Allocation	13,200	4,400	7,205	2,805	63.75%
<b>Total Operating Revenues</b>	<b>\$ 7,801,741</b>	<b>\$ 2,600,580</b>	<b>\$ 2,979,710</b>	<b>\$ 379,129</b>	<b>14.58%</b>

**Expenses**

Personnel Cost	<b>A</b>	\$ 1,861,134	\$ 588,492	\$ 599,376	\$ (10,884)	-1.85%
Professional Services	<b>B</b>	207,200	69,067	105,898	(36,832)	-53.33%
Other Services & Charges	<b>C</b>	574,963	191,654	262,574	(70,920)	-37.00%
Communications	<b>D</b>	65,100	21,700	28,495	(6,795)	-31.31%
Information Technology		77,000	25,667	20,540	5,127	19.98%
Supplies		6,100	2,033	1,817	216	10.63%
Operations & Maintenance		2,356,590	785,530	722,815	62,715	7.98%
Equipment Purchases	<b>G</b>	50,500	16,833	33,858	(17,025)	-101.14%
Depreciation		300,000	100,000	100,000	-	0.00%
Reserve Transfers		-	-	-	-	
<b>Subtotal Before Allocations</b>		<b>\$ 5,498,587</b>	<b>\$ 1,800,976</b>	<b>\$ 1,875,373</b>	<b>\$ (74,397)</b>	<b>-4.13%</b>
Allocation of Support Departments		2,303,155	729,296	741,132	(11,836)	-1.62%
<b>Total Operating Expenses</b>		<b>\$ 7,801,742</b>	<b>\$ 2,530,272</b>	<b>\$ 2,616,505</b>	<b>\$ (86,232)</b>	<b>-3.41%</b>
<b>Operating Surplus/(Deficit)</b>		<b>\$ (1)</b>	<b>\$ 70,308</b>	<b>\$ 363,205</b>		

**Debt Service Budget vs. Actual**

**Revenues**

Debt Service Rate Revenue	\$ 6,178,598	\$ 2,059,533	\$ 2,059,532	\$ (1)	0.00%
Trust Fund Interest	54,000	18,000	35,079	17,079	94.88%
Reserve Fund Interest	387,000	129,000	139,726	10,726	8.31%
Buck Mountain Surcharge	125,900	41,967	69,600	27,633	65.85%
Lease Revenue	1,600	533	2,120	1,587	297.49%
<b>Total Debt Service Revenues</b>	<b>\$ 6,747,098</b>	<b>\$ 2,249,033</b>	<b>\$ 2,306,057</b>	<b>\$ 57,024</b>	<b>2.54%</b>

**Debt Service Costs**

Total Principal & Interest	\$ 5,223,498	\$ 1,741,166	\$ 1,741,166	\$ -	0.00%
Reserve Additions-Interest	387,000	129,000	139,726	(10,726)	-8.31%
Debt Service Ratio Charge	400,000	133,333	133,333	-	0.00%
Reserve Additions-CIP Growth	736,600	245,533	245,533	-	0.00%
<b>Total Debt Service Costs</b>	<b>\$ 6,747,098</b>	<b>\$ 2,249,033</b>	<b>\$ 2,259,759</b>	<b>\$ (10,726)</b>	<b>-0.48%</b>
<b>Debt Service Surplus/(Deficit)</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 46,298</b>		

**Rate Center Summary**

<b>Total Revenues</b>	\$ 14,548,839	\$ 4,849,613	\$ 5,285,767	\$ 436,154	8.99%
<b>Total Expenses</b>	14,548,840	4,779,305	4,876,264	(96,959)	-2.03%
<b>Surplus/(Deficit)</b>	<b>\$ (1)</b>	<b>\$ 70,308</b>	<b>\$ 409,503</b>		
<b>Costs per 1000 Gallons Operating and DS</b>	\$ 2.30		\$ 1.99		
	\$ 4.28		\$ 3.71		
<b>Thousand Gallons Treated or Flow (MGD)</b>	3,397,700	1,132,567	1,314,072	181,505	16.03%
	9.309		10.684		



**Rivanna Water & Sewer Authority**  
**Monthly Financial Statements - October 2019**

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

<i>Budget FY 2020</i>	<i>Budget Year-to-Date</i>	<i>Actual Year-to-Date</i>	<i>Budget vs. Actual</i>	<i>Variance Percentage</i>
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**Operating Budget vs. Actual**

Notes

**Revenues**

Operations Rate Revenue	\$ 1,028,808	\$ 342,936	\$ 342,936	\$ -	0.00%
Lease Revenues	30,000	10,000	10,363	363	3.63%
Use of Reserves	52,000	17,333	-	(17,333)	-100.00%
Interest Allocation	1,800	600	1,002	402	67.02%
<b>Total Operating Revenues</b>	<b>\$ 1,112,608</b>	<b>\$ 370,869</b>	<b>\$ 354,301</b>	<b>\$ (16,568)</b>	<b>-4.47%</b>

**Expenses**

Personnel Cost	\$ 300,589	\$ 95,091	\$ 95,451	\$ (361)	-0.38%
Professional Services	12,850	4,283	-	4,283	100.00%
Other Services & Charges	137,816	45,939	40,382	5,557	12.10%
Communications	4,950	1,650	2,178	(528)	-31.97%
Information Technology	2,600	867	278	589	67.94%
Supplies	1,395	465	387	78	16.76%
Operations & Maintenance	398,400	132,800	80,840	51,960	39.13%
Equipment Purchases	6,500	2,167	4,041	(1,874)	-86.50%
Depreciation	30,000	10,000	10,000	-	0.00%
Reserve Transfers	-	-	-	-	-
<b>Subtotal Before Allocations</b>	<b>\$ 895,100</b>	<b>\$ 293,261</b>	<b>\$ 233,557</b>	<b>\$ 59,704</b>	<b>20.36%</b>
Allocation of Support Departments	217,513	68,915	69,639	(724)	-1.05%
<b>Total Operating Expenses</b>	<b>\$ 1,112,613</b>	<b>\$ 362,176</b>	<b>\$ 303,196</b>	<b>\$ 58,981</b>	<b>16.29%</b>
<b>Operating Surplus/(Deficit)</b>	<b>\$ (5)</b>	<b>\$ 8,693</b>	<b>\$ 51,105</b>		

**Debt Service Budget vs. Actual**

**Revenues**

Debt Service Rate Revenue	\$ 1,311,312	\$ 437,104	\$ 437,104	\$ -	0.00%
Trust Fund Interest	5,500	1,833	3,600	1,767	96.39%
Reserve Fund Interest	21,500	7,167	7,721	554	7.74%
<b>Total Debt Service Revenues</b>	<b>\$ 1,338,312</b>	<b>\$ 446,104</b>	<b>\$ 448,426</b>	<b>\$ 2,322</b>	<b>0.52%</b>

**Debt Service Costs**

Total Principal & Interest	\$ 1,230,815	\$ 410,272	\$ 410,272	\$ -	0.00%
Reserve Additions-Interest	21,500	7,167	7,721	(554)	-7.74%
Reserve Additions-CIP Growth	86,000	28,667	28,667	-	0.00%
<b>Total Debt Service Costs</b>	<b>\$ 1,338,315</b>	<b>\$ 446,105</b>	<b>\$ 446,659</b>	<b>\$ (554)</b>	<b>-0.12%</b>
<b>Debt Service Surplus/(Deficit)</b>	<b>\$ (3)</b>	<b>\$ (1)</b>	<b>\$ 1,766</b>		

**Rate Center Summary**

<b>Total Revenues</b>	\$ 2,450,920	\$ 816,973	\$ 802,727	\$ (14,247)	-1.74%
<b>Total Expenses</b>	2,450,928	808,281	749,855	58,426	7.23%
<b>Surplus/(Deficit)</b>	<b>\$ (8)</b>	<b>\$ 8,692</b>	<b>\$ 52,871</b>		
<b>Costs per 1000 Gallons</b>	\$ 5.59		\$ 3.81		
<b>Operating and DS</b>	\$ 12.31		\$ 9.41		
<b>Thousand Gallons Treated</b>	199,053	66,351	79,660	13,309	20.06%
<b>Flow (MGD)</b>	0.545		0.648		

Rivanna Water & Sewer Authority  
Monthly Financial Statements - October 2019

Scottsville Water Rate Center  
Revenues and Expenses Summary

<i>Budget FY 2020</i>	<i>Budget Year-to-Date</i>	<i>Actual Year-to-Date</i>	<i>Budget vs. Actual</i>	<i>Variance Percentage</i>
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**Operating Budget vs. Actual**

Notes

**Revenues**

Operations Rate Revenue	\$ 520,812	\$ 173,604	\$ 173,604	\$ -	0.00%
Use of Reserves	15,000	5,000	-	(5,000)	-100.00%
Interest Allocation	800	267	449	183	68.47%
<i>Total Operating Revenues</i>	<b>\$ 536,612</b>	<b>\$ 178,871</b>	<b>\$ 174,053</b>	<b>\$ (4,817)</b>	<b>-2.69%</b>

**Expenses**

Personnel Cost	\$ 197,349	\$ 62,354	\$ 62,177	\$ 177	0.28%
Professional Services	20,000	6,667	-	6,667	100.00%
Other Services & Charges	33,318	11,106	6,519	4,587	41.30%
Communications	3,430	1,143	1,924	(781)	-68.29%
Information Technology	800	267	320	(53)	-20.04%
Supplies	410	137	142	(5)	-3.62%
Operations & Maintenance	121,340	40,447	30,422	10,024	24.78%
Equipment Purchases	3,200	1,067	5,405	(4,339)	-406.76%
Depreciation	20,000	6,667	6,667	(0)	0.00%
Reserve Transfers	-	-	-	-	
<i>Subtotal Before Allocations</i>	<b>\$ 399,847</b>	<b>\$ 129,854</b>	<b>\$ 113,577</b>	<b>\$ 16,277</b>	<b>12.53%</b>
Allocation of Support Departments	136,770	43,415	43,209	206	0.47%
<i>Total Operating Expenses</i>	<b>\$ 536,617</b>	<b>\$ 173,269</b>	<b>\$ 156,786</b>	<b>\$ 16,483</b>	<b>9.51%</b>
<i>Operating Surplus/(Deficit)</i>	<b>\$ (5)</b>	<b>\$ 5,602</b>	<b>\$ 17,267</b>		

**Debt Service Budget vs. Actual**

**Revenues**

Debt Service Rate Revenue	\$ 128,749	\$ 42,916	\$ 42,916	\$ (0)	0.00%
Trust Fund Interest	1,700	567	1,029	462	81.54%
Reserve Fund Interest	8,400	2,800	2,989	189	6.74%
<i>Total Debt Service Revenues</i>	<b>\$ 138,849</b>	<b>\$ 46,283</b>	<b>\$ 46,933</b>	<b>\$ 650</b>	<b>1.41%</b>

**Debt Service Costs**

Total Principal & Interest	\$ 129,524	\$ 43,175	\$ 43,175	\$ -	0.00%
Reserve Additions-Interest	8,400	2,800	2,989	(189)	
Reserve Additions-CIP Growth	925	308	308	-	
<i>Total Debt Service Costs</i>	<b>\$ 138,849</b>	<b>\$ 46,283</b>	<b>\$ 46,472</b>	<b>\$ (189)</b>	<b>-0.41%</b>
<i>Debt Service Surplus/(Deficit)</i>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 462</b>		

**Rate Center Summary**

<b>Total Revenues</b>	\$ 675,461	\$ 225,154	\$ 220,987	\$ (4,167)	-1.85%
<b>Total Expenses</b>	675,466	219,552	203,258	16,294	7.42%
<b>Surplus/(Deficit)</b>	<b>\$ (5)</b>	<b>\$ 5,602</b>	<b>\$ 17,729</b>		
<b>Costs per 1000 Gallons</b>	\$ 29.56		\$ 27.28		
<b>Operating and DS</b>	\$ 37.21		\$ 35.36		
<b>Thousand Gallons Treated</b>	18,151	6,050	5,748	(302)	-5.00%
<b>or</b>					
<b>Flow (MGD)</b>	0.050		0.047		

**Rivanna Water & Sewer Authority**  
**Monthly Financial Statements - October 2019**

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

<i>Budget FY 2020</i>	<i>Budget Year-to-Date</i>	<i>Actual Year-to-Date</i>	<i>Budget vs. Actual</i>	<i>Variance Percentage</i>
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**Operating Budget vs. Actual**

Notes

**Revenues**

Operations Rate Revenue	\$ 8,033,620	\$ 2,677,873	\$ 2,839,628	\$ 161,755	6.04%
Stone Robinson WWTP	22,478	7,493	6,122	(1,371)	-18.29%
Septage Acceptance	450,000	150,000	174,490	24,490	16.33%
Nutrient Credits	90,000	30,000	78,763	48,763	162.54%
Miscellaneous Revenue	-	-	-	-	
Interest Allocation	14,400	4,800	7,931	3,131	65.23%
<b>Total Operating Revenues</b>	<b>\$ 8,610,498</b>	<b>\$ 2,870,166</b>	<b>\$ 3,106,934</b>	<b>\$ 236,768</b>	<b>8.25%</b>

**Expenses**

Personnel Cost	\$ 1,281,463	\$ 404,471	\$ 407,843	\$ (3,372)	-0.83%
Professional Services	175,000	58,333	144,402	(86,069)	-147.55%
Other Services & Charges	2,030,825	676,942	636,314	40,628	6.00%
Communications	10,430	3,477	5,759	(2,282)	-65.65%
Information Technology	62,500	20,833	12,331	8,502	40.81%
Supplies	2,700	900	174	726	80.65%
Operations & Maintenance	1,724,650	574,883	555,031	19,852	3.45%
Equipment Purchases	77,500	25,833	20,009	5,825	22.55%
Depreciation	470,000	156,667	156,667	(0)	0.00%
Reserve Transfers	-	-	-	-	
<b>Subtotal Before Allocations</b>	<b>\$ 5,835,068</b>	<b>\$ 1,922,339</b>	<b>\$ 1,938,530</b>	<b>\$ (16,190)</b>	<b>-0.84%</b>
Allocation of Support Departments	2,775,430	880,058	882,592	(2,534)	-0.29%
<b>Total Operating Expenses</b>	<b>\$ 8,610,498</b>	<b>\$ 2,802,397</b>	<b>\$ 2,821,122</b>	<b>\$ (18,725)</b>	<b>-0.67%</b>
<b>Operating Surplus/(Deficit)</b>	<b>\$ (0)</b>	<b>\$ 67,769</b>	<b>\$ 285,812</b>		

**Debt Service Budget vs. Actual**

**Revenues**

Debt Service Rate Revenue	\$ 8,229,143	\$ 2,743,048	\$ 2,743,048	\$ 0	0.00%
Septage Receiving Support - County	109,440	36,480	109,441	72,961	200.00%
Trust Fund Interest	96,900	32,300	63,060	30,760	95.23%
Reserve Fund Interest	266,900	88,967	96,389	7,422	8.34%
<b>Total Debt Service Revenues</b>	<b>\$ 8,702,383</b>	<b>\$ 2,900,794</b>	<b>\$ 3,011,937</b>	<b>\$ 111,143</b>	<b>3.83%</b>

**Debt Service Costs**

Total Principal & Interest	\$ 7,880,079	\$ 2,626,693	\$ 2,626,693	\$ -	0.00%
Reserve Additions-Interest	266,900	88,967	96,389	(7,422)	-8.34%
Debt Service Ratio Charge	325,000	108,333	108,333	-	0.00%
Reserve Additions-CIP Growth	230,400	76,800	76,800	-	0.00%
<b>Total Debt Service Costs</b>	<b>\$ 8,702,379</b>	<b>\$ 2,900,793</b>	<b>\$ 2,908,215</b>	<b>\$ (7,422)</b>	<b>-0.26%</b>
<b>Debt Service Surplus/(Deficit)</b>	<b>\$ 4</b>	<b>\$ 1</b>	<b>\$ 103,722</b>		

**Rate Center Summary**

<b>Total Revenues</b>	\$ 17,312,881	\$ 5,770,960	\$ 6,118,871	\$ 347,911	6.03%
<b>Total Expenses</b>	17,312,877	5,703,190	5,729,337	(26,147)	-0.46%
<b>Surplus/(Deficit)</b>	<b>\$ 4</b>	<b>\$ 67,770</b>	<b>\$ 389,534</b>		
<b>Costs per 1000 Gallons</b>	\$ 2.54		\$ 2.35		
<b>Operating and DS</b>	\$ 5.11		\$ 4.78		
<b>Thousand Gallons Treated</b>	3,390,400	1,130,133	1,198,661	68,528	6.06%
<b>or</b>					
<b>Flow (MGD)</b>	9.289		9.745		

**Rivanna Water & Sewer Authority**  
**Monthly Financial Statements - October 2019**

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

<i>Budget FY 2020</i>	<i>Budget Year-to-Date</i>	<i>Actual Year-to-Date</i>	<i>Budget vs. Actual</i>	<i>Variance Percentage</i>
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**Operating Budget vs. Actual**

Notes

**Revenues**

Operations Rate Revenue	\$ 370,524	\$ 123,508	\$ 123,508	\$ -	0.00%
Interest Allocation	700	233	380	147	62.91%
<i>Total Operating Revenues</i>	<b>\$ 371,224</b>	<b>\$ 123,741</b>	<b>\$ 123,888</b>	<b>\$ 147</b>	<b>0.12%</b>

**Expenses**

Personnel Cost	\$ 95,340	\$ 30,109	\$ 30,093	\$ 16	0.05%
Professional Services	-	-	2,194	(2,194)	
Other Services & Charges	35,210	11,737	12,741	(1,004)	-8.56%
Communications	3,000	1,000	1,343	(343)	-34.27%
Information Technology	3,700	1,233	-	1,233	100.00%
Supplies	100	33	-	33	100.00%
Operations & Maintenance	119,450	39,817	65,289	(25,473)	-63.97%
Equipment Purchases	2,900	967	800	167	17.24%
Depreciation	5,000	1,667	1,667	0	0.00%
<i>Subtotal Before Allocations</i>	<b>\$ 264,700</b>	<b>\$ 86,562</b>	<b>\$ 114,126</b>	<b>\$ (27,564)</b>	<b>-31.84%</b>
Allocation of Support Departments	106,527	33,871	33,364	507	1.50%
<i>Total Operating Expenses</i>	<b>\$ 371,227</b>	<b>\$ 120,434</b>	<b>\$ 147,490</b>	<b>\$ (27,056)</b>	<b>-22.47%</b>
<i>Operating Surplus/(Deficit)</i>	<b>\$ (3)</b>	<b>\$ 3,308</b>	<b>\$ (23,602)</b>		

**Debt Service Budget vs. Actual**

**Revenues**

Debt Service Rate Revenue	\$ 3,778	\$ 1,259	\$ 1,260	\$ 1	0.05%
Trust Fund Interest	-	-	-	-	
Reserve Fund Interest	3,100	1,033	1,245	212	20.52%
<i>Total Debt Service Revenues</i>	<b>\$ 6,878</b>	<b>\$ 2,293</b>	<b>\$ 2,505</b>	<b>\$ 1</b>	<b>0.03%</b>

**Debt Service Costs**

Total Principal & Interest	\$ 1,578	\$ 526	\$ 526	\$ -	0.00%
Reserve Additions-CIP Growth	\$ 2,200				
Reserve Additions-Interest	3,100	1,033	1,245	(212)	-20.52%
<i>Total Debt Service Costs</i>	<b>\$ 6,878</b>	<b>\$ 1,559</b>	<b>\$ 1,771</b>	<b>\$ (212)</b>	<b>-13.60%</b>
<i>Debt Service Surplus/(Deficit)</i>	<b>\$ -</b>	<b>\$ 733</b>	<b>\$ 734</b>		

**Rate Center Summary**

<b>Total Revenues</b>	\$ 378,102	\$ 126,034	\$ 126,393	\$ 359	0.29%
<b>Total Expenses</b>	378,105	121,993	149,261	(27,268)	-22.35%
<b>Surplus/(Deficit)</b>	<b>\$ (3)</b>	<b>\$ 4,041</b>	<b>\$ (22,868)</b>		
<b>Costs per 1000 Gallons</b>	\$ 9.31		\$ 14.17		
<b>Operating and DS</b>	\$ 9.48		\$ 14.34		
<b>Thousand Gallons Treated or Flow (MGD)</b>	39,892	13,297	10,407	(2,890)	-21.74%
	0.109		0.085		

Rivanna Water & Sewer Authority  
Monthly Financial Statements - October 2019

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

<i>Budget FY 2020</i>	<i>Budget Year-to-Date</i>	<i>Actual Year-to-Date</i>	<i>Budget vs. Actual</i>	<i>Variance Percentage</i>
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**Operating Budget vs. Actual**

Notes

**Revenues**

Operations Rate Revenue	\$ 308,988	\$ 102,996	\$ 102,996	\$ -	0.00%
Interest Allocation	600	200	311	111	55.51%
<b>Total Operating Revenues</b>	<b>\$ 309,588</b>	<b>\$ 103,196</b>	<b>\$ 103,307</b>	<b>\$ 111</b>	<b>0.11%</b>

**Expenses**

Personnel Cost	\$ 95,366	\$ 30,118	\$ 30,093	\$ 25	0.08%
Professional Services	2,000	667	-	667	100.00%
Other Services & Charges	28,000	9,333	8,474	859	9.21%
Communications	3,930	1,310	1,424	(114)	-8.73%
Information Technology	1,700	567	-	567	100.00%
Supplies	25	8	-	8	100.00%
Operations & Maintenance	58,850	19,617	21,051	(1,434)	-7.31%
Equipment Purchases	3,200	1,067	800	267	25.00%
Depreciation	18,000	6,000	6,000	-	0.00%
<b>Subtotal Before Allocations</b>	<b>\$ 211,071</b>	<b>\$ 68,686</b>	<b>\$ 67,842</b>	<b>\$ 844</b>	<b>1.23%</b>
Allocation of Support Departments	98,523	31,312	30,967	345	1.10%
<b>Total Operating Expenses</b>	<b>\$ 309,594</b>	<b>\$ 99,998</b>	<b>\$ 98,809</b>	<b>\$ 1,189</b>	<b>1.19%</b>
<b>Operating Surplus/(Deficit)</b>	<b>\$ (6)</b>	<b>\$ 3,198</b>	<b>\$ 4,498</b>		

**Debt Service Budget vs. Actual**

**Revenues**

Debt Service Rate Revenue	\$ 9,442	\$ 3,147	\$ 3,148	\$ 1	0.02%
Trust Fund Interest	100	33	103	70	
Reserve Fund Interest	3,100	1,033	996	(37)	-3.59%
<b>Total Debt Service Revenues</b>	<b>\$ 12,642</b>	<b>\$ 4,214</b>	<b>\$ 4,247</b>	<b>\$ 33</b>	<b>0.79%</b>

**Debt Service Costs**

Total Principal & Interest	\$ 7,742	\$ 2,581	\$ 2,581	\$ -	0.00%
Reserve Additions-Interest	3,100	1,033	996	37	
Estimated New Principal & Interest	1,800	600	600	-	
<b>Total Debt Service Costs</b>	<b>\$ 12,642</b>	<b>\$ 4,214</b>	<b>\$ 4,177</b>	<b>\$ 37</b>	<b>0.88%</b>
<b>Debt Service Surplus/(Deficit)</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 70</b>		

**Rate Center Summary**

<b>Total Revenues</b>	\$ 322,230	\$ 107,410	\$ 107,554	\$ 144	0.13%
<b>Total Expenses</b>	<b>322,236</b>	<b>104,212</b>	<b>102,986</b>	<b>1,226</b>	<b>1.18%</b>
<b>Surplus/(Deficit)</b>	<b>\$ (6)</b>	<b>\$ 3,198</b>	<b>\$ 4,569</b>		
<b>Costs per 1000 Gallons</b>	\$ 14.28		\$ 16.48		
<b>Operating and DS</b>	\$ 14.87		\$ 17.17		
<b>Thousand Gallons Treated</b>	21,677	7,226	5,997	(1,229)	-17.00%
<b>or</b>					
<b>Flow (MGD)</b>	0.059		0.049		

**Rivanna Water & Sewer Authority**  
**Monthly Financial Statements - October 2019**

**Administration**

<i>Budget FY 2020</i>	<i>Budget Year-to-Date</i>	<i>Actual Year-to-Date</i>	<i>Budget vs. Actual</i>	<i>Variance Percentage</i>
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**Operating Budget vs. Actual**

Notes

**Revenues**

Payment for Services SWA	\$	466,000	\$	155,333	\$	155,333	\$	(0)	0.00%
Miscellaneous Revenue		2,000		667		7,133		6,466	969.96%
<b>Total Operating Revenues</b>	<b>\$</b>	<b>468,000</b>	<b>\$</b>	<b>156,000</b>	<b>\$</b>	<b>162,466</b>	<b>\$</b>	<b>6,466</b>	<b>4.15%</b>

**Expenses**

Personnel Cost	<b>A</b>	\$	1,841,351	\$	577,076	\$	610,678	\$	(33,601)	-5.82%
Professional Services			229,000		76,333		45,968		30,365	39.78%
Other Services & Charges			106,400		35,467		34,327		1,140	3.21%
Communications			18,500		6,167		7,677		(1,511)	-24.50%
Information Technology	<b>E</b>		174,250		58,083		65,826		(7,743)	-13.33%
Supplies			21,500		7,167		5,346		1,821	25.41%
Operations & Maintenance	<b>F</b>		64,500		21,500		35,516		(14,016)	-65.19%
Equipment Purchases			24,000		8,000		4,697		3,303	41.29%
Depreciation			-		-		-		-	
<b>Total Operating Expenses</b>		<b>\$</b>	<b>2,479,501</b>	<b>\$</b>	<b>789,793</b>	<b>\$</b>	<b>810,035</b>	<b>\$</b>	<b>(20,242)</b>	<b>-2.56%</b>

**Department Summary**

<b>Net Costs Allocable to Rate Centers</b>		<b>\$</b>	<b>(2,011,501)</b>	<b>\$</b>	<b>(633,793)</b>	<b>\$</b>	<b>(647,569)</b>	<b>\$</b>	<b>13,776</b>	<b>-2.17%</b>
<b><u>Allocations to the Rate Centers</u></b>										
Urban Water	44.00%	\$	885,060	\$	278,869	\$	284,930	\$	(6,061)	
Crozet Water	4.00%	\$	80,460		25,352		25,903		(551)	
Scottsville Water	2.00%	\$	40,230		12,676		12,951		(276)	
Urban Wastewater	48.00%	\$	965,520		304,221		310,833		(6,612)	
Glenmore Wastewater	1.00%	\$	20,115		6,338		6,476		(138)	
Scottsville Wastewater	1.00%	\$	20,115		6,338		6,476		(138)	
	100.00%	\$	2,011,501	\$	633,793	\$	647,569	\$	(13,776)	

Rivanna Water & Sewer Authority  
Monthly Financial Statements - October 2019

**Maintenance**

<i>Budget FY 2020</i>	<i>Budget Year-to-Date</i>	<i>Actual Year-to-Date</i>	<i>Budget vs. Actual</i>	<i>Variance Percentage</i>
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**Operating Budget vs. Actual**

Notes

**Revenues**

Payment for Services SWA  
Miscellaneous Revenue

*Total Operating Revenues*

\$ 10,000				
-	-	5,414	5,414	
<b>\$ 10,000</b>	<b>\$ -</b>	<b>\$ 5,414</b>	<b>\$ 5,414</b>	

**Expenses**

Personnel Cost  
Professional Services  
Other Services & Charges  
Communications  
Information Technology  
Supplies  
Operations & Maintenance  
Equipment Purchases  
Depreciation

*Total Operating Expenses*

\$ 1,345,633	\$ 423,467	\$ 401,332	\$ 22,135	5.23%
-	-	-	-	
14,500	4,833	5,862	(1,029)	-21.29%
17,600	5,867	10,023	(4,157)	-70.85%
6,500	2,167	2,250	(83)	-3.85%
2,000	667	123	544	81.54%
77,400	25,800	23,279	2,521	9.77%
147,150	49,050	41,948	7,102	14.48%
-	-	-	-	
<b>\$ 1,610,783</b>	<b>\$ 511,851</b>	<b>\$ 484,818</b>	<b>\$ 27,033</b>	<b>5.28%</b>

**Department Summary**

**Net Costs Allocable to Rate Centers**

<b>\$ (1,600,783)</b>	<b>\$ (511,851)</b>	<b>\$ (479,404)</b>	<b>\$ (21,618)</b>	<b>4.22%</b>
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**Allocations to the Rate Centers**

Urban Water	30.00%	\$ 480,235	\$ 153,555	\$ 143,821	\$ 9,734
Crozet Water	3.50%	56,027	17,915	16,779	1,136
Scottsville Water	3.50%	56,027	17,915	16,779	1,136
Urban Wastewater	56.50%	904,442	289,196	270,863	18,333
Glenmore Wastewater	3.50%	56,027	17,915	16,779	1,136
Scottsville Wastewater	3.00%	48,023	15,356	14,382	973
	100.00%	<b>\$ 1,600,783</b>	<b>\$ 511,851</b>	<b>\$ 479,404</b>	<b>\$ 32,447</b>

Rivanna Water & Sewer Authority  
Monthly Financial Statements - October 2019

Laboratory

Budget FY 2020	Budget Year-to-Date	Actual Year-to-Date	Budget vs. Actual	Variance Percentage
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**Operating Budget vs. Actual**

Notes

**Revenues**

N/A

**Expenses**

Personnel Cost	\$	394,222	\$	123,859	\$	118,024	\$	5,835	4.71%
Professional Services		-		-		-		-	
Other Services & Charges		9,230		3,077		271		2,806	91.21%
Communications		1,153		384		512		(128)	
Information Technology		2,500		833		-		833	100.00%
Supplies		2,150		717		135		582	81.21%
Operations & Maintenance	F	61,500		20,500		26,047		(5,547)	-27.06%
Equipment Purchases		2,200		733		567		167	22.73%
Depreciation		-		-		-		-	
<b>Total Operating Expenses</b>		<b>\$ 472,955</b>		<b>\$ 150,103</b>		<b>\$ 145,554</b>		<b>\$ 4,549</b>	<b>3.03%</b>

**Department Summary**

<b>Net Costs Allocable to Rate Centers</b>		<b>\$ (472,955)</b>	<b>\$ (150,103)</b>	<b>\$ (145,554)</b>	<b>\$ (4,549)</b>	<b>3.03%</b>
<u><b>Allocations to the Rate Centers</b></u>						
Urban Water	44.00%	\$ 208,100	\$ 66,045	\$ 64,044	\$ 2,002	
Crozet Water	4.00%	18,918	6,004	5,822	182	
Scottsville Water	2.00%	9,459	3,002	2,911	91	
Urban Wastewater	47.00%	222,289	70,549	68,411	2,138	
Glenmore Wastewater	1.50%	7,094	2,252	2,183	68	
Scottsville Wastewater	1.50%	7,094	2,252	2,183	68	
	100.00%	<b>\$ 472,955</b>	<b>\$ 150,103</b>	<b>\$ 145,554</b>	<b>\$ 4,549</b>	



Rivanna Water & Sewer Authority  
Monthly Financial Statements - October 2019

**Engineering**

<i>Budget FY 2020</i>	<i>Budget Year-to-Date</i>	<i>Actual Year-to-Date</i>	<i>Budget vs. Actual</i>	<i>Variance Percentage</i>
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**Operating Budget vs. Actual****Revenues**

Payment for Services SWA

*Total Operating Revenues*

\$ -	\$ -	\$ -	\$ -	-
<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>-</b>

**Expenses**

Personnel Cost

Professional Services

Other Services &amp; Charges

Communications

Information Technology

Supplies

Operations &amp; Maintenance

Equipment Purchases

Depreciation &amp; Capital Reserve Transfers

*Total Operating Expenses*

\$ 1,347,631	\$ 422,771	\$ 427,758	\$ (4,987)	-1.18%
20,000	6,667	5,346	1,321	19.81%
10,350	3,450	4,069	(619)	-17.95%
14,500	4,833	6,922	(2,088)	-43.21%
21,200	7,067	31,611	(24,544)	-347.32%
9,800	3,267	1,530	1,737	53.17%
86,798	28,933	25,490	3,442	11.90%
42,400	14,133	25,651	(11,517)	-81.49%
-	-	-	-	-
<b>\$ 1,552,679</b>	<b>\$ 491,120</b>	<b>\$ 528,376</b>	<b>\$ (37,256)</b>	<b>-7.59%</b>

**Department Summary**

Net Costs Allocable to Rate Centers

\$ (1,552,679)	\$ (491,120)	\$ (528,376)	\$ 37,256	-7.59%
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**Allocations to the Rate Centers**

Urban Water

Crozet Water

Scottsville Water

Urban Wastewater

Glenmore Wastewater

Scottsville Wastewater

47.00%	\$ 729,759	\$ 230,826	\$ 248,337	\$ (17,510)
4.00%	62,107	19,645	21,135	(1,490)
2.00%	31,054	9,822	10,568	(745)
44.00%	683,179	216,093	232,485	(16,392)
1.50%	23,290	7,367	7,926	(559)
1.50%	23,290	7,367	7,926	(559)
100.00%	<b>\$ 1,552,679</b>	<b>\$ 491,120</b>	<b>\$ 528,376</b>	<b>\$ (37,256)</b>

## 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: NOVEMBER 19, 2019**

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

### Under Construction

1. Crozet Water Treatment Plant Expansion
2. Wholesale Water Master Metering
3. Valve Repair – Replacement (Phase 2)
4. Scottsville WTP – Finished Water Metering Improvements
5. Buck's Elbow Ground Storage Tank Chlorination System

### Design and Bidding

6. Observatory Water Treatment Plant Expansion
7. South Rivanna Water Treatment Plant Improvements
8. Ragged Mountain Reservoir to Observatory Water Treatment Plant Raw Water Line and Raw Water Pump Station
9. Crozet Flow Equalization Tank
10. Beaver Creek Dam Alterations
11. Beaver Creek Raw Water Pump Station
12. Crozet Interceptor Pump Station Rebuilds
13. MC Digester Sludge Storage Improvements
14. MC Aluminum Slide Gate Replacements
15. Sugar Hollow Dam – Rubber Crest Gate Replacement and Intake Tower Repairs
16. Route 29 Water Pump Station
17. South Rivanna Dam – Gate Repairs
18. Moores Creek Wetland Hydrology Improvements

## Planning and Studies

19. South Fork Rivanna Reservoir to Ragged Mountain Reservoir Water Line Right-of-Way
20. Urban Water Demand and Safe Yield Study
21. Urban Finished Water Infrastructure Master Plan
22. South Rivanna River Crossing and North Rivanna Transmission Main
23. Upper Schenks Branch Interceptor, Phase II
24. Asset Management Plan
25. Albemarle-Berkeley PS Basin Demolition and Capacity Analysis
26. Buck Mountain Master Plan

## Other Significant Projects

27. Urgent and Emergency Repairs
28. Interceptor Sewer & Manhole Repair
29. Security Enhancements
30. NRWTP Raw Metering Improvements
31. NRWTP Sludge Lagoon Study and Needs Assessment
32. MCAWRRF Cogeneration System Analysis

## **Under Construction**

### **1. Crozet Water Treatment Plant Expansion**

Design Engineer:	Short Elliot Hendrickson (SEH)
Construction Contractor:	Orders Construction Co. (WVA)
Construction Start:	December 2018
Percent Completion:	25%
Base Construction Contract + Change Order to Date = Current Value:	\$7,170,000- \$285,000 = \$6,885,000
Expected Completion Date:	May 2021
Total Capital Project Budget:	\$8,500,000

Current Status: Continuing work on the expansion of the Chemical Building, sanitary force main installation, and backwash lagoon improvements.

### **2. Wholesale Water Master Metering**

Design Engineer:	Michael Baker International (Baker)
Construction Contractor:	Linco, Inc.
Construction Start:	January 2016
Percent Complete:	100%
Base Construction Contract + Change Orders to Date = Current Value:	\$2,228,254 - \$284,104.24 = \$1,944,149.76
Expected Completion Date:	October 2019

Total Capital Project Budget: \$3,200,000

Current Status: 25 of 25 meters are now functional following successful calibration testing in late October 2019. The metering system is substantially complete and in operation, with the initial water usage report anticipated in December's Board of Directors meeting.

**3. Valve Repair – Replacement (Phase 2)**

Design Engineer:	RWSA / Dewberry
Construction Contractor:	Garney Construction
Construction Start:	May 2019
Percent Complete:	15%
Base Construction Contract +	
Change Orders to Date = Current Value:	\$843,460.00 - \$33,525.21 + \$178,322.33 = \$988,257.12
Expected Completion:	July 2020
Total Capital Project Budget:	\$1,132,914

Current Status: Valve replacements will resume in March.

**4. Scottsville WTP – Finished Water Metering Improvements**

Design Engineer:	Short Elliot Hendrickson (SEH)
Construction Contractor:	Anderson Construction Inc.
Construction Start:	November 2019
Percent Complete:	0%
Base Construction Contract +	
Change Orders to Date = Current Value:	\$115,500
Completion:	April 2020
Approved Capital Budget:	\$145,000

Current Status: A coordination meeting in preparation for construction activities was held on November 13<sup>th</sup>. Construction will begin in December following material delivery.

**5. Buck's Elbow Ground Storage Tank Chlorination System**

Design Engineer:	Short Elliot Hendrickson (SEH)
Construction Contractor:	Littleton and Associates, Inc.
Construction Start:	November 2019
Percent Complete:	0%
Base Construction Contract +	
Change Orders to Date = Current Value:	\$186,000
Completion:	April 2020
Approved Capital Budget:	\$239,000

Current Status: Construction is scheduled to begin in November, prior to the delivery of the

chlorination structure in late December.

## **Design and Bidding**

### **6. Observatory Water Treatment Plant Expansion**

Design Engineer:	Short Elliot Hendrickson, Inc. (SEH)
Project Start:	October 2017
Project Status:	Bids due in January 2020
Construction Start:	March 2020
Completion:	March 2023
Approved Capital Budget:	\$19,700,000
Current Project Estimate:	\$25,500,000

Current Status: An advertisement for construction bids was issued on November 12, 2019.

### **7. South Rivanna Water Treatment Plant Improvements**

Design Engineer:	Short Elliot Hendrickson (SEH)
Project Start:	October 2017
Project Status:	Bids due in January 2020
Construction Start:	March 2020
Completion:	March 2023
Approved Capital Budget:	\$15,000,000

Current Status: An advertisement for construction bids was issued on November 12, 2019.

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

Design Engineer:	Michael Baker International (Baker)
Project Start:	August 2018
Project Status:	Prelim Design & Easement Acquisition in Progress
Construction Start:	2022
Completion:	2026
Approved Capital Budget:	\$3,877,000
Current Project Estimate:	\$18,000,000

Current Status: Easement acquisitions are underway.

### **9. Crozet Flow Equalization Tank**

Design Engineer:	Schnabel Engineering
Project Start:	October 2016
Project Status:	99% Design
Construction Start:	February 2020

Completion:	June 2021
Approved Capital Budget:	\$4,860,000

Current Status: An advertisement for construction bids will be issued by December 2019 following final permit approvals.

#### **10. Beaver Creek Dam Alterations**

Design Engineer:	Schnabel Engineering
Project Start:	February 2018
Project Status:	Final Design and Permitting Underway
Construction Start:	2023
Completion:	2026
Approved Capital Budget:	\$4,898,000
Current Project Estimate:	\$15,000,000

Current Status: Final design of the dam improvements is underway. Development of a Joint Permit Application for the new Pump Station, Intake, and Beaver Creek Dam Spillway Upgrades began in May 2019 and is expected to be completed in the summer of 2020. Staff will pursue federal funding for the project.

#### **11. Beaver Creek Raw Water Pump Station and Intake**

Design Engineer:	Hazen & Sawyer
Project Start:	August 2018
Project Status:	Permitting and Site Selection Work Underway
Construction Start:	2023
Completion:	2026
Approved Capital Budget:	\$4,138,000
Current Project Estimate:	\$8,000,000

Current Status: A site selection study for the new Raw Water Pump Station and intake will be completed by January 2020. Development of a Joint Permit Application for the new Pump Station, Intake, and Beaver Creek Dam Spillway Upgrades will be completed in the summer of 2020.

#### **12. Crozet Interceptor Pump Station Rebuilds**

Design Engineer:	RWSA
Project Start:	July 2018
Project Status:	50% Design
Construction Start:	2019
Completion:	2023
Approved Capital Budget:	\$545,000

Current Status: The Maintenance Department has begun pump replacement work associated with this overall project. Other improvements are being coordinated with the completion of the Crozet Flow Equalization Tank project.

### **13. MC Digester Sludge Storage Improvements**

Design Engineer:	TBD
Project Start:	Summer 2019
Project Status:	Preliminary Design
Construction Start:	Spring 2020
Completion:	Winter 2020
Approved Capital Budget:	\$313,000

Current Status: Completing an interior inspection of the sludge storage tank.

### **14. MC Aluminum Slide Gate Replacements**

Design Engineer:	Hazen and Sawyer
Project Start:	November 2018
Project Status:	Re-Bidding
Construction Start:	February 2020
Completion:	October 2020
Approved Capital Budget:	\$470,000

Current Status: Advertising for construction bids in December.

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

Design Engineer:	Schnabel Engineering
Project Start:	January 2019
Project Status:	Design 40%
Construction Start:	2020
Completion:	2021
Approved Capital Budget:	\$1,140,000

Current Status: Schnabel is proceeding with design of the new rubber crest gate and compiling a list of recommended repairs based on recent site inspections. Construction is anticipated to begin in late spring or summer of 2020.

### **16. Route 29 Water Pump Station and Piping**

Design Engineer:	Short Elliot Hendrickson (SEH)
Project Start:	July 2019
Project Status:	Design 10%
Construction Start:	2021
Completion:	2022
Approved Capital Budget:	\$2,300,000

Current Status: Surveying and stakeholder meetings are in progress.

#### **17. South Rivanna Dam – Gate Repairs**

Design Engineer:	N/A
Project Start:	July 2019
Project Status:	Contract Pending
Construction Start:	Spring- Fall 2020
Completion:	2020
Approved Capital Budget:	\$900,000

Current Status: RWSA anticipates completing repair or replacement of the gates with its on-call dam services contractor, Bander Smith, Inc. The contract is currently under review and is expected to be signed in November. Gate repairs are currently expected to occur in late spring 2020 following a condition assessment of the gates this winter.

#### **18. MC Wetland Hydrology Improvements**

Design Engineer:	VHB/ECS, Mid-Atlantic
Project Start:	March 2019
Project Status:	90% Design
Construction Start:	December 2019
Completion:	February 2020
Approved Capital Budget:	\$95,000

Current Status: Construction bidding in November.

### **Planning and Studies**

#### **19. 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 Underway
Completion:	2021
Approved Capital Budget:	\$2,295,000

Current Status: We are completing easement appraisals and making offers to property owners.

#### **20. Urban Water Demand and Safe Yield Study**

Design Engineer:	Hazen and Sawyer
Project Start:	November 2018
Project Status:	85% complete
Completion:	January 2020



Approved Capital Budget: \$154,000

Current Status: Hazen is moving forward with the Safe Yield analysis and report writing.

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

Design Engineer:	Michael Baker International (Baker)
Project Start:	November 2018
Project Status:	55% complete
Completion:	June 2020
Approved Capital Budget:	\$253,000

Current Status: Model development and calibration is on-going and will incorporate the finalized water demand information.

**22. South Rivanna River Crossing and North Rivanna Transmission Main**

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

Current Status: Design will begin in summer 2020.

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

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

Current Status: A report documenting additional subsurface exploration work to gather rock information along the alignment in McIntire Road as well as across the ballfield was completed in October 2019. The report results are being reviewed with the City Utilities Department.

**24. Asset Management Plan**

Design Consultant:	GHD, Inc.
Project Start:	July 2018
Project Status:	Phase 1 – 99% Complete Phase 2 – 5% Complete
Completion:	2020

Approved Capital Budget: \$500,000

Current Status: Development of an asset register, condition assessment protocols, and a pilot study of the asset management process in underway.

## **25. Albemarle-Berkeley PS Basin Demolition and Capacity Analysis**

Design Consultant: GHD, Inc.  
Project Start: September 2019  
Project Status: Design 10%  
Completion: 2021  
Approved Capital Budget: \$200,000

Current Status: Staff is completing Work Authorization development with the consultant. A temporary flow meter was placed just upstream of the PS to begin the data collection process for the Capacity Analysis. Staff continues to coordinate with Albemarle County Public Schools to find more information on their sewer system(s) that tie into the PS.

## **26. Buck Mountain Master Plan**

Design Consultant: LPDA (Charlottesville)  
Project Start: November 2019  
Project Status: 15% Complete  
Completion: May 2020  
Budget: \$56,000

Current Status: Study is underway.

## **Other Significant Projects**

### **27. 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	TBD
2019-09	Miscellaneous Water Main ARV Installations	\$50,000

- [South Rivanna Dam Apron and River Bank Repairs:](#) Repairs to the north and south concrete aprons will be designed by Schnabel Engineering and those services will be procured separately from the on-call contract.
- [Urban Water Line Valve and Blow-off Repair:](#) Faulconer Construction will be performing the valve replacement(s), as well as any piping/outlet modifications to the drain line. Staff is coordinating the logistics of the project, including the associated water main shutdown.
- [Miscellaneous Water Main ARV Installations:](#) Based on water system operations, two locations for additional air release valves have been identified. One will be installed on the Pantops Water Line on Pen Park Lane and the other will be installed on the Stillhouse Water Line on Hydraulic Road. Staff is working with Faulconer Construction to have these valves installed this winter. Water main locations and depths are being confirmed and then construction activities will begin.

## 28. [Interceptor Sewer and Manhole Repair](#)

Design Engineer:	Frazier Engineering
Construction Contractor:	IPR Northeast
Construction Start:	November 2017
Percent Complete:	40%
Base Construction Contract + Change Orders to Date = Current Value:	\$1,244,337.19
Expected Completion:	October 2021
Total Capital Project Budget:	\$1,088,330 (Urban) + \$625,000 (Crozet) = \$1,713,330

Current Status: Condition assessment and repair activities continue on portions of the Morey Creek, Crozet, and Powell Creek Interceptors. Repairs to the upper Morey Creek Interceptor through the Birdwood Golf Course are complete, with the focus now shifting to the rest of the Upper Morey Creek Interceptor North and South of the course.

## 29. [Security Enhancements](#)

Contractor:	Security 101
Construction Start:	August 2019
Percent Complete:	Design 10%
Completion:	2021
Approved Capital Budget:	\$1,000,000

Current Status: The Contract Documents have been executed by both parties, and an initial work authorization is being developed to secure doors at priority locations.

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

#	Project Description	Total Approx. Value
30	NRWTP Raw Water Metering Improvements	\$135,000
31	NRWTP Sludge Lagoon Study and WTP Needs Assessment	\$60,100

32	MCAWRRF Cogeneration System Analysis	\$48,300
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### **30. NRWTP Raw Water Metering Improvements**

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

### **31. NRWTP Sludge Lagoon Study and WTP Needs Assessment**

The needs assessment report was completed in September 2019. Construction activities associated with these improvements are being evaluated as part of the CIP development process.

### **32. MCAWRRF Cogeneration System Analysis**

Alternatives will be presented to the Board in January 2020 to replace, modify or eliminate the facility.

## **History**

## **Under Construction**

### **1. Crozet Water Treatment Plant Expansion**

This project was created to increase the supply capacity of the existing Crozet WTP by modernizing plant systems. The goal was to not drastically increase the plant footprint in regard to the existing filter plant, flocculation tanks, and sedimentation basins. By modernizing the outdated equipment within these treatment systems, the plant discharge capacity will be improved by approximately 100% (from 1 to 2 mgd). SEH completed a Preliminary Engineering Report (PER); watershed data collection; raw water jar testing; pilot scale testing, as well as preliminary and final design. A Notice to Proceed was issued on December 13, 2018 and the contractor mobilized on February 26, 2019.

### **2. Wholesale Water Master Metering**

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

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

required acquisition of twenty (20) permanent water line easements and one (1) permanent access easement.

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

### **3. Valve Repair – Replacement (Phase 2)**

Due to the recently completed Piney Mountain Tank Rehabilitation project and bypass pumping necessary for that work, two valves identified for replacement in the Valve Repair-Replacement Project have been unavailable to be replaced. As such, the Contractor demobilized from the project after the valve replacement completed on May 21, 2019.

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

A Request for Bids (RFB) was issued on November 6, 2018. RWSA staff opened bids for the project on December 11, 2018, and Garney Companies, Inc. was the apparent low bidder (\$843,460). The RWSA Board of Directors approved the bid award recommendation and Capital Improvement Plan Budget Amendment on January 22, 2019. A Notice to Proceed was issued on May 6, 2019.

Two (2) valve replacements were completed in May 2019; one (1) valve was replaced on the Crozet Waterline, and one (1) valve was replaced on the South Rivanna Waterline. Due to the unavailability of certain valves and lead times on selected materials, the contractor demobilized from the project in late May. The Capital Improvement Plan was further amended on October 22, 2019 to compensate the contractor for this extra demobilization/remobilization, as well as the installation of a necessary bypass line that will keep South Rivanna WTP in service during one of the valve replacements.

### **4. Scottsville WTP – Finished Water Metering Improvements**

The Scottsville WTP is permitted to provide up to 0.25 MGD of potable drinking water to RWSA customers in the Scottsville service area. After water has been treated in the plant it is collected in an existing clearwell, which was constructed with the original facility. From the clearwell, the water is pumped into the distribution system by one of the two high service pumps. The flow from these pumps is not metered. In order to keep a record of the total flow entering the Scottsville system, plant operators must periodically conduct draw-down tests to verify the pumping rate of each of the two pumps. The total flow is then calculated based on the run time of each pump. This method of measuring flow is not accurate, as the pumping rate will vary based on the clearwell level and the hydraulic grade line of the distribution system. In addition, the Virginia Department of Health has indicated that the flow should be metered during recent conversations related to the disinfection profile calculation throughout the plant. The purpose of this project is to install a finished water meter at the plant. Construction bids were opened on May 29, 2019. Notice of Award was provided to the contractor on July 9, 2019 and a Notice to Proceed was provided on August 26, 2019.

## **5. Buck's Elbow Ground Storage Tank Chlorination System**

The Contract Documents have been executed by both parties, and a Notice to Proceed (NTP) was issued on September 9, 2019.

The two million-gallon Bucks Elbow Ground Storage Tank provides finished water storage for the Crozet Area. Historically, RWSA has experienced low chlorine residuals in the tank during the warm weather months due to water age and stratification. When chlorine residuals drop, RWSA must manually feed chlorine into the tank. Previously, this meant that staff had to bring all required pumping infrastructure to the site and climb the tank to access the injection point(s). To enhance the efficiency and safety of this process, SEH is assisting RWSA with the design of a chlorine feed system that is capable of one-person operation, will not require tank climbing or confined space entry into the adjacent altitude valve vault, and will minimize overall chemical exposure risk to RWSA staff. An active mixing system will also be installed at the Buck's Elbow Ground Storage Tank as a part of the work to supplement the existing passive mixing system. This will ensure that the tank is being appropriately mixed during the chlorine feed process and will decrease overall stratification in the tank.

SEH completed an update to the project's original Alternatives Analysis (completed in Winter 2017 as an O&M Project) and held a review meeting with RWSA Engineering and Operations staff during the week of May 6, 2019. This document was submitted to VDH for preliminary review following the meeting. Bidding documents were finalized, and the Request for Bids was issued on June 20, 2019. Bids were opened on July 11, 2019, and the apparent low bidder was Littleton and Associates, Inc. (\$186,000). A Bid Award Recommendation and Capital Improvement Plan Amendment was approved by the Board of Directors on July 23, 2019. A Notice of Award was issued to Littleton and Associates, Inc. on August 6, 2019. The Notice to Proceed was issued on September 9, 2019.

## **Design and Bidding**

### **6. Observatory Water Treatment Plant Expansion**

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<sup>th</sup> and a memo summarizing the results has been completed. Any agreed upon results will be incorporated into the project. This project will consider the design and costs for upgrading the plant systems to achieve a consistent 7.7 MGD plant capacity, as well as consider the costs involved with upgrading the plant to 10 or 12 MGD capacity. Much of the Observatory Water Treatment Plant is original to the 1953 construction. In an effort to better understand the needed future improvements, a Condition Assessment Report was completed by SEH in October of 2013. The approved Capital Improvement Plan project was based on the findings from this report. A portion of this project was expedited in order to repair and replace old, existing equipment that was not functional. The flocculator systems have been replaced and upgraded as part of the Drinking Water Activated Carbon and WTP Improvements project (GAC). The second flocculator system was started up in May 2017, and both systems are currently in full service. Four additional GAC contactors will be included in the design.

**7. South Rivanna Water Treatment Plant Improvements**

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 13, 2018 and 30% design documents were provided in February. A Value Engineering Workshop took place the week of April 8<sup>th</sup> and a memo summarizing the results has been completed. Any agreed upon results will be incorporated into the project. The South Rivanna Water Treatment Plant is currently undergoing significant upgrades as part of the Granular Activated Carbon Project. Several other significant needs have also been identified and have been assembled into a single project. The projects herein include: expansion of the coagulant storage facilities; installation of additional filters to meet firm capacity needs; the addition of a second variable frequency drive at the Raw Water Pump Station; the relocation for the electrical gear from a sub terrain location at the Sludge Pumping Station; a new building on site for additional office, lab, control room and storage space; improvements to storm sewers to accept allowable WTP discharges; and the construction of a new metal building to cover the existing liquid lime feed piping and tanks. The scope of this project will not increase plant treatment capacity.

**8. 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 14,000 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 SRR WTP.

**9. 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 namely the existing Crozet Pump Stations (1 through 4) have adequate capacity to handle the 2015 peak wet weather flow from the Crozet Service Area during a two-year storm. However, as projected growth in the service area occurs, peak wet weather flows in the area under the storm conditions established in the updated model will begin to exceed the firm capacities of the pump stations by 2025. Additional I&I reductions in order to reduce flows enough to not exceed the pump station firm capacities are not feasible and as a result, the construction of a

flow equalization tank was identified as the best method to alleviate wet weather capacity issues.

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

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

A work authorization with Schnabel Engineering was finalized and a Project Kick-off Meeting was held on July 12, 2018. A data collection period has been completed which includes a wetlands investigation of the project site and a topographic survey of the site has also been completed.

#### **10. Beaver Creek Dam Alterations**

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.

#### **11. Beaver Creek Raw Water Pump Station and Intake**

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.



#### **12. Crozet Interceptor Pump Station Rebuilds**

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

#### **13. MC Digester Sludge Storage Improvements**

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

#### **14. 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 access and repair the gates, it is now necessary to replace and modify the gate arrangement. The replacement includes new gates for greater flexibility and resiliency as well as significant influent flow bypass pumping. Likewise, there are several gates at the Ultraviolet disinfection facility that leak water, causing a reduced capacity of the facility. Replacement of these gates will restore the process to full capacity.

#### **15. 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 will be inspected and evaluated. Recommended repairs may include issues relating to the intake gate valves and tower walls, including repair or replacement of intake trash racks, and sealing/grouting of minor concrete wall cracks.

#### **16. Route 29 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. As this project has been developed, 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.

#### **17. South Rivanna Dam – Gate Repairs**

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

#### **18. MC Wetland Hydrology Improvements**

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

### **Planning and Studies**

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

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

Baker 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.

**20. Urban Water Demand and Safe Yield Study**

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

**21. 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.

**22. South Rivanna River Crossing and North Rivanna Transmission Main**

An update to the Airport Zone Study Report was completed in summer of 2018, confirming the need for and timing of the river crossing and transmission main. As work associated with the Route 29 Pump Station begins, improvements to the North Rivanna Transmission Main as needed to facilitate that project, will be included in that effort. RWSA has previously identified through master planning that a 24-inch water main will be needed from the South Rivanna Water Treatment Plant (SRWTP) to Hollymead Town Center to meet future water demands. Two segments of this water main were constructed as part of the VDOT Rt. 20 Solutions projects, including approximately 10,000 LF of 24-inch water main along Rt. 29 and 600 LF of 24-inch water main along the new Berkmar Drive Extension, behind the Kohl's department store. To complete the connection between the SRWTP and the Airport Road Pump Station Site, RWSA plans to construct a new river crossing at the South Fork Rivanna River and two "gap" sections of 24-inch water main between the already completed sections. Much of the new water main route is within VDOT right-of-way; however, acquisition of right-of-way will be required at the river crossing and on the Kohl's Property at Hollymead Town Center. The North Rivanna Transmission Main improvements portion of this CIP project have been moved to the Route 29 Pump Station project to allow for the connection of that pump station to the distribution system. These project changes will be formalized during the upcoming CIP development process.

**23. 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.

#### **24. Asset Management Plan**

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

#### **25. Albemarle-Berkeley PS Basin Demolition and Capacity Analysis**

Historically, the Albemarle Berkley Pump Station was co-located within an open-air basin that occasionally collected sewage during power outages. With the addition of a back-up power generator, the basin no longer serves a technical purpose. Given the proximity of the deteriorating structure to school property, this project serves to demolish and fill the area of the existing basin. In addition, due to unacceptably high run times on the pumps themselves, a second part of the overall project will be to perform a capacity analysis of the PS, given the current and projected upstream conditions.

Staff conducted an initial scoping meeting with the consultant in late September 2019.

#### **26. Buck Mountain Master Plan**

The purpose of this Master Plan for is to consider alternatives for use of the 1300 acre property purchased in the 1980's for a water supply reservoir, which was never built. 600 acres are currently under deed restrictions to mitigate the environmental impacts of the expanded Ragged Mountain Dam. Development of the Buck Mountain Master Plan will consider past and current uses of the property, identify alternatives, and provide recommendations for strategic use of the property into the future.

### **Other Significant Projects**

#### **27. 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. Once the scope has been finalized.

- **Miscellaneous Water Main ARV Installations**

Based on water system operations, two locations for additional air release valves have been identified. One will be installed on the Pantops Water Line on Pen Park Lane and the other will be installed on the Stillhouse Water Line on Hydraulic Road. Staff is working with Faulconer Construction to have these valves installed this winter. Water main locations and depths are being confirmed and then construction activities will begin.

## **28. 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.

## **29. Security Enhancements**

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

industrial strength locks, communication technology and cable hardening, and an enhanced access control program.

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 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 brought to the Board on July 23, 2019.

### **30. NRWTP Raw Water Metering Improvements**

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

### **31. NRWTP Sludge Lagoon Study and WTP Needs Assessment**

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

### **32. MCAWRRF Cogeneration System Analysis**

The MCAWRRF currently utilizes a cogeneration facility which accepts digester gas and uses it to create electricity and heat. The facility was put into operation in 2011. The generator supplies power back to the plant electrical distribution system providing energy usage savings through offsetting usage with the electric utility. Unfortunately, there have been a number of issues associated with operation of the generator including, expensive and proprietary maintenance services and temperature issues. With a significant and expensive scheduled maintenance event forthcoming, RWSA wanted to conduct a study to determine if these issues could be resolved or if there was a more efficient way to utilize the digester gas. This study will evaluate options for improvements to the existing system or new systems that could be implemented along with estimated costs and returns on investment. A final report was submitted in February 2019, and RWSA is evaluating the alternatives.

## 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 OCTOBER 2019**

**DATE: NOVEMBER 19, 2019**

### WATER OPERATIONS:

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

<i><b>Water Treatment Plant</b></i>	<i><b>Average Daily Production (MGD)</b></i>	<i><b>Total Monthly Production (MG)</b></i>	<i><b>Maximum Daily Production in the Month (MGD)</b></i>
Observatory	1.46	45.42	2.17 (10/09/19)
South Rivanna	8.30	257.50	9.75 (10/03/19)
North Rivanna	<u>0.394</u>	<u>12.21</u>	0.51 (10/03/19)
<i><b>Urban Total</b></i>	10.15	315.13	12.08 (10/03/19)
Crozet	0.612	18.99	0.90 (10/15/19)
Scottsville	<u>0.051</u>	<u>1.62</u>	0.092 (10/29/19)
<i><b>RWSA Total</b></i>	10.81	335.74	---

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

### Status of Reservoirs (as of November 14, 2019):

- Urban Reservoirs: 95 % of Total Useable Capacity
- Ragged Mountain Reservoir is – 1.70 feet (93 %)
- Sugar Hollow Reservoir is -3.41 feet (85%)
- South Rivanna Reservoir is full (100%)
- Beaver Creek Reservoir is full (100%)
- Totier Creek Reservoir is full (100%)

## **WASTEWATER OPERATIONS:**

All RWSA Water Resource Recovery Facilities (WRRFs) were in regulatory compliance with their effluent limitations during October 2019. Performance of the WRRFs in October was as follows compared to the respective VDEQ permit limits:

<b>WRRF</b>	<b>Average Daily Effluent Flow (mgd)</b>	<b>Average CBOD<sub>5</sub> (ppm)</b>		<b>Average Total Suspended Solids (ppm)</b>		<b>Average Ammonia (ppm)</b>	
		<b>RESULT</b>	<b>LIMIT</b>	<b>RESULT</b>	<b>LIMIT</b>	<b>RESULT</b>	<b>LIMIT</b>
<b>Moore's Creek</b>	9.8	<QL	11	<QL	22	<QL	2.2
<b>Glenmore</b>	0.086	4.0	15	3.0	30	NR	NL
<b>Scottsville</b>	0.049	5.0	25	11.0	30	NR	NL
<b>Stone Robinson</b>	0.003	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 Moore's Creek AWWRF were as follows for October 2019.

<b>State Annual Allocation (lb./yr.) Permit</b>		<b>Average Monthly Allocation (lb./mo.) *</b>	<b>Moore's Creek Discharge October (lb./mo.)</b>	<b>Performance as % of monthly average Allocation*</b>	<b>Year to Date Performance as % of annual allocation</b>
<b>Nitrogen</b>	282,994	23,583	6,434	27%	48%
<b>Phosphorous</b>	18,525	1,544	525	34%	35%

\*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:**

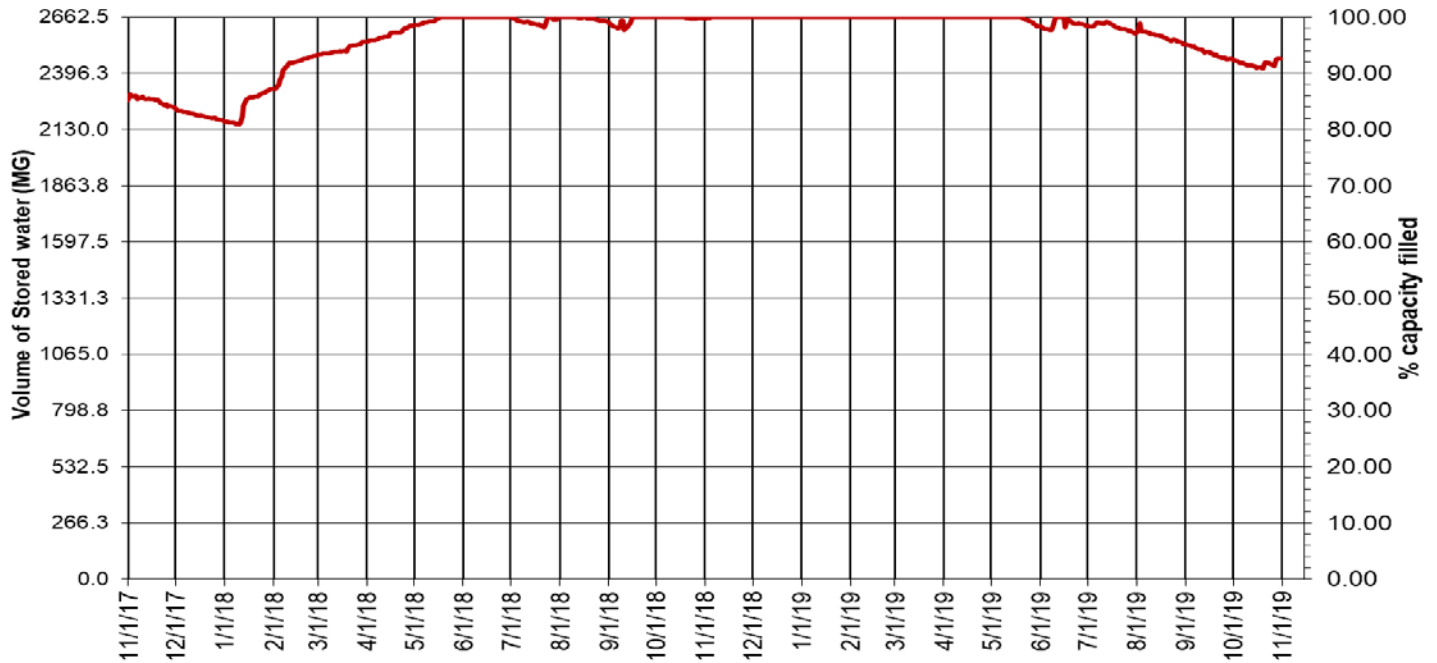
The following graphs are provided for review:

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

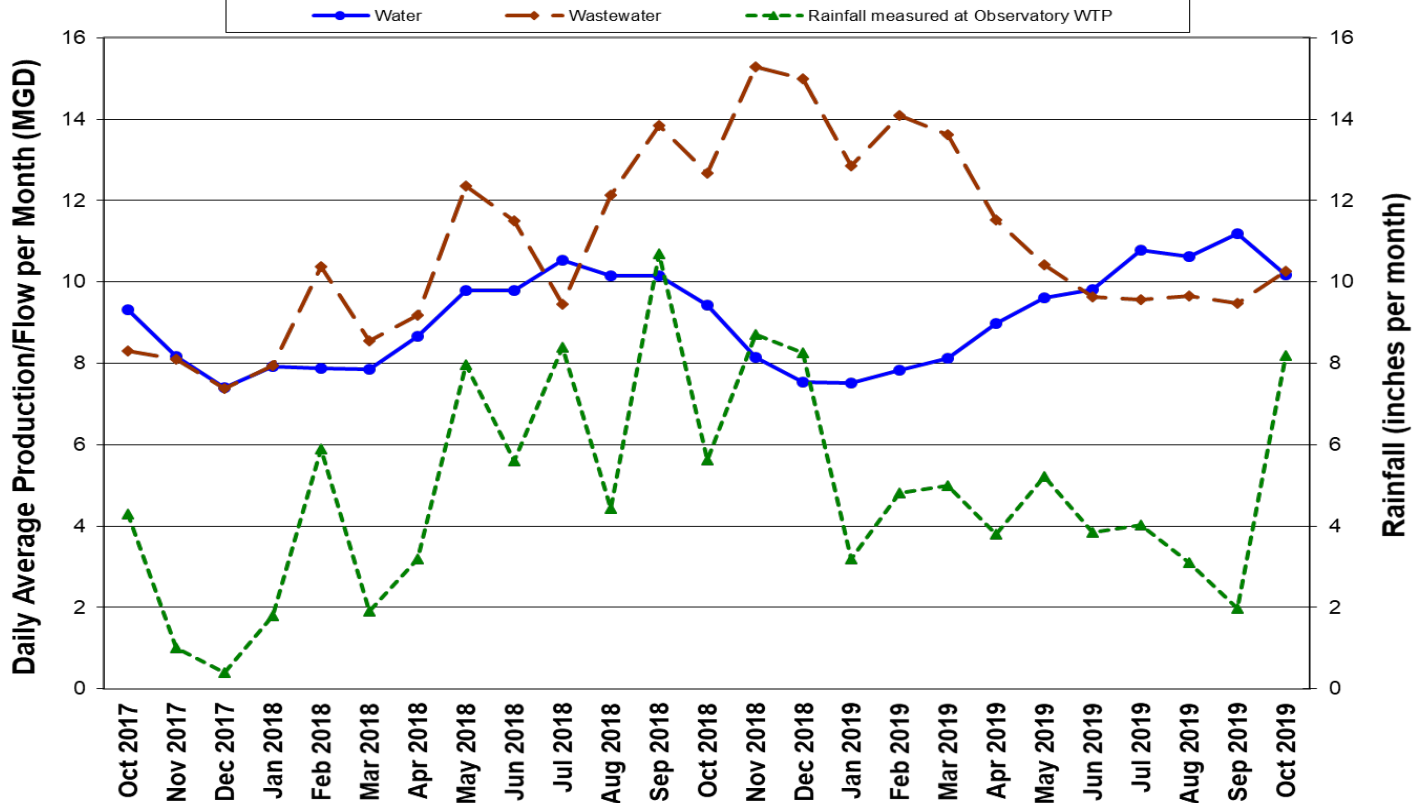


## Usable Urban Reservoir Water Storage

Maximum 2,662.5 MG after 5/1/19



## Urban Water and Wastewater Flows versus Rainfall



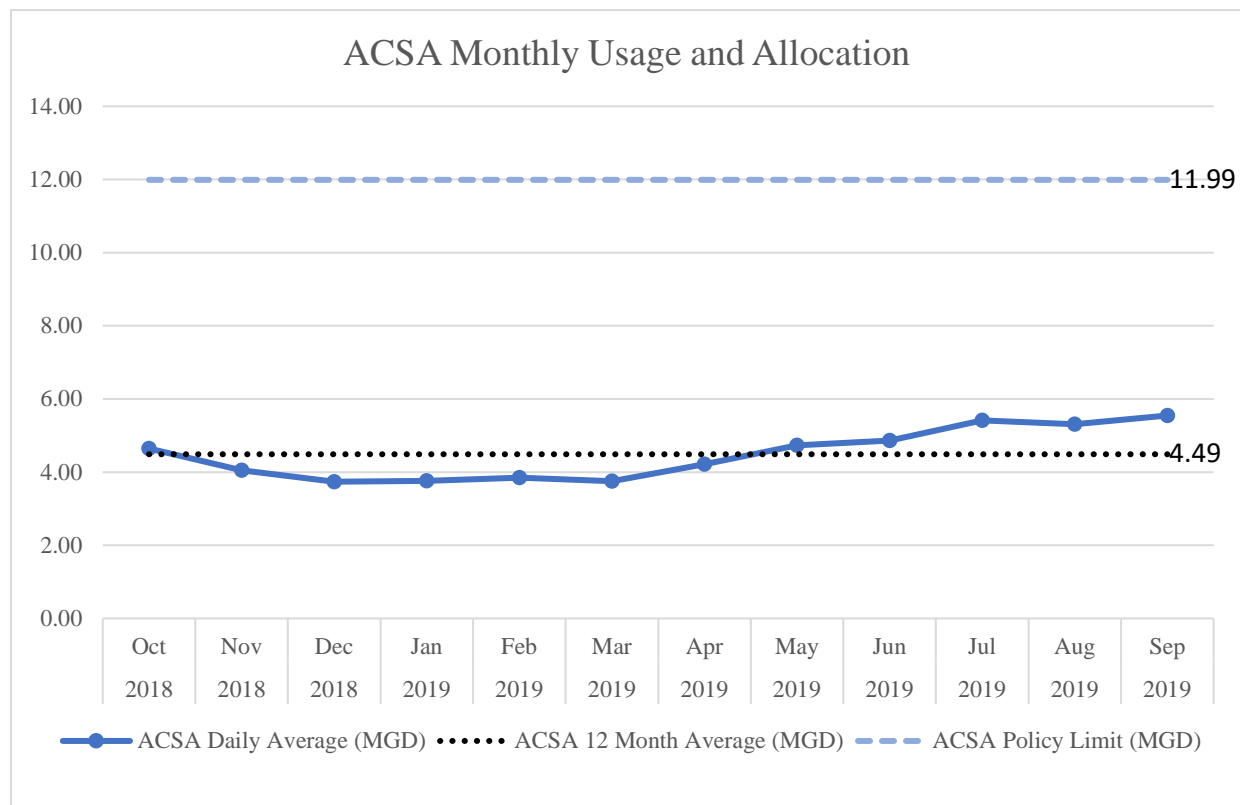
## Wholesale Water Metering SAMPLE Monthly Board Report

The monthly and average daily water usage by the ACSA and the City for September 2019 were as follows:

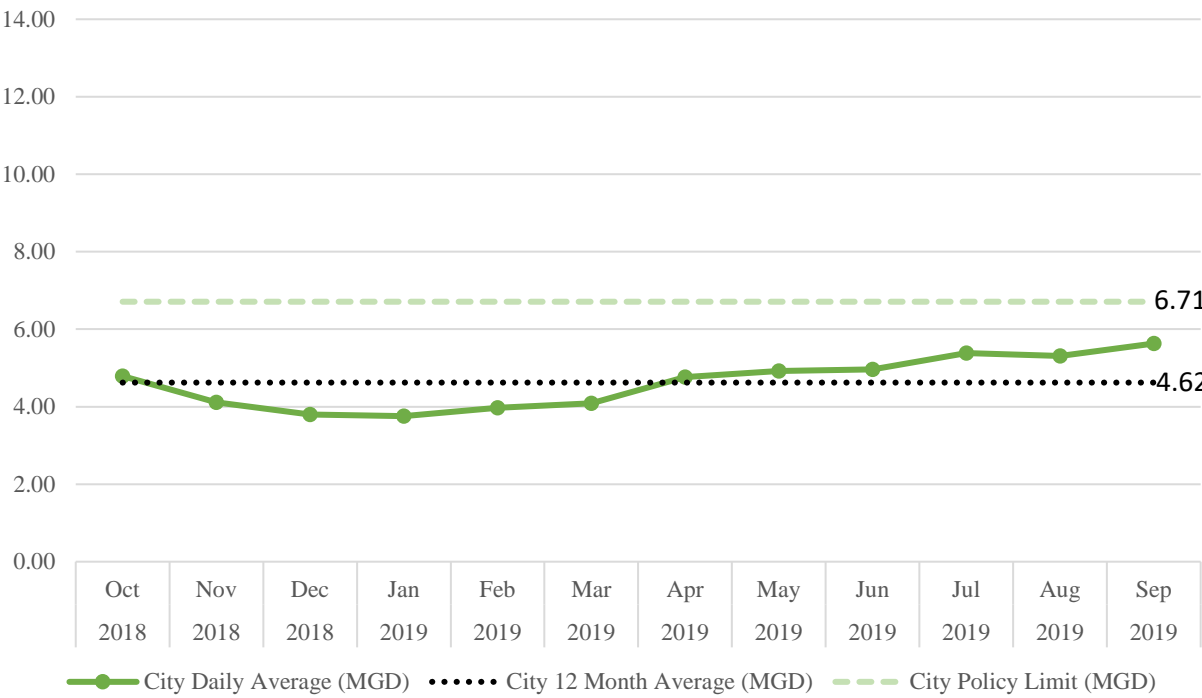
	<i>Month</i>	<i>Daily Average</i>	
City Usage (gal)	168,925,140*	5,630,838	50.4%
ACSA Usage (gal)	166,404,860*	5,546,828	49.6%
<b>Total (gal)</b>	<b>335,330,000*</b>	<b>11,177,666</b>	

\*Data shown above is based on retail metered flows rather than the Wholesale Meters for example purposes only. Future reports will contain monthly and average usage based on data received from the Jurisdictional Wholesale Meters.

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, above which a financial true-up would be required for the debt service charges related to the Ragged Mtn Dam and the SRR-RMR Pipeline projects. Below are graphs showing the calculated monthly water usage by each party, the running average (since the beginning of the current fiscal year, extended back to October 2018) and that usage relative to the maximum allocation for each party (11.99 MGD for ACSA and 6.71 MGD for the City).



# City Monthly Usage and Allocation





695 Moores Creek Lane | Charlottesville, Virginia 22902-9016

434.977.2970  
434.293.8858  
[www.rivanna.org](http://www.rivanna.org)

## MEMORANDUM

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

**FROM: BILL MAWYER, EXECUTIVE DIRECTOR**

**SUBJECT: APPROVAL OF BOARD MEETING SCHEDULE FOR CALENDAR 2020**

**DATE: NOVEMBER 19, 2019**

This memo is to propose a schedule for Board meetings during calendar year 2020.

Since 2009, the Board has met on the fourth Tuesday of the month at 2:15 p.m. (or upon conclusion of the RSWA Meeting when it is also held), except traditionally the November and December meetings have been advanced to the third Tuesday to avoid conflicts with the Thanksgiving and Christmas holidays.

### **Board Action Requested**

Staff respectfully recommends adoption of the attached Board Meeting Schedule for Calendar Year 2020.

Attachment



## Board Meeting Schedule

Listed below are the approved RWSA Board of Directors meeting dates for calendar year 2020:

Tuesday, January 28, 2020

Tuesday, February 25, 2020

Tuesday, March 24, 2020

Tuesday, April 28, 2020

Tuesday, May 26, 2020

Tuesday, June 23, 2020

Tuesday, July 28, 2020

Tuesday, August 25, 2020

Tuesday, September 22, 2020

Tuesday, October 27, 2020

Tuesday, November 17, 2020\*

Tuesday, December 15, 2020\*

\* The November and December meetings are moved to the third Tuesday of the month, respectively, to avoid conflicts with the weeks of Thanksgiving and Christmas.

RWSA meetings will start following the RSWA Board Meetings but not earlier than 2:15 p.m. RWSA meetings will be held in the large conference room of the Moores Creek Wastewater Treatment Plant Administration Building, 695 Moores Creek Lane, Charlottesville, VA.



## 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:** APPROVAL OF WORK AUTHORIZATION AND CAPITAL  
IMPROVEMENT PLAN AMENDMENT – URBAN WATER  
DEMAND AND SAFE YIELD STUDY; HAZEN AND SAWYER  
ENGINEERS

**DATE:** NOVEMBER 19, 2019

This request is to authorize an increase of \$13,000 to the consultant's Work Authorization to provide additional geographic-based water demand information not included in the original Work Authorization, and to amend the Capital Improvement Program (CIP) budget for the project.

At the August 2018 Board Meeting, the Executive Director was authorized to execute a Work Authorization with Hazen and Sawyer Engineers for a total not to exceed cost of \$140,000 to complete the Urban Water Demand and Safe Yield Study, and any amendments necessary for the completion of work up to 10% of the total Work Authorization. During the course of the project, additional tasks and data formatting changes were required to access and analyze water use and planning data more comprehensively than originally scoped, including better clarification of water usage between the City, ACSA and UVA. An increase in fees of \$27,000 was negotiated as fair and reasonable compensation for the additional effort. Use of the originally authorized contingency funds (\$14,000) plus an additional \$13,000 are required. This additional cost will exceed the CIP budget, and requires a CIP amendment of \$13,000.

**Board Action Requested:**

Staff requests the Board of Directors authorize an increase of \$13,000 to the consultant's contract and an amendment of the FY 2020 Capital Improvement Plan to increase the project budget from \$154,000 to \$167,000.

# Strategic Plan Update

## for the Board of Directors

Presented by: Katie McIlwee, Communications Manager

November 19, 2019



# Strategic Direction

## Values

The Rivanna Water & Sewer and Solid Waste Authority are committed to the following values:

Integrity  
Teamwork  
Respect  
Quality

## Vision

To serve the community and be a recognized leader in environmental stewardship by providing exceptional water and solid waste services.

## Mission

Our professional team of knowledgeable and engaged personnel serve the Charlottesville, Albemarle, and UVA community by providing high quality water treatment, refuse, and recycling services in a financially responsible manner.



# Year 2 Implementation

## Workforce Development

To attract, develop, and retain a professional, highly skilled, dedicated, and versatile team

## Operational Optimization

To efficiently, reliably, and safely provide high quality services, assuring the best value for our customers

## Communication & Collaboration

To foster a culture that encourages open communications and strengthens relationships

6 Goals



14  
Strategies



58 Tactics

## Environmental Stewardship

To be a leader in our community's environmental protection and education

## Solid Waste Services

To provide reliable, convenient, and innovative solid waste and recycling services

## Infrastructure & Master Planning

To plan, deliver, and maintain dependable infrastructure in a financially responsible manner

# Workforce Development

Overall Completion:  
70% 

Goal Team Leader: Betsy Nemeth & Lonnie Wood

## Conduct Training Needs Assessment & Enhance the Training Program

- Completed a Project Planning course for several Managers with PVCC.
- Began implementing online training through VRSA and will continue for all employees through the end of this year.
- Began Managers training using the video training library from VRSA (completed Incident Reporting and Preventing Sexual Harassment for Managers training).

### Next Steps:

- Working with PVCC on math tutoring for Water and Wastewater Operators who will be testing for higher licenses.
- Exploring employer branding (via social media) to aid in new employee recruitment
- Expanding New Employee Orientation to a full day, to better cover important topics such HR/Payroll and benefits, and safety

# Operational Optimization

Overall Completion:  
47% 

Goal Team Leader: Dave Tungate

## Continually Evaluate, Prioritize, & Improve Key Business & Operational Process

- Evaluated biosolids disposal process, toured outside facilities, and attended VA Biosolids Council Meeting
- Optimized S. Rivanna WTP belt press hours of operation, this included hiring a contractor to clean out the EQ Basin to remove excess filter media
- Completed the Corrosion Inhibitor Study

### Next Steps:

- After location has been determined, purchase, install, and integrate nitrogen sensors in the MC wastewater treatment process
- Install high speed fiber to South Rivanna WTP
- Implement new corrosion inhibitor product at WTPs

## Protect Workforce and the Public Through Continually Growing Rivanna's Culture of Safety

- Reviewed final version of the "Risk and Resilience" report required by AWIA for water utilities
- Installed remaining web-based cameras for security and monitoring facilities
- Completed a security assessment of the Moores Creek Facility

- Integrate web-based cameras with the Security 101 project
- Complete "Risk and Resilience" project by Jan 2020

# Communication & Collaboration

Overall Completion:  
45% 

Goal Team Leader: Katie McIlwee

## Create & Maintain Internal Communication Platforms

- MS Teams
- DocLink implementation
- Continued collaboration w/ Employee Council
- Published bi-monthly newsletter

### Next Steps:

- Continue implementation of DocLink
- Continue to maintain high level of communication through Employee Council, Employee Newsletter, and Employee Portal

## Create & Implement a Comprehensive Public Outreach Plan

- Awarded RFP for photography /videography services
- Continued/ongoing website maintenance
- Continued to reach out to schools and local groups to provide facility tours and informational presentations

- Plan and schedule project/facility videos
- Take updated facility photos for use on the website and in presentations

## Enhance Internal & External Communication

- United Way Day of Caring
- Imagine a Day Without Water
- Rivanna Flow Fest
- Quarterly Teambuilding events
- Participate in monthly TAC meetings with ACSA & City

- Planning the next NW Central VA Utilities Managers Lunch & Learn
- Research use of Social Media
- Planning the next Managers Meeting w/ ACSA & City

# Environmental Stewardship

Overall Completion:  
50% 

Goal Team Leader: Andrea Terry

## Increase Internal Environmental Engagement

- United Way Day of Caring
- Employee Environmental Council established

### Next Steps:

- Continue to look for opportunities, such as stream cleanups, tree plantings, etc. to engage employees

## Provide Regional Leadership in Environmental Stewardship Partnerships

- Imagine a Day Without Water
- Rivanna Flow Fest
- Tree planting at Crozet Elementary
- Stormwater partnership
- Rivanna Renaissance Conference participation

- Continue to look for opportunities for collaboration
- Explore the potential for a Regional Glass Recycling Pilot program w/ other localities

## Evaluate Potential Opportunities for Additional Environmental Activities at RWSA Facilities

- Advertised and awarded contract for Buck Mountain Master Plan
- Oyster shell collection at McIntire Recycling Center
- Political sign collection program

- Complete Buck Mtn. MP
- Review Wetland Mitigation Grading quotes and award project
- Evaluate potential for use of solar at RWSA facilities

# Solid Waste Services

Overall Completion:  
45% 

Goal Team Leader: Phil McKalips

## Determine Community Needs & Preferred Service Levels

- Continue to provide facility tours to local schools
- Created recycling stickers for customers' home bins
- Political sign collection program
- Completed Composting Master Plan

### Next Steps:

- Continue reaching out to schools, civic groups, etc. for tours and informational presentations
- Identify places at RSWA facilities and in the community for informational flyers
- Continue collaboration with SWAAC

## Enhance Partnerships with Local Governments and UVA

- Create an Earth Day YouTube recycling video competition with local schools
- Define contest details (subject, length, judging, awards, start/end dates)
- Partnered with VOSRP to set up oyster shell recycling container at McIntire

- Complete contest rules and establish other competition details
- Reach out to local schools and begin advertising competition
- Sponsor a Regional Glass Recycling Pilot program w/ other localities

# Infrastructure & Master Planning

Overall Completion:  
48% 

Goal Team Leader: Scott Schiller

## Implement an Authority- Wide Asset Management Program

- Completed scope of work for Phase 2 of program development
- Began providing asset data to the consultant
- Began development of an RFP for procurement of CMMS software and implementation
- Completed bond refinancing

### Next Steps:

- Use collected data to begin development of complete asset hierarchy structure & inventory
- Advertise RFP for CMMS software and implementation

## Develop & Maintain Long-Term Master Plans for all Critical Assets

- Develop list of asset classes to use within the Master Plan matrix
- Confirmed master plan champions
- Began to implement projects from the Technology Master Plan
- Began to develop procedure to link the master plan matrix to the CIP development process

- Prepare draft procedure for asset class master plan champions, have team review and comment
- Continue development of Master Plan/CIP matrix

Questions?





## MEMORANDUM

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

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

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

**SUBJECT: COMPREHENSIVE ANNUAL FINANCIAL REPORT  
FISCAL YEAR ENDING JUNE 30, 2019**

**DATE: NOVEMBER 19, 2019**

The Authority's Comprehensive Annual Financial Report for the fiscal year ending June 30, 2019 is included with your Board packet. A large part of preparing the financial statements involves having the financial reports audited for the purposes of obtaining an opinion from an independent Certified Public Accountant as to the accuracy of the information presented in the report.

The audit also reviews internal accounting controls and tests for compliance with relevant laws and regulations as a function of expressing the firm's opinion on the financial information. I am pleased to inform you that the Authority received an unmodified opinion, which is the highest opinion that the financial statements are materially accurate and fairly presented.

Mr. Robert Huff, a principal of the Charlottesville office of Robinson, Farmer, Cox Associates, will be at the meeting to give a brief review of the audit and discuss any audit findings the firm may have. A letter communicating several aspects of the review is attached for you as well.

I would also like to thank Kathy Ware, Senior Accountant, who performed much of the detailed work in the preparation of this report. The entire administrative staff deserves our appreciation for their hard work during the year in processing our transactions and their assistance during the audit.

This report will be submitted to the Certification Program of the Government Finance Officers Association.

Attachment: Comprehensive Annual Financial Report  
Communication with Those Charged with Governance



# ROBINSON, FARMER, COX ASSOCIATES, PLLC

*Certified Public Accountants*

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## Communication with Those Charged with Governance

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### To the Board of Directors Rivanna Water & Sewer Authority

We have audited the financial statements of financial statements of Rivanna Water & Sewer Authority for the year ended June 30, 2019. Professional standards require that we provide you with information about our responsibilities under generally accepted auditing standards and *Government Auditing Standards*, as well as certain information related to the planned scope and timing of our audit. We have communicated such information in our letter to you dated July 15, 2019. Professional standards also require that we communicate to you the following information related to our audit.

#### Significant Audit Matters

##### *Qualitative Aspects of Accounting Practices*

Management is responsible for the selection and use of appropriate accounting policies. The significant accounting policies used by Rivanna Water & Sewer Authority are described in Note 1 to the financial statements. As described in Note 18 to the financial statements, Rivanna Water & Sewer Authority changed accounting policies by adopting Statement of Governmental Accounting Standards (GASB Statement) No. 88 *Certain Disclosures Related to Debt, Including Direct Borrowings and Direct Placements* and by early implementing GASB No. 89, *Accounting for Interest Cost Incurred Before the End of a Construction Period*. We noted no transactions entered into by the entity during the year for which there is a lack of authoritative guidance or consensus. All significant transactions have been recognized in the financial statements in the proper period.

Accounting estimates are an integral part of the financial statements prepared by management and are based on management's knowledge and experience about past and current events and assumptions about future events. Certain accounting estimates are particularly sensitive because of their significance to the financial statements and because of the possibility that future events affecting them may differ significantly from those expected. The most sensitive estimates affecting the Authority's financial statements were:

Management's estimate of the useful lives of depreciable assets is based on industry standards. Pension and OPEB estimates were determined by valuations performed by actuaries. We evaluated the key factors and assumptions used to develop the estimates in determining that they are reasonable in relation to the financial statements taken as a whole.

The financial statement disclosures are neutral, consistent, and clear.

##### *Difficulties Encountered in Performing the Audit*

We encountered no significant difficulties in dealing with management in performing and completing our audit.

### *Corrected and Uncorrected Misstatements*

Professional standards require us to accumulate all known and likely misstatements identified during the audit, other than those that are clearly trivial, and communicate them to the appropriate level of management. Management has corrected all such misstatements. In addition, none of the misstatements detected as a result of audit procedures and corrected by management were material, either individually or in the aggregate, to each opinion unit's financial statements taken as a whole.

### *Disagreements with Management*

For purposes of this letter, a disagreement with management is a financial accounting, reporting, or auditing matter, whether or not resolved to our satisfaction, that could be significant to the financial statements or the auditors' report. We are pleased to report that no such disagreements arose during the course of our audit.

### *Management Representations*

We have requested certain representations from management that are included in the management representation letter dated October 25, 2019.

### *Management Consultations with Other Independent Accountants*

In some cases, management may decide to consult with other accountants about auditing and accounting matters, similar to obtaining a "second opinion" on certain situations. If a consultation involves application of an accounting principle to the entity's financial statements or a determination of the type of auditors' opinion that may be expressed on those statements, our professional standards require the consulting accountant to check with us to determine that the consultant has all the relevant facts. To our knowledge, there were no such consultations with other accountants.

### *Other Audit Findings or Issues*

We generally discuss a variety of matters, including the application of accounting principles and auditing standards, with management each year prior to retention as the entity's auditors. However, these discussions occurred in the normal course of our professional relationship and our responses were not a condition to our retention.

### Other Matters

We applied certain limited procedures to management's discussion and analysis and the schedules related to pension and OPEB funding, which are required supplementary information (RSI) that supplements the basic financial statements. Our procedures consisted of inquiries of management regarding the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We did not audit the RSI and do not express an opinion or provide any assurance on the RSI.

We were not engaged to report on the introductory section or statistical section which accompany the financial statements but are not RSI. Such information has not been subjected to the auditing procedures applied in the audit of the basic financial statements, and accordingly, we do not express an opinion or provide any assurance on it.

Restriction on Use

This information is intended solely for the use of the Board of Directors and management of Rivanna Water & Sewer Authority and is not intended to be, and should not be, used by anyone other than these specified parties.

*Robinson, Farmer, Cox Associates*  
Charlottesville, Virginia  
October 25, 2019



**COMPREHENSIVE ANNUAL FINANCIAL REPORT  
YEARS ENDED JUNE 30, 2019 AND 2018**

**SERVING**

**CHARLOTTESVILLE & ALBEMARLE COUNTY, VIRGINIA**

**Front Cover Photograph**  
**Observatory Water Treatment Plant**

**RIVANNA WATER & SEWER AUTHORITY  
CHARLOTTESVILLE, VIRGINIA**

**COMPREHENSIVE ANNUAL FINANCIAL REPORT**

**YEARS ENDED JUNE 30, 2019 AND 2018**

**Prepared By:**

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Department of Finance and Administration

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# RIVANNA WATER & SEWER AUTHORITY

## Comprehensive Annual Financial Report Fiscal Years Ended June 30, 2019 and 2018

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## RIVANNA WATER & SEWER AUTHORITY

Comprehensive Annual Financial Report  
Fiscal Years Ended June 30, 2019 and 2018

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**BOARD MEMBERS**

Michael A. Gaffney, Chairman

Dr. Tarron Richardson, Vice-Chairman

Jeff Richardson, Secretary-Treasurer

Lauren Hildebrand

Dr. Liz A. Palmer

Kathleen Galvin

Gary B. O'Connell

**EXECUTIVE DIRECTOR**

William I. Mawyer, Jr., P.E.

**DIRECTOR OF FINANCE/ADMINISTRATION**

Lonzy E. Wood, III

**GENERAL COUNSEL**

McGuire Woods, LLP  
Charlottesville, Virginia

**TRUSTEE AND ESCROW AGENT**

Bank of New York Mellon  
New York, New York

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695 MOORES CREEK LANE  
CHARLOTTESVILLE, VA 22902-9016  
TEL: 434.977.2970  
FAX: 434.293.8858  
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October 25, 2019

To the Board of Directors  
Rivanna Water and Sewer Authority  
Charlottesville, Virginia

The Comprehensive Annual Financial Report (CAFR) of the Rivanna Water and Sewer Authority (the Authority) for the fiscal year ended June 30, 2019 is submitted herewith. This report has been prepared in conformity with the reporting and accounting standards promulgated by the Government Accounting Standards Board and the Financial Accounting Standards Board and with the accounting and reporting standards for enterprise funds set out by the Government Finance Officers Association of the United States and Canada, with such modifications as apply to our status as an independently chartered corporation.

Based upon a comprehensive framework of internal control that it has established for this purpose, management assumes responsibility for the completeness and reliability of the information contained in this report. The objective of internal control is to provide reasonable, rather than absolute, assurance that the financial statements are free of material misstatements, because the cost of each internal control should not outweigh the potential benefit.

Management's discussion and analysis (MD&A) immediately follows the independent auditors' report and provides a narrative introduction, overview, and analysis of the basic financial statements. MD&A complements this letter of transmittal and should be read in conjunction with it.

## **ORGANIZATION AND SERVICES PROVIDED**

The Rivanna Water and Sewer Authority is a regional non-profit public corporation and political subdivision of the Commonwealth of Virginia chartered in 1972 under the Virginia Water and Waste Authorities Act (1950, as amended), that supplies drinking water to and treats the wastewater of Charlottesville (City) and certain areas of Albemarle County (County). The Authority is a wholesale agency and bills monthly both Charlottesville and the Albemarle County Service Authority, which handle retail distribution of water and collection of sewage in their respective service areas.

The Authority is charged to acquire, finance, construct, operate and maintain facilities for the impoundment, production, storage, treatment and transmission of potable water and for the interception, treatment and discharge of wastewater. The Authority operates under the terms of a Service Agreement signed June 12, 1973 by the officers of the Charlottesville City Council, the Albemarle County Board of Supervisors, the Albemarle County Service Authority and the Rivanna Water and Sewer Authority. The Authority has determined that it is not part of the reporting entity of either the City of Charlottesville or the County of Albemarle and will not be included in the financial report of either (see Note 1 to the Financial Statements).

SERVING CHARLOTTESVILLE & ALBEMARLE COUNTY

## **ORGANIZATION AND SERVICES PROVIDED: (CONTINUED)**

The Authority is governed by a seven-member Board of Directors (Board). The Board appoints an Executive Director, who manages Authority operations under its direction. The Authority is now organized in administration, laboratory, engineering, maintenance, water, and wastewater departments. The Authority operates and maintains six water treatment plants and three wastewater treatment plants and the associated water storage facilities, pump stations, transmission mains and interceptor sewers. Retail distribution of water and collection of wastewater is performed by the Authority's two customers: the City of Charlottesville's Public Utilities Division and the Albemarle County Service Authority.

## **JOINT ADMINISTRATION**

By mutual agreement of the respective Boards of Directors, the Authority currently shares administrative staff and office space with the Rivanna Solid Waste Authority, which is billed monthly for its portion of the costs. Administrative procedures were implemented to ensure proper segregation of funds, purchasing activity, personnel, and similar matters. The Authorities also agreed to administer joint Safety Regulations and a joint Safety Program.

## **ECONOMIC CONDITION AND PROSPECTS**

The University of Virginia provides a significant buffer against large swings in the economy of our service area. In addition, the Charlottesville urban area is a major retail trade center for the surrounding region. Housing growth remains steady. Although most growth occurs in County developments, in-filling in Charlottesville continues. Both Charlottesville and Albemarle County enjoy low unemployment rates, steady economic growth and high bond ratings.

A ten-year compilation analysis report dated September 2018 by the Charlottesville Regional Chamber of Commerce examining employment in the Greater Charlottesville Region concluded that combined private and public-sector employment grew by 10%, or 11,551 jobs, from 2007 to 2017, compared to a 4.3% increase in Virginia outside of the region. In 2017, 76% of jobs within the Region were located in the City of Charlottesville and Albemarle County, and the other 24% are reported in the Counties of Fluvanna, Greene, Louisa, Nelson, and Orange. The unemployment rate for the Charlottesville Metropolitan Service Area for 2018 was 2.7%.

The Charlottesville-Albemarle area attracts many visitors to its historic sites, and the wine industry has been popular and has served to help benefit the tourism sector of the regional economy. The travel and tourism industry make a vital contribution to the local economy.

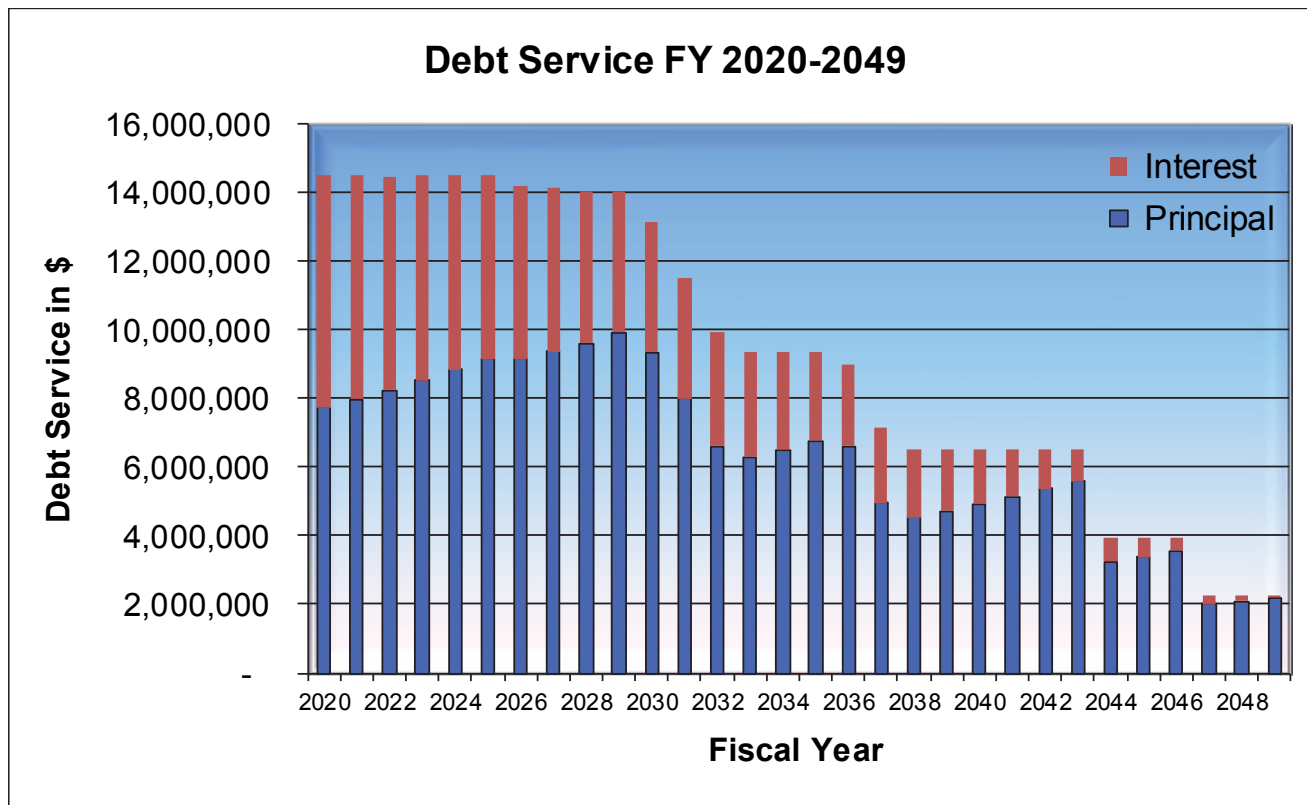
The University of Virginia's capital projects will continue to be an impetus of growth for water and sewer services. Our current Capital Improvement Program, as discussed below, reflects the Authority's response to the current and projected service demands on our facilities and to the need to respond to regulatory requirements.

## **LONG-TERM FINANCIAL PLANNING**

Despite the significant infrastructure needs identified in the CIP, the Authority is positioned to provide for these needs by using more cash up front for projects and having a debt and rate structure (and a system for increasing debt charges to our customers) that will accommodate more debt in the future. The Authority has slowly but consistently been implementing rate increases to pay for such infrastructure needs in 5-year increments. This practice encourages the creation of reserves for capital spending until a project is started and partially financed with debt proceeds.

## **LONG-TERM FINANCIAL PLANNING: (CONTINUED)**

As shown in the following graph, which represents debt service payments on existing debt, the Authority has a consistent to a declining debt structure for the next 12 years with large declines thereafter. Additionally, the rates are currently programmed to generate \$15.5 million annually in debt service revenues; however, the water and wastewater capital needs will require additional rate increases in the future to maintain solid cash positions and fund future debt service needs.



## **MAJOR INITIATIVES**

There are several capital improvements slated for the next 5 to 10 years that will be significant in terms of planning and attention to details. Water plant construction is a critical but necessary initiative for the two main plants on the Urban system. The plants must stay on-line during the construction process which takes great efforts to plan out the improvements and coordinate with operating staff to meet our production and construction goals. Major planned upgrades to the South Rivanna Water Treatment Plant (WTP) and Observatory WTP are expected to cost a total of \$40.5 million. The Crozet system will also go through several upgrades and increase capacity. The Beaver Creek Dam will have to be modified to meet current regulatory standards for dam safety, specifically to the spillway. These projects have an estimated budget of \$30.6 million. See the MD&A for more information.

One non-capital project related major initiative continued during the year which was a strategic plan implementation. Staff implemented the first year of the strategic plan adopted more than a year ago by identifying specific tactics to address the strategies within the plan. Major initiatives accomplished were implementation of a compensation plan (which was a study and board approval), consolidation and updating of the Personnel Management Plan, increasing and cataloguing green initiatives, began development for asset management systems, completed an IT Master Plan study, completed an employee portal on our website, and enhanced the usability of the overall Authority website. The Board approved the Strategic Plan in November 2017 and it will be continuously worked on for the next several years because this effort is a continuous program of assessing our plan/mission and measuring our progress towards achieving identified goals.

## **BUDGETARY CONTROLS AND FINANCIAL POLICIES**

The Authority is required by the Service Agreement to adopt an annual budget for setting wholesale rates as well as for fiscal guidance to staff. Separate fiscal year budgets are currently prepared for six rate centers to include direct costs and allocations of administrative, engineering, maintenance, lab and debt service expenses. Until the Service Agreement was amended in August 2015, projections of flows and expenses were used to calculate rates per thousand gallons for the two Urban rate centers and flat monthly charges for the other rate centers to cover both operating and debt service costs. Actual flows vary each year from the flows estimated when the rates were set, due to unpredictable weather conditions. Effective with the October 2015 billing, RWSA began charging a fixed monthly rate for the Urban rate center debt service costs while continuing to charge operations rates per thousand gallons. This was a very positive change, because RWSA is required to make fixed debt service payments each fiscal year, and it is important to have a fixed revenue source to pay those expenses.

A proposed budget for each fiscal year is prepared by the Authority Directors and the Executive Director and submitted to the Board of Directors, usually in February, with a public hearing held on the proposed rates in April or May. All budget items lapse at the end of the fiscal year except capital commitments. It should be noted that the budget is prepared for internal use and does not reflect the accrual basis of accounting. An example of this is that principal payments on debt are shown as an expense.

Budgetary compliance is monitored and reported to the Board by the Director of Finance & Administration and the Executive Director. Projections of both revenues and expenses are understood to reflect anticipated service levels and to incorporate a variety of economic, climatic, and demographic forecasts. Variances from budget line items are examined at least monthly to assure a reasonable relation between actual costs and actual service levels, emergencies, or economic conditions. The Authority Board of Directors adopted in August 2011 certain financial policies that help guide the capital and operating budgeting process by defining reserves, reserve goals, uses of discretionary funds, and setting financial targets on debt and capital funding.

The Authority's accounting records are maintained on the accrual basis of accounting. Under this method, revenues are recognized when earned and expenses are recorded when incurred, without regard to receipt or payment of cash. Current controls provide reasonable assurance that the Authority's assets are properly recorded and protected and that the financial data may be used with confidence in the preparation of historical reports and projections. Accounting control is maintained by segregation of duties and data security systems in all areas of record keeping, disbursements, and purchasing authority. These controls are reviewed regularly by staff and are evaluated as part of the annual financial audit (see Annual Audit section below).

The Authority implemented the financial reporting provisions of Governmental Accounting Standards Board (GASB) Statement No. 89, Accounting for Interest Cost Incurred Before the End of a Construction Period, at the beginning of fiscal year ended June 30, 2019. This Statement requires that interest cost incurred before the end of a construction period be recognized as an expense when incurred instead of being included in the historical cost of constructed capital assets.

## **ANNUAL AUDIT**

The Code of Virginia, the June 12, 1973 Service Agreement, the Trust Agreement and its Supplements require an annual audit of the books and records of the Authority. The opinion of our independent certified public accountants is included in the Financial Section.



## **AWARDS**

The Government Finance Officers Association of the United States and Canada (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to Rivanna Water and Sewer Authority for its comprehensive annual financial report for the fiscal year ended June 30, 2018. To be awarded a Certificate of Achievement, a governmental unit must publish an easily readable and efficiently organized comprehensive annual financial report. This report must satisfy both generally accepted accounting principles and applicable legal requirements.

A Certificate of Achievement is valid for a period of one year only. We believe that our current comprehensive annual financial report continues to meet the Certificate of Achievement Program's requirements and we are submitting it to the GFOA to determine its eligibility for another certificate.

## **ACKNOWLEDGEMENTS**

The help of the Authority's staff and of our certified public accountants is gratefully acknowledged. Such help and the Board of Directors' support and commitment to financial reporting excellence are essential to the preparation of this report.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Lonzy E. Wood, III". The signature is fluid and cursive, with a large initial "L" and "W".

Lonzy E. Wood, III, CPA  
Director of Finance and Administration

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Government Finance Officers Association

**Certificate of  
Achievement  
for Excellence  
in Financial  
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Presented to

**Rivanna Water & Sewer Authority  
Virginia**

For its Comprehensive Annual  
Financial Report  
for the Fiscal Year Ended

**June 30, 2018**

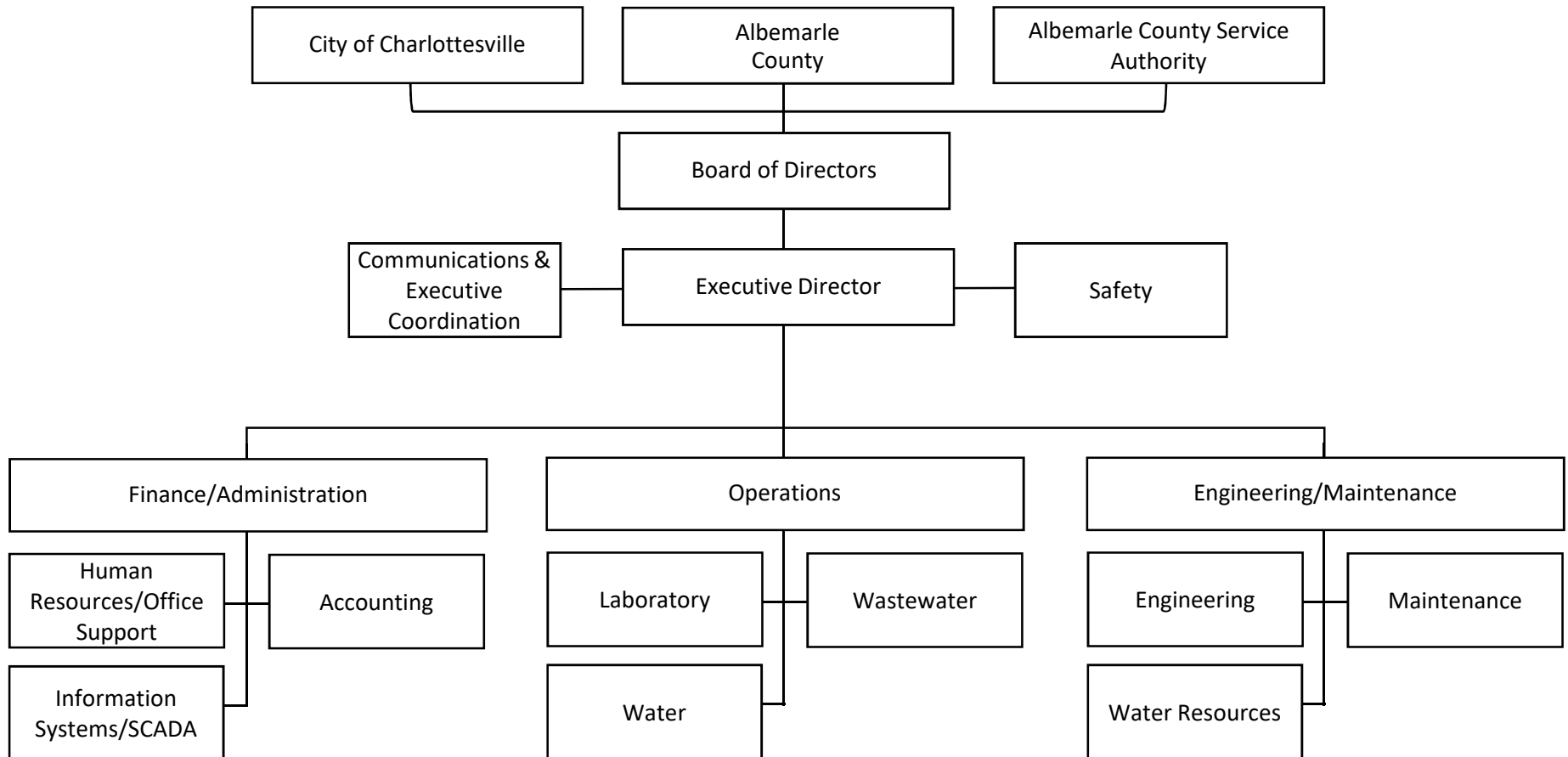
*Christopher P. Morrell*

Executive Director/CEO

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# Rivanna Water & Sewer Authority

## Organizational Chart



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**Independent Auditors' Report**

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**To the Board of Directors  
Rivanna Water & Sewer Authority  
Charlottesville, Virginia**

**Report on the Financial Statements**

We have audited the accompanying financial statements of the business-type activities of Rivanna Water & Sewer Authority, as of and for the years ended June 30, 2019 and 2018, and the related notes to the financial statements, which collectively comprise the Authority's basic financial statements as listed in the table of contents.

***Management's Responsibility for the Financial Statements***

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

***Auditors' Responsibility***

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in the United States of America; the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States; and the *Specifications for Audits of Authorities, Boards, and Commissions*, issued by the Auditor of Public Accounts of the Commonwealth of Virginia. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

## **Opinion**

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the business-type activities of Rivanna Water & Sewer Authority, as of June 30, 2019 and 2018, and the changes in financial position, and cash flows thereof for the year then ended in accordance with accounting principles generally accepted in the United States of America.

## **Change in Accounting Principle**

As described in Note 18 to the financial statements, in 2019, the Authority adopted new accounting guidance, GASB Statement No. 88 *Certain Disclosures Related to Debt, Including Direct Borrowings and Direct Placements* and early implemented GASB No. 89, *Accounting for Interest Cost Incurred Before the End of a Construction Period*. Our opinion is not modified with respect to this matter.

## **Other Matters**

### *Required Supplementary Information*

Accounting principles generally accepted in the United States of America require that the management's discussion and analysis and schedules related to pension and OPEB funding on pages 15-24 and 84-90 be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board, who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

### *Other Information*

Our audit was conducted for the purpose of forming an opinion on the financial statements that collectively comprise Rivanna Water & Sewer Authority's basic financial statements. The introductory and statistical sections are presented for purposes of additional analysis and are not a required part of the basic financial statements.

The introductory and statistical sections have not been subjected to the auditing procedures applied in the audit of the basic financial statements and, accordingly, we do not express an opinion or provide any assurance on them.

## **Other Reporting Required by Government Auditing Standards**

In accordance with *Government Auditing Standards*, we have also issued our report dated October 25, 2019, on our consideration of Rivanna Water & Sewer Authority's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is solely to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the effectiveness of Rivanna Water & Sewer Authority's internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering Rivanna Water & Sewer Authority's internal control over financial reporting and compliance.

*Robinson, Farmer, Cox Associates*  
Charlottesville, Virginia  
October 25, 2019



## Management's Discussion and Analysis

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**To the Board of Directors  
Rivanna Water & Sewer Authority  
Charlottesville, Virginia**

As management of the Rivanna Water & Sewer Authority (the Authority), we offer readers of our financial statements this narrative overview and analysis of the financial activities of the Authority for the fiscal year ended June 30, 2019. We encourage readers to consider the information presented here in conjunction with additional information that we have furnished in our letter of transmittal, which can be found on pages 3 through 8 of this report.

### **Overview of the Financial Statements:**

This discussion and analysis is intended to serve as an introduction to the Authority's basic financial statements. Since the Authority is engaged only in business-type activities, its basic financial statements are comprised of only two components: 1) enterprise fund financial statements and 2) notes to the financial statements. This report also contains required supplementary information in addition to the basic financial statements themselves.

**Enterprise fund financial statements.** The enterprise fund financial statements are designed to provide readers with a broad overview of the Authority's finances, in a manner similar to a private-sector business.

The statement of net position presents information on the Authority's assets, deferred outflows of resources, liabilities, and deferred inflow of resources with the difference reported as net position. Over time, increases or decreases in net position may serve as a useful indicator of whether the financial position of the Authority is improving or deteriorating.

The statement of revenues, expenses, and changes in net position presents information showing how the Authority's net position changed during the most recent fiscal year. All changes in net position are reported as soon as the underlying event giving rise to the change occurs, regardless of the timing of the cash flows. Thus, revenues and expenses are reported in this statement for some items that will only result in cash flows in future fiscal periods (e.g. earned but unused vacation leave).

The basic enterprise fund financial statements can be found on pages 26 through 29 of this report.

**Notes to the financial statements.** The notes provide additional information that is essential to a full understanding of the data provided in the financial statements. The notes to the financial statements can be found on pages 31 through 82 of this report.

**Required supplementary information.** This report also includes required supplementary information concerning the Authority's progress in funding its obligation to provide pension and other postemployment benefits to its employees. It is located immediately following the notes to financial statements.

### **Required supplementary information.**

In FY 2018, the Authority adopted new accounting guidance, GASB Statement No. 75, *Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions*, and restated beginning balances pursuant to the requirements of GASB Statement No. 75. See Notes 12 and 17 for more information.

### **Financial Highlights:**

- The Authority's total net position increased consistently the last two years by \$5.2 million in FY 2019 and by \$5.3 million in FY 2018.
- Construction in progress decreased by \$45.7 million this year and buildings and operating equipment net of depreciation increased by \$46.5 million, due to the completion and capitalization of several capital projects.
- Noncurrent liabilities increased by \$31.2 million this year due to the issuance of a new \$36.8 million revenue bond to fund capital projects less \$7 million bond principal repayments.
- Operating revenues increased by \$5.1 million due to increased rates and significant wastewater flow resulting from record rainfall.
- Interest expense increased \$3.3 million this year, because interest was no longer capitalized as of July 1, 2018 due to early adoption of GASB 89.

### **Financial Analysis:**

The Authority's assets and deferred outflows exceeded its liabilities and deferred inflows (net position) by \$152.3 million at fiscal year end June 30, 2019. Of this amount, \$34.6 million (unrestricted net position) may be used to meet the Authority's normal ongoing operating obligations to customers and creditors while \$4.3 million of net position is restricted for the bondholders. Total net position increased 4% in each of the past two years, which is an indication that the Authority's overall financial position has improved. The net investment in capital assets decreased by \$0.7 million this year primarily due to the issuance of a new bond. The largest portion of the Authority's net position (74%) reflects its investment in capital assets, net of depreciation and related debt outstanding that was used to acquire those assets. The Authority uses these capital assets to provide services to its customers; consequently, these assets are not available for future spending. Although the Authority's investment in capital assets is reported net of related debt, the resources needed to repay this debt are derived from the revenue generating capability of these capital assets and not from the capital assets themselves.

	<b>Net Position</b>		
	<b>2019</b>	<b>2018</b>	<b>2017</b>
Current and other assets	\$ 82,727,243	\$ 47,155,939	\$ 60,323,302
Capital assets	278,086,565	275,272,861	263,852,256
Total assets	<u>\$ 360,813,808</u>	<u>\$ 322,428,800</u>	<u>\$ 324,175,558</u>
Deferred outflows of resources	<u>\$ 1,140,986</u>	<u>\$ 1,315,467</u>	<u>\$ 1,874,215</u>
Noncurrent liabilities	\$ 195,819,731	\$ 164,657,769	\$ 170,711,501
Current liabilities	13,398,622	11,447,549	13,574,665
Total liabilities	<u>\$ 209,218,353</u>	<u>\$ 176,105,318</u>	<u>\$ 184,286,166</u>
Deferred inflows of resources	<u>\$ 468,212</u>	<u>\$ 565,983</u>	<u>\$ -</u>
Net position:			
Net investment in capital assets	\$ 113,396,071	\$ 114,137,186	\$ 105,412,275
Restricted for bond covenants	4,278,445	3,794,293	3,729,350
Unrestricted	34,593,713	29,141,487	32,621,982
Total net position	<u>\$ 152,268,229</u>	<u>\$ 147,072,966</u>	<u>\$ 141,763,607</u>

## **Financial Analysis: (Continued)**

Operating revenues increased by \$5.15 million for FY 2019 compared to a \$694,000 increase last year. Metered water sales increased 8% over last year's charges, or \$1.2 million, which was on target with budget projections for FY 2019 increases. For FY 2018, there was a 2% increase in revenues over the previous year which was slightly less than budget targets. Wastewater service charge revenues increased 27% over FY 2018 revenues. The Authority targeted a budgeted revenue increase of \$1.1 million for the FY 2019 compared to the actual charges of \$4 million in additional revenues. This was a significant increase due to much higher than normal precipitation for the year. FY 2018 wastewater revenues decreased 3% from the previous year yet was slightly under budgeted targets.

Total operating expenses increased by \$3.6 million or 17%, for FY 2019 primarily due to several costly water and sewer line maintenance items related to storm damage, granular activated carbon purchases, increased utility costs, maintenance/repairs and depreciation expense increases. There was a \$650,000 increase in operating expenses in FY 2018, largely due to higher utility costs and depreciation. Key elements of these changes are explained further in the Review of Operations section.

	<b>Changes in Net Position</b>		
	<b>2019</b>	<b>2018</b>	<b>2017</b>
Revenues:			
Operating revenues			
Metered water sales	\$ 15,216,180	\$ 14,034,080	\$ 13,753,977
Wastewater service charges	18,821,857	14,858,101	14,444,159
Nonoperating revenues			
Investment earnings	1,599,486	525,039	296,433
Buck Mountain revenue	111,700	125,900	115,700
Administrative reimbursement	474,246	436,329	328,000
Other revenues	380,737	302,920	305,763
Total revenues	<u>\$ 36,604,206</u>	<u>\$ 30,282,369</u>	<u>\$ 29,244,032</u>
Expenses:			
Operating expenses			
Personnel costs	\$ 7,728,340	\$ 7,385,978	\$ 7,483,807
Professional services	994,207	738,823	885,072
Other services and charges	3,770,051	3,341,421	2,764,905
Operations and maintenance	5,799,962	4,169,065	4,214,246
Depreciation expense	6,704,908	5,773,757	5,411,996
Nonoperating expenses			
Interest expense	5,947,988	2,643,801	2,248,229
Debt issuance costs	463,487	-	126,766
Total expenses	<u>\$ 31,408,943</u>	<u>\$ 24,052,845</u>	<u>\$ 23,135,021</u>
Change in net position	<u>\$ 5,195,263</u>	<u>\$ 6,229,524</u>	<u>\$ 6,109,011</u>
Net position, beginning of year, as restated	<u>147,072,966</u>	<u>140,843,442</u>	<u>135,654,596</u>
Net position, end of year	<u>\$ 152,268,229</u>	<u>\$ 147,072,966</u>	<u>\$ 141,763,607</u>

## **Capital Asset and Debt Administration:**

**Capital Assets** - The Authority's investment in capital assets net of accumulated depreciation increased 1% in the current year and 4% in the prior year because of costs incurred on construction projects noted below less depreciation on all assets of \$6.7 million and \$5.8 million respectively for FY 2019 and FY 2018. Construction costs incurred were \$8.9 million for FY 2019 and \$17.6 million for FY 2018. More detailed information on the Authority's capital assets is presented in Notes 4 and 5 of the notes to the financial statements and is addressed further Review of Operations section below.

The various categories of capital assets net of depreciation at the end of the past three fiscal years are as follows:

	<b>2019</b>	<b>2018</b>	<b>2017</b>
Land and improvements	\$ 12,310,763	\$ 10,604,850	\$ 10,604,850
Buildings and operating equipment	256,781,051	210,317,886	180,753,567
Trucks and autos	519,291	200,137	148,252
Office equipment	11,665	1,001	3,003
Construction in progress	8,463,765	54,148,987	72,342,584
Total capital assets, net	<u>\$ 278,086,535</u>	<u>\$ 275,272,861</u>	<u>\$ 263,852,256</u>

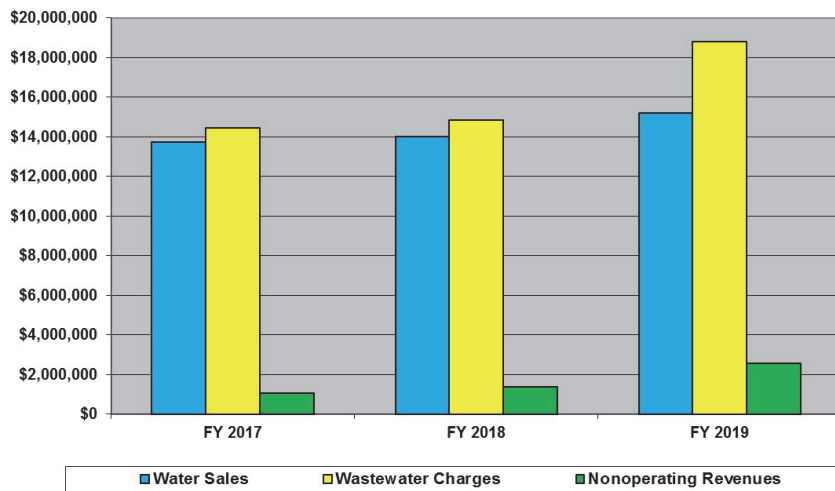
Major capital asset activity for the current fiscal year included:

Birdwood Golf Course Waterline	\$ 2,714,728
Crozet WTP Expansion	728,340
Moore's Creek AWRRF Odor Control-Phase 2	727,096
Route 29 Pumping Station Site Acquisition	663,745
South Rivanna WTP Improvements	572,140
Wholesale Water Master Metering-Urban	558,174
Observatory WTP Improvements	506,520
Sugar Hollow to Ragged Mtn Res Transfer Flow Meter	466,738
Crozet Interceptor PS Bypass Isolation Valves	415,760
Crozet WTP Finished Water Pump Station	203,814
Urban Water GAC/Water Treatment Plant Improvements	188,019
S. Rivanna Reservoir to Ragged Mtn. Reservoir Water Line R/W	177,272
Crozet Flow Equalization Tank	175,227
MCAWRRF Roof Replacements	166,796
Valve Repair-Replacement (Phase 2)	154,219
MCAWRRF Second Centrifuge	136,414
Asset Management	92,285
Interceptor Sewer & Manhole Repair	91,933
Beaver Creek Dam Alterations	87,417
Water Demand Projection and Safe Yield Study	79,106
Crozet Drinking Water Infrastructure Plan	52,041
Other	222,792
Retainage on Construction in Progress	(278,382)
Total Current Year Construction Costs and Adjustments	<u>\$ 8,902,194</u>

**Long-Term Debt** - At the end of the current fiscal year, the Authority had \$200 million in bonds outstanding, which is an increase of \$32 million. This change is due to a new bond issued in November of 2018 at a premium for \$39.8 million (par amount of \$36.9 million). Normal principal payments on existing debt decreased total outstanding bonds by \$7 million. More detailed information regarding the Authority's long-term debt is presented in Note 6 of the notes to the financial statements.

## Review of Operations:

### Revenues



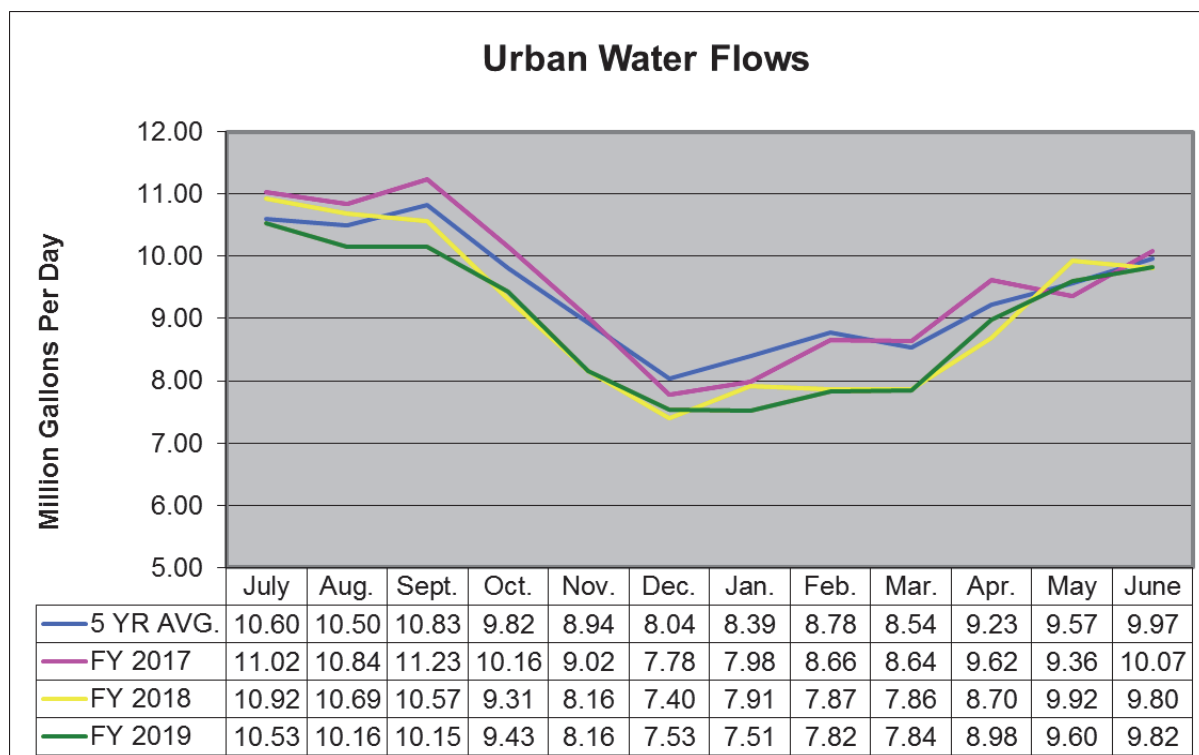
Total operating revenues increased 18% or \$5.15 million in Fiscal Year 2019 compared to the previous year revenues. The budget for FY 2019 targeted a \$2.3 million increase in operating revenue to fund projected operating expenses. There were several large rate increases approved by the Board of Directors last year. Crozet saw a 21.5% increase in the overall rates charged to anticipate the increased debt service on several large capital projects. Comparing budget to actual, this would mean the Authority generated roughly \$2.85 million in excess revenues for FY 2019. The region experienced sudden significant rain during the last year and wastewater service charges were the main cause for the

excess revenues. Urban wastewater operating rates and charges were expected to increase 10%, however, actual revenues charged were 27% higher than the previous year due to increased wastewater flows. This is in contrast to the year before when drought conditions later in the summer of 2017 prompted the Authority to call for voluntary and mandatory drought restriction on consumption in early October of 2017. This caused FY 2018 revenues to be less than budgeted targets. This is a prime example of the predictability issues related to wastewater and to some extent water charges.

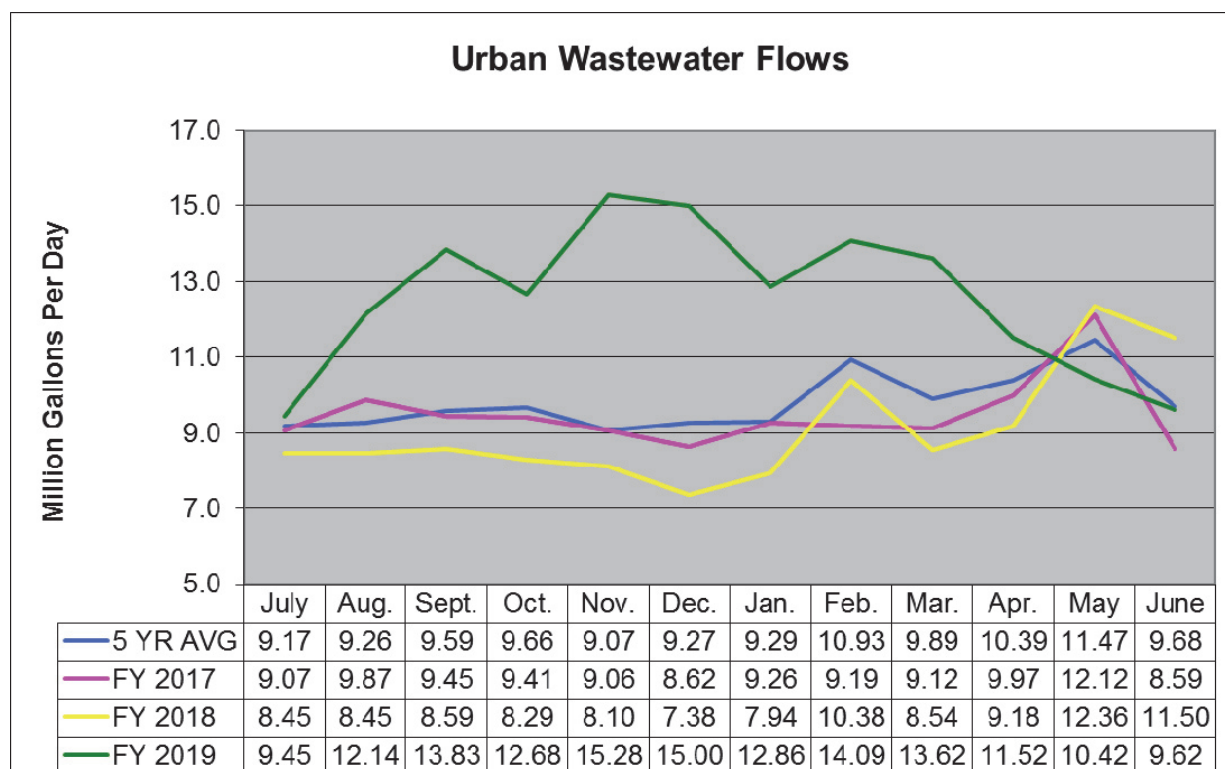
The capital program has been the single largest driver to the Authority's revenue requirements, especially for wastewater rates for the past several years. Over the past three years, the Authority has invested over \$58 million in capital infrastructure. Most of that investment was financed with long-term debt. Roughly \$2.3 million of this spending was funded through cash reserves over that same time period. As shown in the chart below, FY 2019 Urban debt service rates increased across most rate centers as the capital program continues to grow. Roughly \$55.3 million in new project costs were added to the 5-year capital plan over the last year. Operating rates were being affected by new systems coming on-line like the odor control and the GAC project which has significant yearly costs for the granular activated carbon used in the new treatment process at all 5 plants.

<u>Urban Rates</u>						
			<u>Water</u>			<u>Wastewater</u>
Operations Rates - City & ACSA (\$ per 1,000 gallons):						
	FY 2017	\$	1.833	10.8%	\$	1.835 -2.3%
	FY 2018	\$	1.969	7.4%	\$	1.951 6.3%
	FY 2019	\$	2.070	5.1%	\$	2.146 10.0%
Debt Service Rates (\$ per month):						
City:	FY 2017	\$	162,968	-23.2%	\$	369,037 7.0%
	FY 2018	\$	160,039	-1.8%	\$	392,841 6.5%
	FY 2019	\$	181,008	13.1%	\$	408,260 3.9%
ACSA:	FY 2017	\$	284,031	-10.9%	\$	222,280 -6.0%
	FY 2018	\$	285,439	0.5%	\$	222,550 0.1%
	FY 2019	\$	307,598	7.8%	\$	246,308 10.7%

Flows in the two urban rate centers are the single largest determining factor in the revenues billed to our two customers. The graphs below show the flows for the year compared to the last two years and the five-year average.



Urban Water flows were consistently lower than the five-year trending average and are generally more predictable to estimate than wastewater flows. Urban Wastewater flows (below) were affected by the high precipitation received earlier in the fiscal year which was mentioned above about excess revenues being generated. This chart clearly demonstrates how erratic wastewater flow can be compared to the trend due to weather patterns that can significantly affect metered flows and revenues.



Total operating expenses increased by \$3.6 million for FY 2019. Non-operating costs for a bond issue of \$463,000 and interest expense increased \$3.3 million for a total of a \$7.3 million increase in all expenses over FY 2018 levels. In the previous two years, nearly half of the interest payments were capitalized as part of the cost of capital projects during the construction period (i.e. considered cost of construction). For example, the Authority paid \$5.6 million for interest on outstanding debt but, of that amount, \$2.9 million was capitalized and not expensed in FY 2018. For FY 2019, new accounting guidance under GASB 89 does not allow for this capitalization effective for reporting periods beginning after December 15, 2019, with earlier application encouraged. The Authority implemented the standard as of July 1, 2018. Additionally, there were several large projects that were completed, and most interest would have been classified as expense for FY 2019 regardless of the accounting change. Essentially, the interest payments didn't increase as much as the interest expense would indicate.

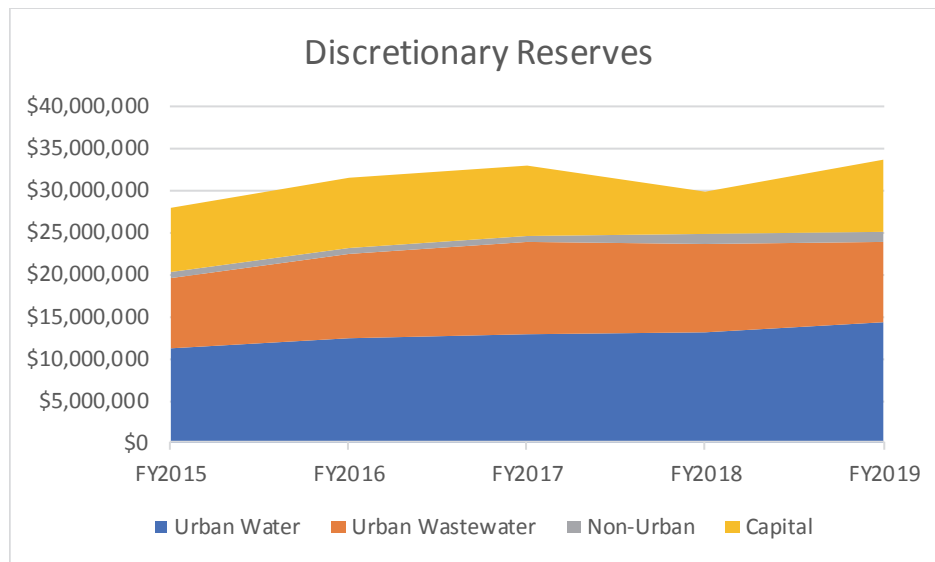
Direct operating costs in certain categories experienced increases in FY 2019. Utility costs increased \$336,000 driven by the high flows in wastewater mentioned before. There were also several sewer and water line repairs this year that cost roughly \$378,000 more in FY 2019 compared to the previous year. Granular activated carbon (GAC) is used in the new filtration system installed at each of the water plants in FY 2018 and need to be changed out 1 to 2 times per year at each plant. This cost roughly \$765,000 for FY 2019. Three new full-time positions were added in FY 2019 costing \$220,000 and the use of professional service consultants increased about \$240,000 for various treatment support, master plan studies and bathometric surveys at several reservoirs. The remaining costs increases of \$718,000 were related to maintenance, repair and operations.

Change in Expenses FY 2019 vs. FY 2018:

	<b>FY 2019</b>	<b>FY 2018</b>	<b>Change</b>	
Direct Operating*	\$ 18,292,560	\$ 15,635,287	\$ 2,657,273	17%
Depreciation	6,704,908	5,805,362	899,546	15%
Interest	5,947,988	2,643,801	3,304,187	125%
Debt issuance costs	463,487	-	463,487	
	<u>\$ 31,408,943</u>	<u>\$ 24,084,450</u>	<u>\$ 7,324,493</u>	<u>30%</u>

\* - Personnel, Chemicals, Operations & Maintenance, Utilities

Cash balances have been stable for the past few years, maintaining a strong debt service coverage ratio the past several years. (See Table 8 in the Statistical Section.) Unrestricted cash and investments, which represents total discretionary reserves balances, for FY 2019 were at \$39 million. This was roughly \$6 million more than the previous year's balance because we issued a bond in November 2018 that reimbursed some cash funds on certain projects and the previously mentioned excess revenues generated this year. Rate stabilization reserves totaled \$2 million at June 30, 2019, which is part of the unrestricted cash. For the past decade, the Authority slowly built cash reserves for rate stabilization, unforeseen maintenance issues and support for an aggressive capital replacement program through its rate setting policies. The Board of Directors supports the need for a strong cash position to mitigate unforeseen costs in an aging infrastructure and to better handle wide fluctuations in flow. The aggressive capital construction activities over the past decade will continue into the future and will further necessitate a strong liquidity position as the Authority has over \$200 million in outstanding debt. Recognizing the increase in debt service obligations over the years, the executive management wisely continues to emphasize the need to maintain adequate reserves to provide financial flexibility and maintain an excellent bond rating of AA+ from Standards & Poor. Below is a chart showing discretionary reserves, which have remained steady for the past five years.



Over the last several years, financial policies have been adopted and revised as needed to formally support this philosophy. The Authority generally targets to have 60 days of working capital on hand for daily operations, which is roughly \$5.6 million. The Authority has a financial policy goal of funding 10% of our total capital program costs with cash reserves. Over the last ten years, the Authority has used capital cash to fund roughly \$25 million in projects. Capital spending over that same 10-year period was roughly \$225 million, which means our actual cash reserve funding target is a little better than the policy targets.

#### Capital Improvements & Long-Term Trends -

The Authority generally updates the five-year projection of our Capital Improvement Plan (CIP) annually. The following table shows the changes in the CIP adopted in May 2019 (for FY 2020–2024) compared to the previously adopted capital plan:

Changes in Capital Improvement Plan (CIP)		
FY 2019-2023	\$ 153,902,026	Previously adopted CIP
	(51,051,644)	Budgets for completed or closed projects
	(13,821,515)	Adjustments on existing projects
	8,175,000	New project budgets added
FY 2020-2024	\$ 97,203,867	Total 5-year CIP

The total 5-year CIP is estimated at \$97.2 million in capital spending needs through the year 2024. Of this amount, roughly \$8.5 million is work-in-progress (nearly 9%) and has already been expended and funded at year end. There is \$31.4 million in available bond proceeds from the recent Series 2018 bond to fund future capital work and \$7.8 million in the capital fund to fund the CIP. The future funding needs will be roughly \$44.6 million in additional debt (revenue bonds) to be issued and \$7.5 million in future reserves to be placed in the capital fund.

Over the last two years, the Authority completed \$88.3 million in projects (\$51 million in FY 2019 and \$37.3 million in FY 2018). The majority of those projects were related to a comprehensive plan to improve the wastewater collection and treatment infrastructure to address issues with inflow and infiltration. These improvements were related to a system-wide DEQ Consent Order to address inflow and infiltration and ultimately sanitary sewer overflows. The Consent Order has been released as the plan has been effectively completed. The next 10 years, the Authority will be shifting its attention to water infrastructure.



The Authority had an opportunity this past year to construct a portion of a raw water line that will connect the two main reservoirs (Ragged Mountain and South Fork Rivanna) which is part of the Community Water Supply Plan approved a decade ago. This project, known as the Birdwood Golf Course Waterline, ran through UVa Foundation property in conjunction with the reconstruction project of the golf course that the Foundation was implementing. This project installed 6,100 linear feet of 36-inch raw water main to be used at a time into the future as the remainder of the water main is constructed.

### **Birdwood Waterline Construction**



The Crozet growth area of the County has placed demand needs on the entire system (which is separate from the Urban System) requiring several projects into the future. The Crozet plant has not seen a major upgrade since its original construction in 1966. A Drinking Water Infrastructure Plan conducted in FY 2018 for the Crozet system identified several projects to address capacity needs and treatment improvements to the Crozet system. The plant capacity will increase from 1 mgd to 1.5 mgd. These projects in addition to the Beaver Creek Dam Alteration to address spillway issues are going to be major future projects for this system.

**Estimated Capital Costs:**

- Beaver Creek Dam – \$15 Million
- New Raw Water Pump Station - \$7.1 Million
- Crozet Water Treatment Plant Expansion - \$8.5 Million

With the plant capacity increase anticipated, the Authority will likely have to seek a new withdrawal permit that will impose new minimum instream flow releases from the reservoir.

**Crozet WTP Improvements**



There are several major improvements planned for the Urban water systems. The South Rivanna Water Treatment Plant (WTP) had recently gone through upgrades for the granular activated carbon systems, but most of the core treatment facilities were not upgraded. This plant will now go through major upgrades to coagulant storage, new filters to meet firm capacity, changing or adding more variable frequency drives among many other upgrades. The Observatory WTP has seen very few upgrades since its construction in the mid-1950s. This plant will go through a system-by-system upgrade and an increase in production capacity from 7.7 million to 10 million gallons per day. This will provide reliability, resiliency and redundancy improvements for the entire Urban system. These two projects are estimated to have a total cost of \$40.5 million.

**Requests for Information:**

This financial report is designed to provide a general overview of the Authority's finances. Questions concerning any of the information provided in this report or requests for additional financial information should be addressed to the Finance Department at 695 Moores Creek Lane, Charlottesville, Virginia 22902-9016.

## **Basic Financial Statements**

Statement of Net Position  
At June 30, 2019 and 2018

	At June 30,	
	2019	2018
<b>ASSETS</b>		
Current assets:		
Cash and cash equivalents (Note 1)	\$ 38,988,804	\$ 32,704,452
Investments (Note 3)	-	1,267
Restricted cash and cash equivalents	36,903,973	7,607,261
Accounts receivable	2,759,152	2,674,276
Unbilled accounts receivable	45,400	44,000
Prepaid expenses	-	94,739
Total current assets	\$ 78,697,329	\$ 43,125,995
Noncurrent assets:		
Restricted assets:		
Cash and cash equivalents	\$ 2,032,250	\$ 2,101,015
Investments (Note 3)	1,997,694	1,928,929
Total restricted assets	\$ 4,029,944	\$ 4,029,944
Capital assets: (Note 4)		
Land and improvements	\$ 12,310,763	\$ 10,604,850
Buildings and operating equipment	348,680,424	297,335,818
Trucks and autos	1,605,502	1,281,934
Office equipment	106,760	93,659
Less accumulated depreciation	(93,080,679)	(88,192,387)
Subtotal net capital assets	\$ 269,622,770	\$ 221,123,874
Construction in progress (Note 5)	8,463,765	54,148,987
Total net capital assets	\$ 278,086,535	\$ 275,272,861
Total noncurrent assets	\$ 282,116,479	\$ 279,302,805
Total assets	\$ 360,813,808	\$ 322,428,800
<b>DEFERRED OUTFLOWS OF RESOURCES</b>		
Deferred charge on refunding	\$ 654,937	\$ 701,491
Deferred outflows - pension (Note 8)	424,975	580,464
Deferred outflows - OPEB - group life insurance (Note 12)	61,074	33,512
Total deferred outflows of resources	\$ 1,140,986	\$ 1,315,467

The accompanying notes to financial statements are an integral part of this statement.



Statement of Net Position (Continued)  
At June 30, 2018 and 2017

	At June 30,	
	2019	2018
<b>LIABILITIES</b>		
Current liabilities:		
Accounts payable and other accrued expenses	\$ 3,244,636	\$ 2,199,504
Compensated absences - current portion (Note 7)	377,000	323,000
Other long-term obligation (Note 9)	174,093	123,637
Revenue bonds - current portion (Note 6)	<u>3,947,065</u>	<u>3,723,236</u>
Subtotal current liabilities	<u>\$ 7,742,794</u>	<u>\$ 6,369,377</u>
Current liabilities (payable from restricted assets):		
Retainage payable	\$ 164,434	\$ 442,816
Accrued interest payable	1,712,949	1,341,064
Revenue bond principal - current portion (Note 6)	<u>3,778,445</u>	<u>3,294,292</u>
Subtotal current liabilities (payable from restricted assets)	<u>\$ 5,655,828</u>	<u>\$ 5,078,172</u>
Total current liabilities	<u>\$ 13,398,622</u>	<u>\$ 11,447,549</u>
Noncurrent liabilities:		
Compensated absences (net of current portion) (Note 7)	\$ 52,107	\$ 115,227
Net OPEB liability (Note 12)	389,000	376,000
Other long-term obligation (Note 9)	409,829	364,289
Net pension liability (Note 8)	2,570,815	2,923,583
Revenue bonds (net of current portion) (Note 6)	<u>192,397,980</u>	<u>160,878,670</u>
Total noncurrent liabilities	<u>\$ 195,819,731</u>	<u>\$ 164,657,769</u>
Total liabilities	<u>\$ 209,218,353</u>	<u>\$ 176,105,318</u>
<b>DEFERRED INFLOWS OF RESOURCES</b>		
Deferred inflows - pension (Note 8)	\$ 432,212	\$ 523,983
Deferred inflows - OPEB - group life insurance (Note 12)	<u>36,000</u>	<u>42,000</u>
Total deferred inflows of resources	<u>\$ 468,212</u>	<u>\$ 565,983</u>
<b>NET POSITION</b>		
Net Position:		
Net investment in capital assets	\$ 113,396,071	\$ 114,137,186
Restricted for bond covenants	4,278,445	3,794,293
Unrestricted	<u>34,593,713</u>	<u>29,141,487</u>
Total net position	<u>\$ 152,268,229</u>	<u>\$ 147,072,966</u>

Statement of Revenues, Expenses, and Changes in Net Position  
 Years Ended June 30, 2019 and 2018

	Year Ended June 30,	
	2019	2018
Operating revenues:		
Metered water sales	\$ 15,216,180	\$ 14,034,080
Wastewater service charges	<u>18,821,857</u>	<u>14,858,101</u>
Total operating revenues	\$ <u>34,038,037</u>	\$ <u>28,892,181</u>
Operating expenses:		
Personnel costs	\$ 7,728,340	\$ 7,385,978
Professional services	994,207	738,823
Other services and charges	3,770,051	3,341,421
Operations and maintenance	5,799,962	4,169,065
Depreciation	<u>6,704,908</u>	<u>5,773,757</u>
Total operating expenses	\$ <u>24,997,468</u>	\$ <u>21,409,044</u>
Operating income	\$ <u>9,040,569</u>	\$ <u>7,483,137</u>
Nonoperating revenues (expenses):		
Investment earnings	\$ 1,599,486	\$ 525,039
Buck Mountain revenue	111,700	125,900
Administrative reimbursement	474,246	436,329
Other revenues	380,737	302,920
Interest expense	(5,947,988)	(2,643,801)
Debt issuance costs	<u>(463,487)</u>	<u>-</u>
Total nonoperating revenues (expenses)	\$ <u>(3,845,306)</u>	\$ <u>(1,253,613)</u>
Change in net position	\$ 5,195,263	\$ 6,229,524
Net position, beginning of year, as restated	<u>147,072,966</u>	<u>140,843,442</u>
Net position, end of year	\$ <u><u>152,268,229</u></u>	\$ <u><u>147,072,966</u></u>

The accompanying notes to financial statements are an integral part of this statement.

Statement of Cash Flows  
Years Ended June 30, 2019 and 2018

	<b>Year Ended June 30,</b>	
	<b>2019</b>	<b>2018</b>
Cash flows from operating activities:		
Receipts from customers and users	\$ 34,918,444	\$ 29,541,972
Payments to suppliers of goods and services	(10,247,250)	(7,949,169)
Payments to and on behalf of employees for services	(7,842,006)	(7,487,933)
Net cash provided by (used for) operating activities	\$ 16,829,188	\$ 14,104,870
Cash flows from capital and related financing activities:		
Additions to capital assets	\$ (9,083,133)	\$ (17,941,791)
Principal payments on bonds	(7,017,528)	(6,904,880)
Proceeds of bonds, net of issue costs, premiums	36,855,000	2,340,222
Premium on bonds issued	2,930,097	-
Debt issuance costs	(463,487)	-
Interest payments	(6,069,825)	(5,465,317)
Net cash provided by (used for) capital and related financing activities	\$ 17,151,124	\$ (27,971,766)
Cash flows from investing activities:		
(Purchase) of investments	\$ (1)	\$ (66,927)
Sale of investments	1,266	10,044,022
Maturity of investments	638	3,986
Interest and dividends received	1,530,084	649,239
Net cash provided by (used for) investing activities	\$ 1,531,987	\$ 10,630,320
Increase (decrease) in cash and cash equivalents	\$ 35,512,299	\$ (3,236,576)
Cash and cash equivalents at beginning of year (including \$9,708,276 and \$19,237,445, respectively reported in restricted accounts)	42,412,728	45,649,304
Cash and cash equivalents at end of year (including \$38,936,223 and \$9,708,276, respectively reported in restricted accounts)	\$ 77,925,027	\$ 42,412,728
Reconciliation of operating income (loss) to net cash provided by (used for) operating activities:		
Operating income	\$ 9,040,569	\$ 7,483,137
Adjustments to reconcile operating income (loss) to net cash provided by (used for) operating activities:		
Depreciation	6,704,908	5,773,757
Buck Mountain revenue	111,700	125,900
Other nonoperating revenues	854,983	739,249
Changes in operating assets and liabilities:		
(Increase) decrease in receivables	(86,276)	(215,358)
Increase (decrease) in net OPEB liability	13,000	(53,000)
Increase (decrease) in compensated absences	(9,120)	39,754
Increase (decrease) in other long-term obligation	95,996	4,858
Increase (decrease) in net pension liability	(352,768)	(1,245,209)
(Increase) decrease in deferred outflows of resources - pension	155,489	544,406
Increase (decrease) in deferred inflows of resources - pension	(91,771)	523,983
(Increase) decrease in deferred outflows of resources - OPEB	(27,562)	(9,512)
Increase (decrease) in deferred inflows of resources - OPEB	(6,000)	42,000
(Increase) decrease in prepaid expenses	94,739	40,865
Increase (decrease) in operating payables and accrued expenses	331,301	310,040
Net cash provided by (used for) operating activities	\$ 16,829,188	\$ 14,104,870
Noncash investing, capital and financing activities:		
Increase (decrease) in fair value of investments	\$ 69,402	\$ (124,200)
(Increase) decrease in retainage payable for capital projects	(278,382)	1,823,351

The accompanying notes to financial statements are an integral part of this statement.

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# **RIVANNA WATER & SEWER AUTHORITY**

## **Notes to the Financial Statements At June 30, 2019 and 2018**

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### **Note 1–Summary of Significant Accounting Policies:**

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In the interest of efficient water quality management for the upper Rivanna River Basin, the Rivanna Water and Sewer Authority was formed on June 7, 1972 as a joint venture of the City of Charlottesville, the Albemarle County Service Authority, and the County of Albemarle, pursuant to the Virginia Water and Waste Authorities Act (1950 as amended). The Authority is responsible for acquiring, financing, constructing and maintaining facilities for the improvement, treatment, storage and transmission of potable water, and for the interception, treatment and discharge of wastewater for the City and County. The Authority operates under the terms of a Service Agreement among the Authority, the Albemarle County Service Authority, the City of Charlottesville, and the County of Albemarle which was signed June 12, 1973.

#### **A. Financial Reporting Entity**

The Rivanna Water & Sewer Authority was established according to the Agreement mentioned above for the purposes stated. The participating entities are City of Charlottesville, County of Albemarle, and Albemarle County Service Authority. The City of Charlottesville and the Albemarle County Service Authority have an ongoing financial responsibility to the Authority because a covenant to pay the Authority's rates and charges is included in the operating agreement.

The Authority's governing body is comprised of three members appointed by the County, three members appointed by the City, and one member who is jointly appointed by the City and County. Therefore, none of the participants appoints a voting majority of board members.

The Authority is perpetual. No participating government has access to its resources or surpluses, nor is any participant liable for the Authority's debts or deficits. The Authority also has the ability to finance its capital projects through user charges or the sale of revenue bonds.

Based on the above representations, the Rivanna Water & Sewer Authority has been determined to be a joint venture of the City of Charlottesville, County of Albemarle and Albemarle County Service Authority. The Authority is not a component unit of any of the participating governments. There are no component units to be included within the Authority's financial statements.

For purposes of reporting entity disclosure, it should be noted that a separate entity, the Rivanna Solid Waste Authority, provides garbage and refuse transfer and disposal services to the City of Charlottesville and Albemarle County. Although certain administrative employees provide services to both Authorities, each Authority is operationally and legally independent.

#### **B. Basis of Accounting**

Rivanna Water & Sewer Authority operates as an enterprise fund, uses the flow of economic resources measurement focus and its accounts are maintained on the accrual basis of accounting. Under this method, revenues are recognized when earned, and expenses are recorded as liabilities when incurred, without regard to receipt or payment of cash. The Authority accrues revenue for services rendered but not yet billed at the end of the fiscal year. The Authority accounts have been audited by an independent firm annually since its founding in accordance with the requirements of the Service Agreement, dated June 12, 1973, among the Authority, the City of Charlottesville, Albemarle County, and Albemarle County Service Authority.

# RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

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## **Note 1–Summary of Significant Accounting Policies: (Continued)**

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### **B. Basis of Accounting (Continued)**

The Authority distinguishes *operating* revenues and expenses from *nonoperating* items. Operating revenues and expenses generally result from providing services and producing and delivering goods in connection with the Authority's principal ongoing operations. The principal operating revenues of the Authority are charges to customers for sales and services. Operating expenses include the cost of sales and services, administrative expenses, and depreciation on capital assets. All revenues and expenses not meeting this definition are reported as nonoperating revenues and expenses.

### **C. Accounts Receivable**

Accounts receivable are stated at book value utilizing the direct write-off method for immaterial uncollectible accounts.

### **D. Basic Financial Statements**

Since the Authority is only engaged in business-type activities, it is required to present only the financial statements required for enterprise funds. For the Authority, the basic financial statements and required supplementary information consist of:

- Management's discussion and analysis
- Enterprise fund financial statements
  - Statement of Net Position
  - Statement of Revenues, Expenses, and Changes in Net Position
  - Statement of Cash Flows
  - Notes to the Financial Statements
- Required Supplementary Information
  - Schedule of Changes in Net Pension Liability and Related Ratios
  - Schedule of Employer Contributions-Pension Plan
  - Notes to Required Supplementary Information-Pension Plan
  - Schedule of Authority's Share of Net OPEB Liability-Group Life Insurance Program
  - Schedule of Employer Contributions-Group Life Insurance Program
  - Notes to Required Supplementary Information-Group Life Insurance Program

# RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

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## Note 1—Summary of Significant Accounting Policies: (Continued)

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### E. Capital Assets

Capital assets, which include property, plant, equipment, and infrastructure assets (e.g., roads, bridges, sidewalks, and similar items), are reported in the financial statements. Capital assets are defined by the Authority as assets with an initial, individual cost of more than \$5,000 (amount not rounded) and an estimated useful life in excess of one year. Such assets are recorded at historical cost or estimated historical cost if purchased or constructed. Donated capital assets are recorded at acquisition value at the date of donation.

The costs of normal maintenance and repairs that do not add to the value of the asset or materially extend its useful life are not capitalized.

Major outlays for capital assets and improvements are capitalized as projects are constructed. Interest incurred during the construction phase of capital assets of business-type activities is included as part of the capitalized value of the assets constructed until the implemented the financial reporting provisions of Governmental Accounting Standards Board (GASB) Statement No. 89, Accounting for Interest Cost Incurred Before the End of a Construction Period, on July 1, 2018. This Statement requires that interest cost incurred before the end of a construction period be recognized as an expense when incurred instead of being included in the historical cost of constructed capital assets. The Authority capitalized interest in the amount of \$2,271,708 for the year ended June 30, 2018.

Property, plant, equipment and infrastructure are depreciated using the straight-line method over the following estimated useful lives:

<u>Assets</u>	<u>Years</u>
Buildings & operating equipment	5 to 50
Trucks & autos	5 to 10
Office equipment	5 to 10
Data processing equipment	5

### F. Cash and Cash Equivalents

The Authority's cash and cash equivalents consist of demand deposits, certificates of deposit, short-term U.S. Governmental obligations, and other investments with an original maturity of three months or less from the date of acquisition, all of which are readily convertible to known amounts of cash.

### G. Investments

Money market investments, participating interest-earning investment contracts (repurchase agreements) that have a remaining maturity at time of purchase of one year or less, nonparticipating interest-earning investment contracts (nonnegotiable certificates of deposit (CDs) and external investment pools) are measured at amortized cost. All other investments are reported at fair value.

# **RIVANNA WATER & SEWER AUTHORITY**

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

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## **Note 1–Summary of Significant Accounting Policies: (Continued)**

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### **H. Budgets and Budgetary Accounting**

A budget is prepared for information, fiscal planning purposes, and to provide the basis for setting wholesale rates, in accordance with the requirements of the Service Agreement, dated June 12, 1973, among the Authority, the City of Charlottesville, Albemarle County, and the Albemarle County Service Authority. Rates charged by the six rate centers are not subjected to regulatory scrutiny but may be changed at any time by the Authority's Board of Directors, if necessary, in order to adjust revenues. None of the participating entities are required to approve the budget. The budget is adopted as a planning document and is not a legal control on expenses.

### **I. Inventory**

Consumption of materials and supplies is recorded as an expense when used. No inventory amounts are recorded as an asset, as available inventories are not significant.

### **J. Use of Estimates**

The preparation of financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions that affect certain reported amounts and disclosures. Accordingly, actual results could differ from those estimates.

### **K. Net Position**

Net position is the difference between assets and deferred outflows of resources and liabilities and deferred inflows of resources. Net investment in capital assets represents capital assets, reduced by accumulated depreciation and by any outstanding debt, deferred outflows of resources and increased by deferred inflows of resources related to the acquisition, construction or improvement of those assets. Restricted net position represents restricted assets reduced by liabilities and deferred inflows of resources related to those assets. The balance in the replacement reserve is presented as restricted net position.

### **L. Restricted Assets**

Certain proceeds of the Authority's revenue bonds and certain resources set aside for their repayment are classified as restricted assets on the statement of net position, because they are maintained in separate bank accounts, and their use is limited by applicable bond covenants. The "revenue bond general operating reserve" is used to report resources set aside to subsidize potential deficiencies from the Authority's operation that could adversely affect debt service payments. The "revenue bond payment account" is used to segregate resources accumulated for debt service payments over the next twelve months. The "debt service reserve" is used to report resources set aside to make up potential future deficiencies in the revenue bond payment account. The "repair and replacement reserve" is used to report resources set aside to meet unexpected contingencies or to fund asset renewals and replacements.

# RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

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## **Note 1–Summary of Significant Accounting Policies: (Continued)**

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### **M. Long-Term Obligations**

Bond premiums and discounts are amortized over the life of the bonds. Bonds payable are reported net of the applicable bond premium or discount. Bond issuance costs are expensed as incurred.

### **N. Reclassification**

Certain amounts in previously issued financial statements have been restated to conform to the current year's classifications.

### **O. Deferred Inflows and Outflows of Resources**

In addition to assets, the statement of net position will sometimes report a separate section for deferred outflows of resources. This separate financial statement element, deferred outflows of resources, represents a consumption of net position that applies to a future period(s) and so will not be recognized as an outflow of resources (expense) until then. The Authority has three types of items that qualify for reporting in this category. One type is the deferred charge on refunding reported in the statement of net position. A deferred charge on refunding results from the difference in the carrying value of refunded debt and its reacquisition price. This amount is deferred and amortized over the shorter of the life of the refunded or refunding debt. Another type of deferred outflow is comprised of certain items related to the measurement of the net pension liability. It is comprised of contributions to the pension plan made during the current year and subsequent to the net pension liability measurement date, which will be recognized as a reduction of the net pension liability next fiscal year, differences between expected and actual experience, and net difference between projected and actual pension plan earnings. A third type of deferred outflow is related to the Group Life Insurance Program (GLI OPEB Plan). It consists of employer contributions to the OPEB plan in the current year and subsequent to the OPEB liability measurement date, which will be recognized as a reduction of the net GLI OPEB liability next fiscal year, differences between expected and actual experience, and changes in proportionate share between measurement dates.

In addition to liabilities, the statement of net position will sometimes report a separate section for deferred inflows of resources. This separate financial statement element, deferred inflows of resources, represents an acquisition of net position that applies to a future period(s) and so will not be recognized as an inflow of resources (revenue) until that time. The Authority has two types of items that qualify for reporting in this category. Items related to the measurement of the net pension liability that are reported as deferred inflows of resources include differences between expected and actual experience, changes in assumptions, and the net difference between projected and actual earnings on pension plan investments. Deferred inflows of resources related to the measurement of the net GLI OPEB liability include differences between expected and actual experience, the net difference between projected and actual earnings on GLI OPEB plan investments, and changes in assumptions.

For more detailed information regarding deferred outflows and inflows of resources related to the pension plan, refer to Note 8. For more information on those related to the GLI OPEB Plan, refer to Note 12.

## **RIVANNA WATER & SEWER AUTHORITY**

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

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### **Note 1–Summary of Significant Accounting Policies: (Continued)**

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#### **P. Net Position Flow Assumption**

Sometimes the Authority will fund outlays for a particular purpose from both restricted (e.g., restricted bond or grant proceeds) and unrestricted resources. In order to calculate the amounts to report as restricted net position and unrestricted net position in the financial statements, a flow assumption must be made about the order in which the resources are considered to be applied. It is the Authority's policy to consider restricted net position to have been depleted before unrestricted net position is applied.

#### **Q. Pensions**

For purposes of measuring the net pension liability, deferred outflows of resources and deferred inflows of resources related to pensions, and pension expense, information about the fiduciary net position of the Authority's Retirement Plan and the additions to/deductions from the Authority's Retirement Plan's net fiduciary position have been determined on the same basis as they were reported by the Virginia Retirement System (VRS). For this purpose, benefit payments (including refunds of employee contributions) are recognized when due and payable in accordance with the benefit terms. Investments are reported at fair value.

#### **R. Other Postemployment Benefits (OPEB)**

##### ***Group Life Insurance***

The Virginia Retirement System (VRS) Group Life Insurance (GLI) Program is a multiple employer cost sharing plan. It provides coverage to state employees, teachers, and employees of participating political subdivisions. The GLI Program was established pursuant to §51.1-500 et seq. of the Code of Virginia, as amended, and which provides the authority under which benefit terms are established or may be amended. The GLI Program is a defined benefit plan that provides a basic group life insurance benefit for employees of participating employers. For purposes of measuring the net GLI Program OPEB liability, deferred outflows of resources and deferred inflows of resources related to the GLI OPEB, and GLI OPEB expense, information about the fiduciary net position of the VRS GLI Program OPEB and the additions to/deductions from the VRS GLI OPEB's net fiduciary position have been determined on the same basis as they were reported by VRS. In addition, benefit payments are recognized when due and payable in accordance with the benefit terms. Investments are reported at fair value.

### **Note 2–Acquisition of Water and Wastewater Facilities:**

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Under the terms of the Service Agreement (See Note 1), the Authority agreed to purchase certain water production, transmission and storage facilities and wastewater interception and treatment facilities from the City and the Albemarle County Service Authority. The agreement provides that the sale be consummated ten years from the date of the agreement or at such later time as the debts, if any, attributed to each such facility have been paid or provision is made for their payment, and that the Authority will lease the facility until such time as the sale is consummated. The purchase price is the fair value of the facilities as of June 12, 1973, as determined by all payments paid by the Authority during the term of lease applicable to the principal retired on the debt of such facilities. In accordance with generally accepted accounting principles, the aforementioned agreement has been treated as an installment purchase of the facilities, with the purchase price being discounted at an annual rate of 6% for ten years.

## RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

### Note 2—Acquisition of Water and Wastewater Facilities: (Continued)

The following tabulation reflects the agreed upon purchase price and accounting thereof:

Fair value as of June 12, 1973:	
Facilities acquired from City of Charlottesville	\$ 6,128,124
Facilities acquired from Albemarle County Service Authority	<u>3,604,384</u>
Total purchase price	\$ 9,732,508
Add: Interest portion of rental payments not applied to principal reduction	<u>1,154,074</u>
Total contracts payable	\$ 10,886,582
Less: Interest included in contract price computed at annual rate of 6% for 10 years	<u>4,940,705</u>
Asset carrying value	<u><u>\$ 5,945,877</u></u>

The contracts payable have been reduced by the amount of the annual rental payments on the facilities as outlined in the following tabulation:

	<u>City of Charlottesville</u>	<u>Albemarle County Service Authority</u>
Contracts payable, June 12, 1973	\$ <u>6,354,634</u>	\$ <u>4,531,948</u>
Rental payments and contract adjustments in prior fiscal years	\$ <u>1,760,676</u>	\$ <u>3,680,395</u>
Total rental payments	\$ <u>1,760,676</u>	\$ <u>3,680,395</u>
Final payment on facilities with no outstanding debt as of June 30, 1983	<u>4,593,958</u>	<u>851,553</u>
Total payments	\$ <u>6,354,634</u>	\$ <u>4,531,948</u>
Contracts payable, June 30, 2019	\$ <u>-</u>	\$ <u>-</u>

The total annual rental payments over the initial ten-year agreement were not sufficient to retire the contracts payable to the Albemarle County Service Authority. The deferred interest was amortized over the initial ten-year period of the agreement and was fully amortized as of June 30, 1983.

Depreciation has been based upon the engineer's estimates of useful lives remaining as of the valuation date (June 12, 1973). Depreciation expense on these facilities amounted to \$52,658 and \$53,080 for the years ended June 30, 2019 and 2018, respectively.

# RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

## Note 3—Deposits and Investments:

### Deposits

Deposits with banks are covered by the Federal Deposit Insurance Corporation (FDIC) and collateralized in accordance with the Virginia Security for Public Deposits Act (the “Act”) Section 2.2-4400 et. seq. of the Code of Virginia. Under the Act, banks and savings institutions holding public deposits in excess of the amount insured by the FDIC must pledge collateral to the Commonwealth of Virginia Treasury Board. Financial Institutions may choose between two collateralization methodologies and depending upon that choice, will pledge collateral that ranges in the amounts from 50% to 130% of excess deposits. Accordingly, all deposits are considered fully collateralized.

### Investments

Statutes authorize the Authority to invest in obligations of the United States or agencies thereof, obligations of the Commonwealth of Virginia or political subdivisions thereof, obligations of the International Bank for Reconstruction and Development (World Bank), the Asian Development Bank, the African Development Bank, “prime quality” commercial paper and certain corporate notes, banker’s acceptances, repurchase agreements and the State Treasurer’s Local Government Investment Pool (LGIP).

The Authority does not have a formal investment policy that addresses credit risk or interest rate risk.

### Credit Risk of Debt Securities

The Authority’s rated debt investments as of June 30, 2019 and 2018 were rated by Standard & Poor’s and the ratings are presented below using Standard & Poor’s rating scale.

Authority's Rated Debt Investments' Values - 2019				
Rated Debt Investments	Fair Quality Ratings			
	AAAm	AA+	AA+f	
U.S. Agencies Securities	\$ 2,454	\$ -	\$ -	
Local Government Investment Pool	19,759,341	-	-	
VML/VACo Virginia Investment Pool	10,368,384	-	-	
Virginia State Non-Arbitrage Pool	31,412,579	-	-	
U.S. Treasury Notes & Bonds	-	1,995,240	-	
U.S. Treasury & Agency Money Market Funds	7,118,324	-	-	
Total	\$ 68,661,082	\$ 1,995,240	\$ -	
Authority's Rated Debt Investments' Values - 2018				
Rated Debt Investments	Fair Quality Ratings			
	AAAm	AA+	AA+f	
U.S. Agencies Securities	\$ 3,148	\$ -	\$ -	
Local Government Investment Pool	15,293,860	-	-	
VML/VACo Virginia Investment Pool	10,120,432	-	1,267	
Virginia State Non-Arbitrage Pool	2,971,904	-	-	
U.S. Treasury Notes & Bonds	-	1,925,780	-	
U.S. Treasury & Agency Money Market Funds	6,215,861	-	-	
Total	\$ 34,605,205	\$ 1,925,780	\$ 1,267	



# RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

## Note 3—Deposits and Investments: (Continued)

### Interest Rate Risk

#### Investment Maturities (in years) - 2019

<u>Investment Type</u>	<u>Fair Value</u>	<u>Less Than 1 Year</u>	<u>1-5 Years</u>	<u>6-10 Years</u>
U.S. Agencies Securities	\$ 2,454	\$ -	\$ 2,454	\$ -
Local Government Investment Pool	19,759,341	19,759,341	-	-
VML/VACo Virginia Investment Pool	10,368,384	10,368,384	-	-
Virginia State Non-Arbitrage Pool	31,412,579	31,412,579	-	-
U.S. Treasury & Agency Money Market Funds	7,118,324	7,118,324	-	-
U.S. Treasury Notes & Bonds	1,995,240	-	1,995,240	-
Total	<u>\$ 70,656,322</u>	<u>\$ 68,658,628</u>	<u>\$ 1,997,694</u>	<u>\$ -</u>

#### Investment Maturities (in years) - 2018

<u>Investment Type</u>	<u>Fair Value</u>	<u>Less Than 1 Year</u>	<u>1-5 Years</u>	<u>6-10 Years</u>
U.S. Agencies Securities	\$ 3,148	\$ -	\$ -	\$ 3,148
Local Government Investment Pool	15,293,860	15,293,860	-	-
VML/VACo Virginia Investment Pool	10,121,699	10,121,699	-	-
Virginia State Non-Arbitrage Pool	2,971,904	2,971,904	-	-
U.S. Treasury & Agency Money Market Funds	6,215,861	6,215,861	-	-
U.S. Treasury Notes & Bonds	1,925,780	-	1,925,780	-
Total	<u>\$ 36,532,252</u>	<u>\$ 34,603,324</u>	<u>\$ 1,925,780</u>	<u>\$ 3,148</u>

### External Investment Pools

The Authority invests in the Virginia Investment Pool (“VIP”) which is sponsored by VML/VACo Finance and is professionally managed under the governance of the VIP Board of Trustees. The VIP investment strategy is to preserve capital, and it only invests in instruments allowable by the Code of Virginia. The Authority owns shares of the VIP and not the underlying instruments held by the VIP.

The fair value of the positions in the external investment pools (Local Government Investment Pool, State Non-Arbitrage Pool and VML/VACo Virginia Investment Pool) is the same as the value of the pool shares. As LGIP and SNAP are not SEC registered, regulatory oversight of the pools rest with the Virginia State Treasury. LGIP and SNAP are amortized cost basis portfolios under the provisions of GASB Statement No. 79. There are no withdrawal limitations or restrictions imposed on participants in LGIP and SNAP. The VML/VACo Virginia Investment Pool has a limit of two withdrawals per month.

# RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

## Note 4—Capital Assets:

Details of changes in capital assets for the year ended June 30, 2019 are as follows:

	Balance July 1, 2018	Increases	Decreases	Balance June 30, 2019
<b>Capital assets not being depreciated:</b>				
Land and improvements	\$ 10,604,850	\$ 1,705,913	\$ -	\$ 12,310,763
Construction in progress	<u>54,148,987</u>	<u>8,902,194</u>	<u>54,587,416</u>	<u>8,463,765</u>
Total capital assets not being depreciated	<u>\$ 64,753,837</u>	<u>\$ 10,608,107</u>	<u>\$ 54,587,416</u>	<u>\$ 20,774,528</u>
<b>Other capital assets:</b>				
Buildings & operating equipment:				
Water system	\$ 95,641,806	\$ 40,933,202	\$ 1,751,478	\$ 134,823,530
Wastewater system	201,227,899	12,173,703	65,179	213,336,423
Support departments	<u>466,113</u>	<u>96,534</u>	<u>42,176</u>	<u>520,471</u>
Subtotal	\$ 297,335,818	\$ 53,203,439	\$ 1,858,833	\$ 348,680,424
Accumulated depreciation	<u>(87,017,932)</u>	<u>(6,719,629)</u>	<u>(1,838,188)</u>	<u>(91,899,373)</u>
Total	<u>\$ 210,317,886</u>	<u>\$ 46,483,810</u>	<u>\$ 20,645</u>	<u>\$ 256,781,051</u>
Trucks and autos:				
Water system	\$ 174,075	\$ 90,450	\$ 23,525	\$ 241,000
Wastewater system	197,570	23,073	-	220,643
Support departments	<u>910,289</u>	<u>289,770</u>	<u>56,200</u>	<u>1,143,859</u>
Subtotal	\$ 1,281,934	\$ 403,293	\$ 79,725	\$ 1,605,502
Accumulated depreciation	<u>(1,081,797)</u>	<u>(84,139)</u>	<u>(79,725)</u>	<u>(1,086,211)</u>
Total	<u>\$ 200,137</u>	<u>\$ 319,154</u>	<u>\$ -</u>	<u>\$ 519,291</u>
Office equipment:				
Water system	\$ 2,715	\$ -	\$ -	\$ 2,715
Wastewater system	2,714	-	-	2,714
Support departments	<u>88,230</u>	<u>13,101</u>	<u>-</u>	<u>101,331</u>
Subtotal	\$ 93,659	\$ 13,101	\$ -	\$ 106,760
Accumulated depreciation	<u>(92,658)</u>	<u>(2,437)</u>	<u>-</u>	<u>(95,095)</u>
Total	<u>\$ 1,001</u>	<u>\$ 10,664</u>	<u>\$ -</u>	<u>\$ 11,665</u>
Capital assets, net	<u><u>\$ 275,272,861</u></u>	<u><u>\$ 57,421,735</u></u>	<u><u>\$ 54,608,061</u></u>	<u><u>\$ 278,086,535</u></u>

# RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

## Note 4—Capital Assets: (Continued)

Details of changes in capital assets for the year ended June 30, 2018 are as follows:

		Balance July 1, 2017	Increases	Decreases	Balance June 30, 2018
<b>Capital assets not being depreciated:</b>					
Land and improvements		\$ 10,604,850	\$ -	\$ -	\$ 10,604,850
Construction in progress		<u>72,342,584</u>	<u>17,618,579</u>	<u>35,812,176</u>	<u>54,148,987</u>
Total capital assets not being depreciated		<u>\$ 82,947,434</u>	<u>\$ 17,618,579</u>	<u>\$ 35,812,176</u>	<u>\$ 64,753,837</u>
<b>Other capital assets:</b>					
Buildings & operating equipment:					
Water system		\$ 93,050,994	\$ 2,590,812	\$ -	\$ 95,641,806
Wastewater system	***	167,995,402	33,232,497	-	201,227,899
Support departments		<u>460,458</u>	<u>16,787</u>	<u>11,132</u>	<u>466,113</u>
Subtotal	***	\$ 261,506,854	\$ 35,840,096	\$ 11,132	\$ 297,335,818
Accumulated depreciation	***	<u>(81,268,452)</u>	<u>(5,752,263)</u>	<u>(2,783)</u>	<u>(87,017,932)</u>
Total	***	<u>\$ 180,238,402</u>	<u>\$ 30,087,833</u>	<u>\$ 8,349</u>	<u>\$ 210,317,886</u>
Trucks and autos:					
Water system		\$ 174,725	\$ -	\$ 650	\$ 174,075
Wastewater system		201,875	-	4,305	197,570
Support departments		<u>836,129</u>	<u>74,160</u>	<u>-</u>	<u>910,289</u>
Subtotal		\$ 1,212,729	\$ 74,160	\$ 4,955	\$ 1,281,934
Accumulated depreciation		<u>(1,064,477)</u>	<u>(22,275)</u>	<u>(4,955)</u>	<u>(1,081,797)</u>
Total		<u>\$ 148,252</u>	<u>\$ 51,885</u>	<u>\$ -</u>	<u>\$ 200,137</u>
Office equipment:					
Water system		\$ 2,715	\$ -	\$ -	\$ 2,715
Wastewater system		2,714	-	-	2,714
Support departments		<u>88,230</u>	<u>-</u>	<u>-</u>	<u>88,230</u>
Subtotal		\$ 93,659	\$ -	\$ -	\$ 93,659
Accumulated depreciation		<u>(90,656)</u>	<u>(2,002)</u>	<u>-</u>	<u>(92,658)</u>
Total		<u>\$ 3,003</u>	<u>\$ (2,002)</u>	<u>\$ -</u>	<u>\$ 1,001</u>
Capital assets, net	***	<u>\$ 263,337,091</u>	<u>\$ 47,756,295</u>	<u>\$ 35,820,525</u>	<u>\$ 275,272,861</u>

\*\*\*Note: Restated amounts to reflect prior period adjustment. See Note 17.

# RIVANNA WATER & SEWER AUTHORITY

## Notes to the Financial Statements At June 30, 2019 and 2018 (Continued)

### Note 5—Construction in Progress:

Details of construction in progress for the year ended June 30, 2019 are as follows:

	Balance July 1, 2018	Cost of Construction	Expense/ Transfer to Capital Assets	Balance June 30, 2019
S. Rivanna Reservoir to Ragged Mtn. Reservoir Water Line R/W	\$ 123,782	\$ 177,272	\$	\$ 301,054
Birdwood Golf Course Waterline	-	2,714,728	-	2,714,728
Observatory WTP Improvements	1,154,558	506,520	1,042,198	618,880
Interconnect Lower SH and RM Raw Water Mains	8,076	-	8,076	-
Sugar Hollow to Ragged Mtn Res Transfer Flow Meter	15,311	466,738	482,049	-
Route 29 Pumping Station Site Acquisition	1,042,168	663,745	1,705,913	-
Valve Repair-Replacement (Phase 2)	-	154,219	-	154,219
Urban Water GAC/Water Treatment Plant Improvements	24,089,122	188,019	24,277,141	-
Wholesale Water Master Metering-Urban	2,679,816	558,174	3,237,990	-
Piney Mountain Tank Rehabilitation	51,185	37,400	-	88,585
Avon to Pantops Water Main	126,861	10,888	-	137,749
Water Demand Projection and Safe Yield Study	-	79,106	-	79,106
Finished Water System Master Plan	-	20,307	-	20,307
South Rivanna Hydropower Plant Decommissioning	98,625	28,456	-	127,081
South Rivanna WTP Improvements	46,891	572,140	-	619,031
Beaver Creek Dam Alterations	191,871	87,417	-	279,288
Crozet Water GAC/Water Treatment Plant Improvements	3,250,630	16,505	3,267,135	-
Buck's Elbow & Crozet Waterball Tank Painting	-	6,643	-	6,643
Crozet WTP Expansion	510,377	728,340	-	1,238,717
Crozet WTP Finished Water Pump Station	2,067,760	203,814	2,271,574	-
Crozet Drinking Water Infrastructure Plan	245,223	52,041	297,264	-
New Raw Water PS & Intake, Oxygenation (BCR)	-	8,846	-	8,846
Scottsville Water Granular Activated Carbon	1,569,384	8,130	1,577,514	-
Scottsville WTP Finished Water Flow Meter	-	12,128	-	12,128
Schenks Branch Interceptor	11,187	-	-	11,187
Interceptor Sewer & Manhole Repair	176,434	91,933	-	268,367
Crozet Interceptor	181,725	250	-	181,975
Crozet Flow Equalization Tank	80,092	175,227	-	255,319
Crozet Interceptor PS Bypass Isolation Valves	18,334	415,760	434,094	-
Moore's Creek Bridge Repairs	261,198	18,270	279,468	-
Moore's Creek AWWRF Odor Control-Phase 2	9,151,666	727,096	8,878,232	1,000,530
MCAWRRF Roof Replacements	809,424	166,796	976,220	-
MCAWRRF Second Centrifuge	1,154,719	136,414	1,291,133	-
Aluminum Slide Gate Replacement	-	6,854	-	6,854
Glenmore Secondary Clarifier Coating	-	1,100	-	1,100
Radio Upgrades	28,337	47,015	-	75,352
Asset Management	-	92,285	-	92,285
Capitalized Interest	4,561,415	-	4,561,415	-
Retainage on Construction in Progress	442,816	(278,382)	-	164,434
Total	\$ 54,148,987	\$ 8,902,194	\$ 54,587,416	\$ 8,463,765

Cost of construction includes interest capitalized during the fiscal year, where applicable. For the year ended June 30, 2018, capitalized interest was \$2,271,708.

# RIVANNA WATER & SEWER AUTHORITY

## Notes to the Financial Statements

At June 30, 2019 and 2018 (Continued)

### Note 5—Construction in Progress: (Continued)

Details of construction in progress for the year ended June 30, 2018 are as follows:

	Balance July 1, 2017	Cost of Construction	Expense/ Transfer to Capital Assets	Balance June 30, 2018
S. Rivanna Reservoir to Ragged Mtn. Reservoir Water Line R/W	\$ 25,249	\$ 98,533	\$ -	\$ 123,782
Observatory WTP Improvements	1,042,198	112,360	-	1,154,558
Interconnect Lower SH and RM Raw Water Mains	-	8,076	-	8,076
Sugar Hollow to Ragged Mtn Res Transfer Flow Meter	6,953	8,358	-	15,311
Route 29 Pumping Station Site Acquisition	832,187	209,981	-	1,042,168
Urban Water GAC/Water Treatment Plant Improvements	18,292,018	5,797,104	-	24,089,122
Wholesale Water Master Metering-Urban	2,270,371	409,445	-	2,679,816
Piney Mountain Tank Rehabilitation	-	51,185	-	51,185
Rt. 29 Pipeline-VDOT Betterment	1,714,749	876,063	2,590,812	-
Avon to Pantops Water Main	-	126,861	-	126,861
South Rivanna Hydropower Plant Decommissioning	82,332	16,293	-	98,625
South Rivanna WTP Improvements	-	46,891	-	46,891
Beaver Creek Dam Alterations	133,886	57,985	-	191,871
Crozet Water GAC/Water Treatment Plant Improvements	2,665,401	585,229	-	3,250,630
Crozet WTP Expansion	90,419	419,958	-	510,377
Crozet WTP Finished Water Pump Station	395,663	1,672,097	-	2,067,760
Crozet Drinking Water Infrastructure Plan	-	245,223	-	245,223
Scottsville Water Granular Activated Carbon	1,216,510	352,874	-	1,569,384
Schenks Branch Interceptor	-	11,187	-	11,187
Rivanna Pump Station and Tunnel	30,040,496	1,423,901	31,464,397	-
Interceptor Sewer & Manhole Repair	124,330	52,104	-	176,434
Crozet Interceptor	180,715	1,010	-	181,725
Crozet Flow Equalization Tank	37,356	42,736	-	80,092
Crozet Pump Station Two Automatic Bar Screens	-	65,575	65,575	-
Crozet Interceptor PS Bypass Isolation Valves	-	18,334	-	18,334
Moore's Creek Bridge Repairs	37,391	223,807	-	261,198
Moore's Creek AWWRF Odor Control-Phase 2	6,669,061	2,482,605	-	9,151,666
MCAWRRF Roof Replacements	61,492	747,932	-	809,424
MCAWRRF Second Centrifuge	172,974	981,745	-	1,154,719
Radio Upgrades	3,567	24,770	-	28,337
Capitalized Interest	3,981,099	2,271,708	1,691,392	4,561,415
Retainage on Construction in Progress	2,266,167	(1,823,351)	-	442,816
Total	\$ 72,342,584	\$ 17,618,579	\$ 35,812,176	\$ 54,148,987

# RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

## Note 6—Long-Term Obligations:

### A. Changes in Long-Term Obligations

The following is a summary of long-term obligation transactions for the year ended June 30, 2019:

	<b>Balance July 1, 2018</b>	<b>Issuances</b>	<b>Retirements</b>	<b>Balance June 30, 2019</b>	<b>Due Within One Year</b>
Revenue bonds payable					
Public offerings	\$ 23,345,000	\$ -	\$ (630,000)	\$ 22,715,000	\$ 650,000
Direct borrowings and direct placements	<u>137,108,980</u>	<u>36,855,000</u>	<u>(6,387,528)</u>	<u>167,576,452</u>	<u>7,075,510</u>
Subtotal	\$ 160,453,980	\$ 36,855,000	\$ (7,017,528)	\$ 190,291,452	\$ 7,725,510
Add (less) amounts:					
For issuance premiums	<u>7,442,218</u>	<u>2,930,097</u>	<u>(540,277)</u>	<u>9,832,038</u>	<u>-</u>
Total revenue bonds	\$ 167,896,198	\$ 39,785,097	\$ (7,557,805)	\$ 200,123,490	\$ 7,725,510
VERIP liability	487,926	219,748	(123,752)	583,922	174,093
Compensated absences	438,227	340,860	(349,980)	429,107	377,000
Net OPEB liability	376,000	82,000	(69,000)	389,000	-
Net pension liability	<u>2,923,583</u>	<u>1,929,171</u>	<u>(2,281,939)</u>	<u>2,570,815</u>	<u>-</u>
Totals	<u>\$ 172,121,934</u>	<u>\$ 42,356,876</u>	<u>\$ (10,382,476)</u>	<u>\$ 204,096,334</u>	<u>\$ 8,276,603</u>

The following is a summary of long-term obligation transactions for the year ended June 30, 2018:

	<b>Balance July 1, 2017</b>	<b>Issuances</b>	<b>Retirements</b>	<b>Balance June 30, 2018</b>	<b>Due Within One Year</b>
Revenue bonds payable	\$ 165,018,638	\$ 2,340,222	\$ (6,904,880)	\$ 160,453,980	\$ 7,017,528
Add (less) amounts:					
For issuance premiums	<u>8,001,815</u>	<u>-</u>	<u>(559,597)</u>	<u>7,442,218</u>	<u>-</u>
Total revenue bonds	\$ 173,020,453	\$ 2,340,222	\$ (7,464,477)	\$ 167,896,198	\$ 7,017,528
VERIP liability	483,068	79,850	(74,992)	487,926	123,637
Compensated absences	398,473	380,221	(340,467)	438,227	323,000
Net OPEB liability*	429,000	13,000	(66,000)	376,000	-
Net pension liability	<u>4,168,792</u>	<u>1,878,258</u>	<u>(3,123,467)</u>	<u>2,923,583</u>	<u>-</u>
Totals	<u>\$ 178,499,786</u>	<u>\$ 4,691,551</u>	<u>\$ (11,069,403)</u>	<u>\$ 172,121,934</u>	<u>\$ 7,464,165</u>

\* Balance as of July 1, 2017 restated resulting from implementation of GASB 75, refer to Note 17.

# RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

## Note 6—Long-Term Obligations: (Continued)

### B. Details of Long-Term Obligations

All of the Authority's bond issues are direct placements with Virginia Resources Authority or with private banks with the exception of Series 2012B, which is a public offering. All bonds are issued in parity with one another under the 1979 Master Trust Agreement. The trust agreement does not specifically identify fixed amounts to be paid in the event of default. The Authority has no unused lines of credit, and none of its assets are pledged as collateral for any of its debt. There are no terms specified in any of the Authority's debt agreements related to significant (a) events of default with finance-related consequences, (b) termination events with finance-related consequences, or (c) subjective acceleration clauses.

	<u>Total Amount</u>	<u>Amount Due Within One Year</u>
<b><u>Revenue Bonds</u></b>		
<b><u>Public Offerings</u></b>		
<b>\$26,240,000 Water and Sewer System Revenue and Refunding Bonds, Series 2012B</b> - On October 30, 2012, the Authority issued \$26,240,000 in Revenue and Refunding Bonds for purposes of financing various water and sewer capital projects including the design, development and construction of a new dam; the implementation of wetlands and streambank mitigation plans and costs of issuance. The bonds were issued at a premium in the amount of \$646,250.		
The bond resolution provides a redemption schedule with interest due semi-annually and principal due annually from April 1, 2013 through October 1, 2042. The bonds bear interest at an annual rate ranging from 2.125% to 4.0%. Total payments due each year range from \$1,337,000 to \$1,342,000. The bonds are subject to federal arbitrage regulations.	\$ 22,715,000	\$ 650,000

### **Direct Borrowings and Direct Placements**

**Water and Sewer System Revenue Bonds** - Series of 2005A - On November 10, 2005, the Authority issued \$2,340,929 in bonds for purposes of financing the Moores Creek wastewater pre-treatment project. These bonds are secured by a supplemental trust agreement between the Authority and trustee for the bondholders. This agreement states that these obligations will be repaid from revenue generated by the Authority and are backed by a restricted cash account.

The bond resolution provides a redemption schedule with an interest only payment due in April 2007 and semi-annual payments of principal and interest of \$79,670 from October 2007 through October 2026. The bonds bear interest at 3%.	\$ 1,063,050	\$ 128,403
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# RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

## Note 6—Long-Term Obligations: (Continued)

### B. Details of Long-Term Obligations (Continued)

	<u>Total Amount</u>	<u>Amount Due Within One Year</u>
<b><u>Revenue Bonds (Continued)</u></b>		
<b><u>Direct Borrowings and Direct Placements (Continued)</u></b>		
<b>\$24,000,000 Regional Water and Sewer System Revenue Bond - Series 2009A</b> - On August 1, 2009 the Authority issued \$24,000,000 in bonds for purposes of financing the Moores Creek Wastewater Treatment Plant upgrades, including the Enhanced Nutrient Removal project. These bonds are secured by a supplemental trust agreement between the Authority and trustee for the bondholders. This agreement states that the obligation will be repaid from revenue generated by the Authority and is backed by a restricted cash account.  The bond resolution provided a redemption schedule with an interest only payment due in April 2011 and semi-annual payments of principal and 3.35% interest of \$843,077 from October 2011 through October 2030. The interest rate was reduced to 2.65% on October 1, 2014, which reduced the semi-annual payments to \$802,099.	\$ 15,812,877	\$ 1,193,009
<b>\$15,179,718 Regional Water and Sewer System Revenue Bond - Series 2010A</b> - On June 29, 2010 the Authority issued \$15,179,718 in bonds for purposes of financing the acquisition, construction and equipping of improvements to the Authority's water and sewer system, including the replacement of the Meadow Creek Sanitary Sewer Interceptor together with related expenses. These bonds are secured by a supplemental trust agreement between the Authority and trustee for the bondholders. This agreement states that the obligation will be repaid from revenue generated by the Authority and is backed by a restricted cash account.  The bond resolution provided a redemption schedule with an interest only payment due in April 2012 and semi-annual payments of principal and 2.93% interest of \$513,715 from October 2012 through October 2030. Effective October 1, 2016, the interest rate was reduced to 2.05%, reducing semi-annual payments to \$481,261.	9,816,467	765,186



# RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

## Note 6—Long-Term Obligations: (Continued)

### B. Details of Long-Term Obligations (Continued)

	<u>Total Amount</u>	<u>Amount Due Within One Year</u>
<b><u>Revenue Bonds (Continued)</u></b>		
<b><u>Direct Borrowings and Direct Placements: (Continued)</u></b>		
<b>\$6,982,662 Regional Water and Sewer System Revenue Bond -</b> Series 2011A - On March 17, 2011 the Authority issued \$6,982,662 in bonds for purposes of financing the acquisition, construction and equipping of improvements to the Authority's sewer system including improvements necessary to address the wet weather flows at the Moores Creek Wastewater Treatment Plant. These bonds are secured by a supplemental trust agreement between the Authority and trustee for the bondholders. This agreement states that the obligation will be repaid from revenue generated by the Authority and is backed by a restricted cash account.  The bond resolution provides a redemption schedule with an interest only payment due in April 2012 and semi-annual payments of principal and 2.93% interest of \$236,308 from October 2012 through October 2031. Effective October 1, 2016, the interest rate was reduced to 2.05%, reducing semi-annual payments to \$221,804.	\$ 4,869,766	\$ 345,540
<b>\$1,017,338 Regional Water and Sewer System Revenue Bond -</b> Series 2011B - On March 17, 2011 the Authority issued \$1,017,338 in bonds for purposes of financing the acquisition, construction and equipping of improvements to the Authority's sewer system including improvements necessary to address the wet weather flows at the Moores Creek Wastewater Treatment Plant. These bonds are secured by a supplemental trust agreement between the Authority and trustee for the bondholders. This agreement states that the obligation will be repaid from revenue generated by the Authority and is backed by a restricted cash account.  The bond resolution provided a redemption schedule with an interest only payment due in April 2012 and semi-annual payments of principal and 2.93% interest of \$34,429 from October 2012 through October 2031. The interest rate was reduced to 2.05% as of October 1, 2016, reducing semi-annual payments to \$31,666.	695,230	49,331

# RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

## Note 6—Long-Term Obligations: (Continued)

### B. Details of Long-Term Obligations (Continued)

	<u>Total Amount</u>	<u>Amount Due Within One Year</u>
<b><u>Revenue Bonds (Continued)</u></b>		
<b><u>Direct Borrowings and Direct Placements: (Continued)</u></b>		
<b>\$4,241,488 Regional Water and Sewer System Revenue Bond - Series 2011D</b> - On September 9, 2011 the Authority issued \$4,241,488 in bonds for purposes of financing the acquisition, construction and equipping of improvements to the Authority's water and sewer system. These bonds are secured by a supplemental trust agreement between the Authority and trustee for the bondholders. This agreement states that the obligation will be repaid from revenue generated by the Authority and is backed by a restricted cash account.  The bond resolution provided a redemption schedule with an interest only payment due in October 2012 and semi-annual payments of principal and 2.93% interest of \$143,541 from April 2013 through April 2032. The interest rate was reduced to 2.05% effective October 1, 2016, and the semi-annual payments were reduced to \$134,475.	\$ 3,055,588	\$ 207,368
<b>\$443,937 Regional Water and Sewer System Revenue Bond - Series 2011E</b> - On September 9, 2011 the Authority issued \$443,937 in bonds for purposes of financing the acquisition, construction and equipping of improvements to the Authority's water and sewer system. These bonds are secured by a supplemental trust agreement between the Authority and trustee for the bondholders. This agreement states that the obligation will be repaid from revenue generated by the Authority and is backed by a restricted cash account.  The bond resolution provided a redemption schedule with an interest only payment due in October 2012 and semi-annual payments of principal and interest of \$15,024 from April 2013 through April 2032. The interest rate was reduced to 2.05% effective October 1, 2016, and the semi-annual payments were reduced to \$13,997.	318,052	21,585

# RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

## Note 6—Long-Term Obligations: (Continued)

### B. Details of Long-Term Obligations (Continued)

	<u>Total Amount</u>	<u>Amount Due Within One Year</u>
<b><u>Revenue Bonds (Continued)</u></b>		
<b><u>Direct Borrowings and Direct Placements: (Continued)</u></b>		
<b>\$25,100,000 Water and Sewer System Revenue and Refunding Bonds, Series 2012A</b> - On June 13, 2012, the Authority issued \$25,100,000 in Revenue and Refunding Bonds for purposes of financing various water and sewer capital projects and to refund Series 2001 bond with an outstanding amount of \$5,490,000 and Series 2003 bond with an outstanding amount of \$4,827,000. The bonds were issued at a premium in the amount of \$3,706,939.		
The bond resolution provides a redemption schedule with interest due semi-annually and principal due annually from October 1, 2012 through October 1, 2042. The bonds bear interest at an annual rate ranging from 2.125% to 5.125%. The Authority refunded the 2001 and 2003 Series bonds to reduce its total debt service payments over the next 13 years by \$4.93 million and to obtain a net economic gain (difference between the present values of the debt service payments on the old and new debt) of \$1,079,384 after applying existing reserve funds of \$3.55 million.	\$ 18,425,000	\$ 600,000
<b>\$29,043,290 Water and Sewer Revenue Bonds, Series 2014A</b> - On March 28, 2014, the Authority issued \$29,043,290 in revenue bonds for purposes of financing capital improvements and capacity upgrades of the Rivanna Interceptor and pump station at Moores Creek Wastewater Treatment Plant.		
The bond resolution provides a redemption schedule with interest and principal of \$941,168 due semi-annually from April 1, 2017 through April 1, 2036. An interest only payment is due on October 1, 2016. The bonds bear interest at an annual rate of 2.45%.	25,954,584	1,254,083

# RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

## Note 6—Long-Term Obligations: (Continued)

### B. Details of Long-Term Obligations (Continued)

	<u>Total Amount</u>	<u>Amount Due Within One Year</u>
<b><u>Revenue Bonds (Continued)</u></b>		
<b><u>Direct Borrowings and Direct Placements: (Continued)</u></b>		
<b>\$1,189,672 Water and Sewer Revenue Bonds, Series 2015A</b> - On June 17, 2015, the Authority issued \$1,189,672 in revenue bonds for purposes of financing capital improvements including replacing the final phase of the Schenks Branch Interceptor.		
The bond resolution provides a redemption schedule with an interest payment due October 1, 2016 and interest and principal payments of \$35,296 due semi-annually from April 1, 2017 through April 1, 2036. The bonds bear interest at an annual rate of 1.5%.	\$ 1,052,840	\$ 55,005
<b>\$44,495,000 Taxable Water and Sewer System Revenue and Refunding Bonds, Series 2015B</b> - On November 18, 2015, the Authority issued \$44,495,000 in Revenue and Refunding Bonds for purposes of financing various water capital projects and to refund Series 2005B bond with an outstanding amount of \$20,455,000. The bonds were issued at a premium in the amount of \$5,329,294.		
The bond resolution provides a redemption schedule with interest due semi-annually and principal due annually from April 1, 2016 through October 1, 2045 for total payments of \$1.7 to \$3.3 million per year. The bonds bear interest at an annual rate ranging from 3.094% to 5.125%. The Authority refunded the 2005B Series bonds to reduce its total debt service payments over the next 20 years by \$4.45 million and to obtain a net economic gain (difference between the present values of the debt service payments on the old and new debt) of \$3.51 million.	40,460,000	1,480,000

# RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

## Note 6—Long-Term Obligations: (Continued)

### B. Details of Long-Term Obligations (Continued)

	<u>Total Amount</u>	<u>Amount Due Within One Year</u>
<b><u>Revenue Bonds (Continued)</u></b>		
<b><u>Direct Borrowings and Direct Placements: (Continued)</u></b>		
<b>\$10,000,000 Tax Regional Water and Sewer Revenue Bonds, Series 2016</b> - On December 8, 2016, the Authority issued \$10,000,000 in revenue bonds for purposes of financing various capital improvements.  The bond resolution provides a redemption schedule with interest due semi-annually and principal due annually from April 1, 2017 through October 1, 2036. The bonds bear interest at an annual rate of 2.35%. Total debt service payments are approximately \$627,000 per year.	\$ 9,198,000	\$ 416,000
<b>\$36,855,000 Taxable Regional Water and Sewer Revenue Bonds, Series 2018</b> - On November 14, 2018 the Authority issued \$36,855,000 in revenue bonds for purposes of financing various capital improvements.  The bond resolution provides a redemption schedule with interest due semi-annually and principal due annually from April 1, 2019 through October 1, 2048. The bonds bear interest at a variable annual rate pf 4.125% to 5.125%. Total debt service payments are approximately \$2.26 million per year. The bonds were issued at a premium in the amount of \$2,389,821.	<u>36,855,000</u>	<u>560,000</u>
Total Revenue Bonds	\$ 190,291,452	\$ 7,725,510
Issuance premiums (discounts)	9,832,038	-
VERIP liability	583,922	174,093
Compensated absences	429,107	377,000
Net OPEB liability	389,000	-
Net pension liability	<u>2,570,815</u>	<u>-</u>
Total	<u>\$ 204,096,334</u>	<u>\$ 8,276,603</u>

# RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

## Note 6—Long-Term Obligations: (Continued)

### C. Annual Amortization of Long-Term Debt

The annual requirements to amortize all long-term debt outstanding as of June 30, 2019 are as follows:

Year Ending June 30,	Revenue Bonds			
	Direct Borrowings and Direct Placements		Public Offerings	
	Interest	Principal	Interest	Principal
2020	\$ 6,059,271	\$ 7,075,510	\$ 688,456	\$ 650,000
2021	5,827,219	7,305,577	668,656	670,000
2022	5,587,182	7,538,974	644,706	695,000
2023	5,327,886	7,805,760	616,306	725,000
2024	5,054,899	8,078,992	586,706	755,000
2025-2029	21,023,216	43,121,885	2,625,278	4,075,000
2030-2034	14,534,079	32,041,242	2,017,888	4,680,000
2035-2039	9,632,094	22,123,512	1,257,106	5,440,000
2040-2044	5,334,269	19,235,000	333,369	5,025,000
2045-2049	1,413,000	13,250,000	-	-
Total	\$ <u>79,793,115</u>	\$ <u>167,576,452</u>	\$ <u>9,438,471</u>	\$ <u>22,715,000</u>

### D. Prior Year Defeasance of Debt

In prior years, the Authority defeased certain revenue bonds by placing the proceeds of new bonds in an irrevocable trust to provide for all future debt service payments on the old bonds. Accordingly, the trust account assets and the liability for the defeased bonds are not included in the Authority's financial statements.

## Note 7—Compensated Absences:

Authority employees earn vacation leave each month at a scheduled rate in accordance with the years of service and sick leave at the rate of eight hours per month. Accumulated unpaid vacation leave amounts are accrued when incurred. At June 30, 2019 and 2018, the liability for accrued vacation leave was \$429,107 and \$438,227, respectively.

# RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

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## **Note 8—Pension Plan:**

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### ***Plan Description***

All full-time, salaried permanent employees of the Authority are automatically covered by a VRS Retirement Plan upon employment. This is an agent multiple-employer plan administered by the Virginia Retirement System (the System) along with plans for other employer groups in the Commonwealth of Virginia. Members earn one month of service credit for each month they are employed and for which they and their employer pay contributions to VRS. Members are eligible to purchase prior service, based on specific criteria as defined in the Code of Virginia, as amended. Eligible prior service that may be purchased includes prior public service, active military service, certain periods of leave, and previously refunded service.

### ***Benefit Structures***

The System administers three different benefit structures for covered employees – Plan 1, Plan 2 and Hybrid. Each of these benefit structures has different eligibility criteria, as detailed below.

- a. Employees hired before July 1, 2010, vested as of January 1, 2013, and have not taken a refund, are covered under Plan 1, a defined benefit plan. Non-hazardous duty employees are eligible for an unreduced retirement benefit beginning at age 65 with at least 5 years of creditable service or age 50 with at least 30 years of creditable service. Non-hazardous duty employees may retire with a reduced benefit as early as age 55 with at least 5 years of creditable service or age 50 with at least 10 years of creditable service. Hazardous duty employees (law enforcement officers, firefighters, and sheriffs) are eligible for an unreduced benefit beginning at age 60 with at least 5 years of creditable service or age 50 with at least 25 years of creditable service. Hazardous duty employees may retire with a reduced benefit as early as age 50 with at least 5 years of creditable service.
- b. Employees hired on or after July 1, 2010, or their membership date is before July 1, 2010, and they were not vested as of January 1, 2013 are covered under Plan 2, a defined benefit plan. Non-hazardous duty employees are eligible for an unreduced benefit beginning at their normal social security retirement age with at least 5 years of creditable service or when the sum of their age and service equals 90. Non-hazardous duty employees may retire with a reduced benefit as early as age 60 with at least 5 years of creditable service. Hazardous duty employees are eligible for an unreduced benefit beginning at age 60 with at least 5 years of creditable service or age 50 with at least 25 years of creditable service. Hazardous duty employees may retire with a reduced benefit as early as age 50 with at least 5 years of creditable service.
- c. Non-hazardous duty employees hired on or after January 1, 2014 are covered by the Hybrid Plan combining the features of a defined benefit plan and a defined contribution plan. Plan 1 and Plan 2 members also had the option of opting into this plan during the election window held January 1 – April 30, 2014 with an effective date of July 1, 2014. Employees covered by this plan are eligible for an unreduced benefit beginning at their normal social security retirement age with at least 5 years of creditable service, or when the sum of their age and service equal 90. Employees may retire with a reduced benefit as early as age 60 with at least 5 years of creditable service. For the defined contribution component, members are eligible to receive distributions upon leaving employment, subject to restrictions.

## RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

### Note 8—Pension Plan: (Continued)

#### *Average Final Compensation and Service Retirement Multiplier*

The VRS defined benefit is a lifetime monthly benefit based on a retirement multiplier as a percentage of the employee's average final compensation multiplied by the employee's total creditable service. Under Plan 1, average final compensation is the average of the employee's 36 consecutive months of highest compensation and the multiplier is 1.7% for non-hazardous duty employees, 1.85% for sheriffs and regional jail superintendents, and 1.7% or 1.85% for hazardous duty employees as elected by the employer. Under Plan 2, average final compensation is the average of the employee's 60 consecutive months of highest compensation and the retirement multiplier is 1.65% for non-hazardous duty employees, 1.85% for sheriffs and regional jail superintendents, and 1.7% or 1.85% for hazardous duty employees as elected by the employer. Under the Hybrid Plan, average final compensation is the average of the employee's 60 consecutive months of highest compensation and the multiplier is 1.00%. For members who opted into the Hybrid Retirement Plan from Plan 1 or Plan 2, the applicable multipliers for those plans will be used to calculate the retirement benefit for service credited in those plans.

#### *Cost-of-Living Adjustment (COLA) in Retirement and Death and Disability Benefits*

Retirees with an unreduced benefit or with a reduced benefit with at least 20 years of creditable service are eligible for an annual COLA beginning July 1 after one full calendar year from the retirement date. Retirees with a reduced benefit and who have less than 20 years of creditable service are eligible for an annual COLA beginning on July 1 after one calendar year following the unreduced retirement eligibility date. Under Plan 1, the COLA cannot exceed 5.00%. Under Plan 2 and the Hybrid Plan, the COLA cannot exceed 3.00%. The VRS also provides death and disability benefits. Title 51.1 of the Code of Virginia, as amended, assigns the authority to establish and amend benefit provisions to the General Assembly of Virginia.

#### *Employees Covered by Benefit Terms*

As of the June 30, 2017 actuarial valuation, the following employees were covered by the benefit terms of the pension plan:

	<u>2019</u>	<u>2018</u>
Inactive members or their beneficiaries currently receiving benefits	56	52
Inactive members:		
Vested inactive members	17	16
Non-vested inactive members	18	20
Long-term disability (LTD)	0	0
Inactive members active elsewhere in VRS	<u>39</u>	<u>36</u>
Total inactive members	74	72
Active members	<u>83</u>	<u>75</u>
Total covered employees	<u>213</u>	<u>199</u>



RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

Note 8–Pension Plan: (Continued)

Contributions

The contribution requirement for active employees is governed by §51.1-145 of the Code of Virginia, as amended, but may be impacted as a result of funding options provided to political subdivisions by the Virginia General Assembly. Employees are required to contribute 5.00% of their compensation toward their retirement.

The Authority’s contractually required employer contribution rate for the year ended June 30, 2019 was 8.14% of covered employee compensation. This rate was based on an actuarially determined rate from an actuarial valuation as of June 30, 2017. The Authority’s contractually required employer contribution rate for the year ended June 30, 2018 was 9.62% of covered employee compensation. This rate was based on an actuarially determined rate from an actuarial valuation as of June 30, 2015.

This rate, when combined with employee contributions, was expected to finance the costs of benefits earned by employees during the year, with an additional amount to finance any unfunded accrued liability. Contributions to the pension plan from the Authority were \$389,097 and \$438,760 for the years ended June 30, 2019 and June 30, 2018, respectively.

Net Pension Liability

The net pension liability (NPL) is calculated separately for each employer and represents that particular employer’s total pension liability determined in accordance with GASB Statement No. 68, less that employer’s fiduciary net position. For Authority, the net pension liability was measured as of June 30, 2018. The total pension liability used to calculate the net pension liability was determined by an actuarial valuation performed as of June 30, 2017 rolled forward to the measurement date of June 30, 2018.

Actuarial Assumptions – General Employees

The total pension liability for General Employees in the Authority’s Retirement Plan was based on an actuarial valuation as of June 30, 2017, using the Entry Age Normal actuarial cost method and the following assumptions, applied to all periods included in the measurement and rolled forward to the measurement date of June 30, 2018.

Inflation	2.5%
Salary increases, including inflation	3.5% – 5.35%
Investment rate of return	7.0%, net of pension plan investment expense, including inflation*

\* Administrative expenses as a percent of the market value of assets for the last experience study were found to be approximately 0.06% of the market assets for all of the VRS plans. This would provide an assumed investment return rate for GASB purposes of slightly more than the assumed 7.0%. However, since the difference was minimal, and a more conservative 7.0% investment return assumption provided a projected plan net position that exceeded the projected benefit payments, the long-term expected rate of return on investments was assumed to be 7.0% to simplify preparation of pension liabilities.

## **RIVANNA WATER & SEWER AUTHORITY**

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

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### **Note 8—Pension Plan: (Continued)**

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#### ***Actuarial Assumptions – General Employees: (Continued)***

Mortality rates:

Largest 10 – Non-Hazardous Duty: 20% of deaths are assumed to be service related

Pre-Retirement:

RP-2014 Employee Rates to age 80, Healthy Annuitant Rates at ages 81 and older projected with scale BB to 2020; males 95% of rates; females 105% of rates.

Post-Retirement:

RP-2014 Employee Rates to age 49, Healthy Annuitant Rates at ages 50 and older projected with scale BB to 2020; males set forward 3 years; females 1.0% increase compounded from ages 70 to 90.

Post-Disablement:

RP-2014 Disability Mortality Rates projected with scale BB to 2020; males set forward 2 years, 110% of rates; females 125% of rates.

All Others (Non 10 Largest) – Non-Hazardous Duty: 15% of deaths are assumed to be service related

Pre-Retirement:

RP-2014 Employee Rates to age 80, Healthy Annuitant Rates at ages 81 and older projected with scale BB to 2020; males 95% of rates; females 105% of rates.

Post-Retirement:

RP-2014 Employee Rates to age 49, Healthy Annuitant Rates at ages 50 and older projected with scale BB to 2020; males set forward 3 years; females 1.0% increase compounded from ages 70 to 90.

Post-Disablement:

RP-2014 Disability Mortality Rates projected with scale BB to 2020; males set forward 2 years, 110% of rates; females 125% of rates.

## RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

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### Note 8—Pension Plan: (Continued)

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#### **Actuarial Assumptions – General Employees: (Continued)**

The actuarial assumptions used in the June 30, 2017 valuation were based on the results of an actuarial experience study for the period from July 1, 2012 through June 30, 2016. Changes to the actuarial assumptions as a result of the experience study are as follows:

Largest 10 – Non-Hazardous Duty:

Mortality Rates (pre-retirement, post-retirement healthy, and disabled)	Updated to a more current mortality table - RP-2014 projected to 2020
Retirement Rates	Lowered rates at older ages and changed final retirement from 70 to 75
Withdrawal Rates	Adjusted rates to better fit experience at each year age and service through 9 years of service
Disability Rates	Lowered rates
Salary Scale	No change
Line of Duty Disability	Increased rate from 14% to 20%

All Others (Non 10 Largest) – Non-Hazardous Duty:

Mortality Rates (pre-retirement, post-retirement healthy, and disabled)	Updated to a more current mortality table - RP-2014 projected to 2020
Retirement Rates	Lowered rates at older ages and changed final retirement from 70 to 75
Withdrawal Rates	Adjusted rates to better fit experience at each year age and service through 9 years of service
Disability Rates	Lowered rates
Salary Scale	No change
Line of Duty Disability	Increased rate from 14% to 15%

## RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

### Note 8—Pension Plan: (Continued)

#### *Long-Term Expected Rate of Return*

The long-term expected rate of return on pension System investments was determined using a log-normal distribution analysis in which best-estimate ranges of expected future real rates of return (expected returns, net of pension System investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. The target asset allocation and best estimate of arithmetic real rates of return for each major asset class are summarized in the following table:

<b>Asset Class (Strategy)</b>	<b>Target Allocation</b>	<b>Arithmetic Long-Term Expected Rate of Return</b>	<b>Weighted Average Long-Term Expected Rate of Return</b>
Public Equity	40.00%	4.54%	1.82%
Fixed Income	15.00%	0.69%	0.10%
Credit Strategies	15.00%	3.96%	0.59%
Real Assets	15.00%	5.76%	0.86%
Private Equity	15.00%	9.53%	1.43%
Total	100.00%		4.80%
		Inflation	2.50%
		*Expected arithmetic nominal return	7.30%

\* The above allocation provides a one-year return of 7.30%. However, one-year returns do not take into account the volatility present in each of the asset classes. In setting the long-term expected return for the system, stochastic projections are employed to model future returns under various economic conditions. The results provide a range of returns over various time periods that ultimately provide a median return of 6.83%, including expected inflation of 2.50%.

#### *Discount Rate*

The discount rate used to measure the total pension liability was 7.00%. The projection of cash flows used to determine the discount rate assumed that System member contributions will be made per the VRS Statutes and the employer contributions will be made in accordance with the VRS funding policy at rates equal to the difference between actuarially determined contribution rates adopted by the VRS Board of Trustees and the member rate. Consistent with the phased-in funding provided by the General Assembly for state and teacher employer contributions; the Authority was also provided with an opportunity to use an alternative employer contribution rate. For the year ended June 30, 2018, the alternate rate was the employer contribution rate used in FY 2012 or 90% of the actuarially determined employer contribution rate from the June 30, 2015 actuarial valuations, whichever was greater. From July 1, 2018 on, participating employers are assumed to continue to contribute 100% of the actuarially determined contribution rates. Based on those assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current active and inactive employees. Therefore, the long-term expected rate of return was applied to all periods of projected benefit payments to determine the total pension liability.

# RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

## Note 8—Pension Plan: (Continued)

### Changes in Net Pension Liability

	Increase (Decrease)		
	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)
Balances at June 30, 2017	\$ 21,977,526	\$ 19,053,943	\$ 2,923,583
Changes for the year:			
Service cost	\$ 414,140	\$ -	\$ 414,140
Interest	1,501,555	-	1,501,555
Differences between expected and actual experience	(211,755)	-	(211,755)
Assumption changes	-	-	-
Contributions - employer	-	438,811	(438,811)
Contributions - employee	-	227,140	(227,140)
Net investment income	-	1,404,233	(1,404,233)
Benefit payments, including refunds of employee contributions	(1,053,473)	(1,053,473)	-
Administrative expenses	-	(12,231)	12,231
Other changes	-	(1,245)	1,245
Net changes	\$ 650,467	\$ 1,003,235	\$ (352,768)
Balances at June 30, 2018	\$ 22,627,993	\$ 20,057,178	\$ 2,570,815

# RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

## Note 8—Pension Plan: (Continued)

### Changes in Net Pension Liability: (Continued)

	Increase (Decrease)		
	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)
Balances at June 30, 2016	\$ 21,391,101	\$ 17,222,309	\$ 4,168,792
Changes for the year:			
Service cost	\$ 398,833	\$ -	\$ 398,833
Interest	1,465,426	-	1,465,426
Differences between expected and actual experience	(123,760)	-	(123,760)
Assumption changes	(241,172)		(241,172)
Contributions - employer	-	423,473	(423,473)
Contributions - employee	-	237,015	(237,015)
Net investment income	-	2,098,047	(2,098,047)
Benefit payments, including refunds of employee contributions	(912,902)	(912,902)	-
Administrative expenses	-	(12,137)	12,137
Other changes	-	(1,862)	1,862
Net changes	\$ 586,425	\$ 1,831,634	\$ (1,245,209)
Balances at June 30, 2017	\$ 21,977,526	\$ 19,053,943	\$ 2,923,583

### Sensitivity of the Net Pension Liability to Changes in the Discount Rate

The following presents the net pension liability of the Authority using the discount rate of 7.00%, as well as what the Authority's net pension liability would be if it were calculated using a discount rate that is one percentage point lower (6.00%) or one percentage point higher (8.00%) than the current rate:

Rivanna Water & Sewer Authority's Net Pension Liability	Rate		
	1% Decrease (6.00%)	Current Discount (7.00%)	1% Increase (8.00%)
2019	\$ 5,341,787	\$ 2,570,815	\$ 248,162
2018	Rate		
	(6.00%)	(7.00%)	(8.00%)
2018	\$ 5,648,515	\$ 2,923,583	\$ 642,315

# RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

## Note 8—Pension Plan: (Continued)

### ***Pension Expense and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pensions***

For the year ended June 30, 2019, the Authority recognized pension expense of \$100,098. At June 30, 2019, the Authority reported deferred outflows of resources and deferred inflows of resources related to pensions from the following sources:

	<b><u>Deferred Outflows of Resources</u></b>	<b><u>Deferred Inflows of Resources</u></b>
Differences between expected and actual experience	\$ 35,878	\$ 179,904
Changes in assumptions	-	78,766
Net difference between projected and actual earnings on pension plan investments	-	173,542
Employer contributions subsequent to the measurement date	<u>389,097</u>	<u>-</u>
Total	<u>\$ 424,975</u>	<u>\$ 432,212</u>

For the year ended June 30, 2018, the Authority recognized pension expense of \$261,936. At June 30, 2018, the Authority reported deferred outflows of resources and deferred inflows of resources related to pensions from the following sources:

	<b><u>Deferred Outflows of Resources</u></b>	<b><u>Deferred Inflows of Resources</u></b>
Differences between expected and actual experience	\$ 141,704	\$ 82,090
Changes in assumptions	-	159,969
Net difference between projected and actual earnings on pension plan investments	-	281,924
Employer contributions subsequent to the measurement date	<u>438,760</u>	<u>-</u>
Total	<u>\$ 580,464</u>	<u>\$ 523,983</u>

## RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

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### Note 8—Pension Plan: (Continued)

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#### ***Pension Expense and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pensions (Continued)***

\$389,097 reported as deferred outflows of resources related to pensions resulting from the Authority's contributions subsequent to the measurement date will be recognized as a reduction of the Net Pension Liability in the fiscal year ending June 30, 2020. Other amounts reported as deferred outflows of resources and deferred inflows of resources related to pensions will be recognized in pension expense in future reporting periods as follows:

<b><u>Year ended June 30</u></b>		
2020	\$	(96,137)
2021		(86,038)
2022		(197,259)
2023		(16,900)
2024		-
Thereafter		-

\$438,760 reported as deferred outflows of resources related to pensions resulting from the Authority's contributions subsequent to the measurement date will be recognized as a reduction of the Net Pension Liability in the fiscal year ending June 30, 2019. Other amounts reported as deferred outflows of resources and deferred inflows of resources related to pensions will be recognized in pension expense in future reporting periods as follows:

<b><u>Year ended June 30</u></b>		
2019	\$	(193,023)
2020		(6,968)
2021		(1,927)
2022		(180,361)
2023		-
Thereafter		-

#### ***Pension Plan Data***

Information about the VRS Political Subdivision Retirement Plan is also available in the separately issued VRS 2018 Comprehensive Annual Financial Report (CAFR). A copy of the 2018 VRS CAFR may be downloaded from the VRS website at <http://www.varetire.org/Pdf/Publications/2018-annual-report.pdf>, or by writing to the System's Chief Financial Officer at P.O. Box 2500, Richmond, VA 23218-2500.



## **RIVANNA WATER & SEWER AUTHORITY**

### **Notes to the Financial Statements**

At June 30, 2019 and 2018 (Continued)

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#### **Note 9—Voluntary Early Retirement Incentive Program:**

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Rivanna Water and Sewer Authority has a Voluntary Early Retirement Incentive Program (VERIP) which provides for monthly payments to eligible employees for a period of up to five years after early retirement or until age 65, whichever comes first. Participants in the VERIP must be regular full-time employees eligible for early or full retirement under the provisions of the Virginia Retirement System (VRS) who have been employed by the Authority for 10 of the last 13 years prior to retirement. Employees retiring under the disability provisions of VRS and/or Social Security are not eligible for the VERIP. VERIP participants receive a stipend equal to the difference between (1) the annual VRS retirement benefit amount as reduced for early VRS retirement if appropriate and (2) the recomputed annual VRS benefit with the addition of the lesser of five more years of service or the number of additional years needed to reach age 65. The stipend is paid on a monthly basis. The participant may also receive a monthly payment equal to the amount of the Board's contribution toward an employee's health insurance, for as long as the employee is covered by VERIP benefits. Applications for the VERIP must be submitted to the Executive Director for approval. The Authority's estimated VERIP liability as of June 30, 2019 and 2018 was \$583,922 and \$487,926, respectively. The amount payable within the next year is \$174,093.

#### **Note 10—Risk Management:**

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The Authority is exposed to various risks of loss related to torts; theft of, damage to and destruction of assets; errors and omissions; injuries to employees; and natural disasters. The Authority joined together with other local governments in the Commonwealth to form the Virginia Association of Counties Group Self-Insurance Risk Pool, a public entity risk pool currently operating as a common risk management and insurance program for member governments. The Authority pays an annual premium to the pool for its workers compensation coverage, property and liability insurance. The Agreement for Formation of the association provides that the association will be self-sustaining through member premiums. Settled claims have not exceeded pool coverage in any of the past three fiscal years.

#### **Note 11—Other Postemployment Benefits—Health Insurance:**

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The Authority previously provided post-retirement healthcare benefits for employees who were eligible under a single-employer defined benefit plan. The Plan and benefits have been terminated. Therefore, the Authority has no assets or liabilities to report as of June 30, 2017 or subsequent years.

## **RIVANNA WATER & SEWER AUTHORITY**

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

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### **Note 12—Group Life Insurance (GLI) Program (OPEB Plan):**

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#### ***Plan Description***

The Group Life Insurance (GLI) Program was established pursuant to §51.1-500 et seq. of the Code of Virginia, as amended, and which provides the authority under which benefit terms are established or may be amended. All full-time, salaried permanent employees of the state agencies, teachers, and employees of participating political subdivisions are automatically covered by the VRS GLI Program upon employment. This is a cost-sharing multiple-employer plan administered by the Virginia Retirement System (the System), along with pensions and other OPEB plans, for public employer groups in the Commonwealth of Virginia.

In addition to the Basic GLI benefit, members are also eligible to elect additional coverage for themselves as well as a spouse or dependent children through the Optional GLI Program. For members who elect the optional group life insurance coverage, the insurer bills employers directly for the premiums. Employers deduct these premiums from members' paychecks and pay the premiums to the insurer. Since this is a separate and fully insured program, it is not included as part of the GLI Program OPEB.

The specific information for GLI OPEB, including eligibility, coverage and benefits is described below:

#### ***Eligible Employees***

The GLI Program was established July 1, 1960, for state employees, teachers, and employees of political subdivisions that elect the program. Basic GLI coverage is automatic upon employment. Coverage ends for employees who leave their position before retirement eligibility or who take a refund of their accumulated retirement member contributions and accrued interest.

#### ***Benefit Amounts***

The GLI Program is a defined benefit plan with several components. The natural death benefit is equal to the employee's covered compensation rounded to the next highest thousand and then doubled. The accidental death benefit is double the natural death benefit. In addition to basic natural and accidental death benefits, the program provides additional benefits provided under specific circumstances that include the following: accidental dismemberment benefit, safety belt benefit, repatriation benefit, felonious assault benefit, and accelerated death benefit option. The benefit amounts are subject to a reduction factor. The benefit amount reduces by 25% on January 1 following one calendar year of separation. The benefit amount reduces by an additional 25% on each subsequent January 1 until it reaches 25% of its original value. For covered members with at least 30 years of creditable service, the minimum benefit payable was set at \$8,000 by statute. This amount is increased annually based on the VRS Plan 2 cost-of-living adjustment and was increased to \$8,279 effective July 1, 2018.

## RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

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### **Note 12—Group Life Insurance (GLI) Program (OPEB Plan): (Continued)**

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#### ***Contributions***

The contribution requirements for the GLI Program are governed by §51.1-506 and §51.1-508 of the Code of Virginia, as amended, but may be impacted as a result of funding provided to state agencies and school divisions by the Virginia General Assembly. The total rate for the GLI Program was 1.31% of covered employee compensation. This was allocated into an employee and an employer component using a 60/40 split. The employee component was 0.79% (1.31% x 60%) and the employer component was 0.52% (1.31% x 40%). Employers may elect to pay all or part of the employee contribution; however, the employer must pay all of the employer contribution. Each employer's contractually required employer contribution rate for the year ended June 30, 2019 was 0.52% of covered employee compensation. This rate was based on an actuarially determined rate from an actuarial valuation as of June 30, 2017. The actuarially determined rate, when combined with employee contributions, was expected to finance the costs of benefits payable during the year, with an additional amount to finance any unfunded accrued liability. Contributions to the GLI Program from the entity were \$27,074 and \$25,512 for the years ended June 30, 2019 and June 30, 2018, respectively.

#### ***GLI OPEB Liabilities, GLI OPEB Expense, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to the GLI Program OPEB***

At June 30, 2019, the entity reported a liability of \$389,000 for its proportionate share of the Net GLI OPEB Liability. The Net GLI OPEB Liability was measured as of June 30, 2018 and the total GLI OPEB liability used to calculate the Net GLI OPEB Liability was determined by an actuarial valuation as of that date. The covered employer's proportion of the Net GLI OPEB Liability was based on the covered employer's actuarially determined employer contributions to the GLI Program for the year ended June 30, 2018 relative to the total of the actuarially determined employer contributions for all participating employers. At June 30, 2018, the participating employer's proportion was 0.02561% as compared to 0.02503% at June 30, 2017.

At June 30, 2018, the entity reported a liability of \$376,000 for its proportionate share of the Net GLI OPEB Liability. The Net GLI OPEB Liability was measured as of June 30, 2017 and the total GLI OPEB liability used to calculate the Net GLI OPEB Liability was determined by an actuarial valuation as of that date. The covered employer's proportion of the Net GLI OPEB Liability was based on the covered employer's actuarially determined employer contributions to the Group Life Insurance Program for the year ended June 30, 2017 relative to the total of the actuarially determined employer contributions for all participating employers. At June 30, 2017, the participating employer's proportion was .02503% as compared to .02450% at June 30, 2016.

For the year ended June 30, 2019, the participating employer recognized GLI OPEB expense of \$6,000. For the year ended June 30, 2018, the participating employer recognized GLI OPEB expense of \$5,000. Since there was a change in proportionate share between measurement dates, a portion of the GLI OPEB expense was related to deferred amounts from changes in proportion.

**RIVANNA WATER & SEWER AUTHORITY**

## Notes to the Financial Statements

At June 30, 2019 and 2018 (Continued)

**Note 12—Group Life Insurance (GLI) Program (OPEB Plan): (Continued)*****GLI OPEB Liabilities, GLI OPEB Expense, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to the GLI Program OPEB: (Continued)***

At June 30, 2019, the employer reported deferred outflows of resources and deferred inflows of resources related to the GLI OPEB from the following sources:

	<u>Deferred Outflows of Resources</u>	<u>Deferred Inflows of Resources</u>
Differences between expected and actual experience	\$ 19,000	\$ 7,000
Net difference between projected and actual earnings on GLI OPEB program investments	-	13,000
Change in assumptions	-	16,000
Changes in proportion	15,000	-
Employer contributions subsequent to the measurement date	<u>27,074</u>	<u>-</u>
Total	\$ <u><u>61,074</u></u>	\$ <u><u>36,000</u></u>

At June 30, 2018, the employer reported deferred outflows of resources and deferred inflows of resources related to the GLI OPEB from the following sources:

	<u>Deferred Outflows of Resources</u>	<u>Deferred Inflows of Resources</u>
Differences between expected and actual experience	\$ -	\$ 9,000
Net difference between projected and actual earnings on GLI OPEB program investments	-	14,000
Change in assumptions	-	19,000
Changes in proportion	8,000	-
Employer contributions subsequent to the measurement date	<u>25,512</u>	<u>-</u>
Total	\$ <u><u>33,512</u></u>	\$ <u><u>42,000</u></u>

## RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

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### **Note 12—Group Life Insurance (GLI) Program (OPEB Plan): (Continued)**

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#### ***GLI OPEB Liabilities, GLI OPEB Expense, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to the GLI Program OPEB: (Continued)***

\$27,074 reported as deferred outflows of resources related to the GLI OPEB resulting from the employer's contributions subsequent to the measurement date will be recognized as a reduction of the Net GLI OPEB Liability in the fiscal year ending June 30, 2020. Other amounts reported as deferred outflows of resources and deferred inflows of resources related to the GLI OPEB will be recognized in the GLI OPEB expense in future reporting periods as follows:

#### **Year Ended June 30**

2020	\$	(3,000)
2021		(3,000)
2022		(3,000)
2023		1,000
2024		4,000
Thereafter		2,000

\$25,512 reported as deferred outflows of resources related to the GLI OPEB resulting from the employer's contributions subsequent to the measurement date will be recognized as a reduction of the Net GLI OPEB Liability in the fiscal year ending June 30, 2019. Other amounts reported as deferred outflows of resources and deferred inflows of resources related to the GLI OPEB will be recognized in the GLI OPEB expense in future reporting periods as follows:

#### **Year Ended June 30**

2019	\$	(8,820)
2020		(8,820)
2021		(8,820)
2022		(5,200)
2023		(2,340)
Thereafter		-

# RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

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## Note 12—Group Life Insurance (GLI) Program (OPEB Plan): (Continued)

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### **Actuarial Assumptions**

The total GLI OPEB liability was based on an actuarial valuation as of June 30, 2017, using the Entry Age Normal actuarial cost method and the following assumptions, applied to all periods included in the measurement and rolled forward to the measurement date of June 30, 2018.

Inflation	2.5%
Salary increases, including inflation:	
General state employees	3.5%–5.35%
Teachers	3.5%–5.95%
SPORS employees	3.5%–4.75%
VaLORS employees	3.5%–4.75%
JRS employees	4.5%
Locality - General employees	3.5%–5.35%
Locality - Hazardous Duty employees	3.5%–4.75%
Investment rate of return	7.0%, net of investment expenses, including inflation*

\*Administrative expenses as a percent of the market value of assets for the last experience study were found to be approximately 0.06% of the market assets for all of the VRS plans. This would provide an assumed investment return rate for GASB purposes of slightly more than the assumed 7.0%. However, since the difference was minimal, and a more conservative 7.0% investment return assumption provided a projected plan net position that exceeded the projected benefit payments, the long-term expected rate of return on investments was assumed to be 7.0% to simplify preparation of OPEB liabilities.

### **Mortality Rates – General State Employees**

#### Pre-Retirement:

RP-2014 Employee Rates to age 80, Healthy Annuitant Rates to 81 and older projected with scale BB to 2020; males set back 1 year, 85% of rates; females set back 1 year.

#### Post-Retirement:

RP-2014 Employee Rates to age 49, Healthy Annuitant Rates at ages 50 and older projected with scale BB to 2020; males set forward 1 year; females set back 1 year with 1.5% increase compounded from ages 70 to 85.

#### Post-Disablement:

RP-2014 Disability Mortality Rates projected with scale BB to 2020; males 115% of rates; females 130% of rates.

## RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

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### Note 12–Group Life Insurance (GLI) Program (OPEB Plan): (Continued)

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#### **Actuarial Assumptions: (Continued)**

#### **Mortality Rates – General State Employees: (Continued)**

The actuarial assumptions used in the June 30, 2017 valuation were based on the results of an actuarial experience study for the period from July 1, 2012 through June 30, 2016. Changes to the actuarial assumptions as a result of the experience study are as follows:

Mortality Rates (pre-retirement, post-retirement healthy, and disabled)	Updated to a more current mortality table - RP-2014 projected to 2020
Retirement Rates	Lowered rates at older ages and changed final retirement from 70 to 75
Withdrawal Rates	Adjusted rates to better fit experience at each year age and service through 9 years of service
Disability Rates	Adjusted rates to better match experience
Salary Scale	No change
Line of Duty Disability	Increased rate from 14% to 25%

#### **Mortality Rates – Teachers**

##### Pre-Retirement:

RP-2014 White Collar Employee Rates to age 80, White Collar Healthy Annuitant Rates at ages 81 and older projected with scale BB to 2020.

##### Post-Retirement:

RP-2014 White Collar Employee Rates to age 49, White Collar Healthy Annuitant Rates at ages 50 and older projected with scale BB to 2020; males 1% increase compounded from ages 70 to 90; females set back 3 years with 1.5% increase compounded from ages 65 to 70 and 2.0% increase compounded from ages 75 to 90.

##### Post-Disablement:

RP-2014 Disability Mortality Rates projected with scale BB to 2020; 115% of rates for males and females.

## RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

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### Note 12—Group Life Insurance (GLI) Program (OPEB Plan): (Continued)

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#### **Actuarial Assumptions: (Continued)**

#### **Mortality Rates – Teachers: (Continued)**

The actuarial assumptions used in the June 30, 2017 valuation were based on the results of an actuarial experience study for the period from July 1, 2012 through June 30, 2016. Changes to the actuarial assumptions as a result of the experience study are as follows:

Mortality Rates (pre-retirement, post-retirement healthy, and disabled)	Updated to a more current mortality table - RP-2014 projected to 2020
Retirement Rates	Lowered rates at older ages and changed final retirement from 70 to 75
Withdrawal Rates	Adjusted rates to better fit experience at each year age and service through 9 years of service
Disability Rates	Adjusted rates to better match experience
Salary Scale	No change

#### **Mortality Rates – SPORS Employees**

##### Pre-Retirement:

RP-2014 Employee Rates to age 80, Healthy Annuitant Rates to 81 and older projected with scale BB to 2020; males 90% of rates; females set forward 1 year.

##### Post-Retirement:

RP-2014 Employee Rates to age 49, Healthy Annuitant Rates at ages 50 and older projected with scale BB to 2020; males set forward 1 year with 1.0% increase compounded from ages 70 to 90; females set forward 3 years.

##### Post-Disablement:

RP-2014 Disability Mortality Rates projected with scale BB to 2020; males set forward 2 years; unisex using 100% male.



## RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

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### Note 12–Group Life Insurance (GLI) Program (OPEB Plan): (Continued)

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#### **Actuarial Assumptions: (Continued)**

#### **Mortality Rates – SPORS Employees: (Continued)**

The actuarial assumptions used in the June 30, 2017 valuation were based on the results of an actuarial experience study for the period from July 1, 2012 through June 30, 2016. Changes to the actuarial assumptions as a result of the experience study are as follows:

Mortality Rates (pre-retirement, post-retirement healthy, and disabled)	Updated to a more current mortality table - RP-2014 projected to 2020 and reduced margin for future improvement in accordance with experience
Retirement Rates	Increased age 50 rates and lowered rates at older ages
Withdrawal Rates	Adjusted rates to better fit experience
Disability Rates	Adjusted rates to better match experience
Salary Scale	No change
Line of Duty Disability	Increased rate from 60% to 85%

#### **Mortality Rates – VaLORS Employees**

##### Pre-Retirement:

RP-2014 Employee Rates to age 80, Healthy Annuitant Rates to 81 and older projected with scale BB to 2020; males 90% of rates; females set forward 1 year.

##### Post-Retirement:

RP-2014 Employee Rates to age 49, Healthy Annuitant Rates at ages 50 and older projected with scale BB to 2020; males set forward 1 year with 1.0% increase compounded from ages 70 to 90; females set forward 3 years.

##### Post-Disablement:

RP-2014 Disability Mortality Rates projected with scale BB to 2020; males set forward 2 years; unisex using 100% male.

## RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

### Note 12—Group Life Insurance (GLI) Program (OPEB Plan): (Continued)

#### *Actuarial Assumptions: (Continued)*

#### **Mortality Rates – VaLORS Employees: (Continued)**

The actuarial assumptions used in the June 30, 2017 valuation were based on the results of an actuarial experience study for the period from July 1, 2012 through June 30, 2016. Changes to the actuarial assumptions as a result of the experience study are as follows:

Mortality Rates (pre-retirement, post-retirement healthy, and disabled)	Updated to a more current mortality table - RP-2014 projected to 2020 and reduced margin for future improvement in accordance with experience
Retirement Rates	Increased age 50 rates and lowered rates at older ages
Withdrawal Rates	Adjusted rates to better fit experience at each year age and service through 9 years of service
Disability Rates	Adjusted rates to better match experience
Salary Scale	No change
Line of Duty Disability	Decreased rate from 50% to 35%

#### **Mortality Rates – JRS Employees**

##### Pre-Retirement:

RP-2014 Employee Rates to age 80, Healthy Annuitant Rates to 81 and older projected with scale BB to 2020; males set back 1 year, 85% of rates; females set back 1 year.

##### Post-Retirement:

RP-2014 Employee Rates to age 49, Healthy Annuitant Rates at ages 50 and older projected with scale BB to 2020; males set forward 1 year; females set back 1 year with 1.5% compounding increase from ages 70 to 85.

##### Post-Disablement:

RP-2014 Disability Mortality Rates projected with scale BB to 2020; males 115% of rates; females 130% of rates.

The actuarial assumptions used in the June 30, 2017 valuation were based on the results of an actuarial experience study for the period from July 1, 2012 through June 30, 2016. Changes to the actuarial assumptions as a result of the experience study are as follows:

Mortality Rates (pre-retirement, post-retirement healthy, and disabled)	Updated to a more current mortality table - RP-2014 projected to 2020
Retirement Rates	Decreased rates at first retirement eligibility
Withdrawal Rates	No change
Disability Rates	Removed disability rates
Salary Scale	No change

## RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

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### Note 12—Group Life Insurance (GLI) Program (OPEB Plan): (Continued)

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#### *Actuarial Assumptions: (Continued)*

#### **Mortality Rates – Largest Ten Locality Employers – General Employees**

**Pre-Retirement:**

RP-2014 Employee Rates to age 80, Healthy Annuitant Rates to 81 and older projected with scale BB to 2020; males 95% of rates; females 105% of rates.

**Post-Retirement:**

RP-2014 Employee Rates to age 49, Healthy Annuitant Rates at ages 50 and older projected with scale BB to 2020; males set forward 3 years; females 1.0% increase compounded from ages 70 to 90.

**Post-Disablement:**

RP-2014 Disability Mortality Rates projected with scale BB to 2020; males set forward 2 years, 110% of rates; females 125% of rates.

The actuarial assumptions used in the June 30, 2017 valuation were based on the results of an actuarial experience study for the period from July 1, 2012 through June 30, 2016. Changes to the actuarial assumptions as a result of the experience study are as follows:

Mortality Rates (pre-retirement, post-retirement healthy, and disabled)	Updated to a more current mortality table - RP-2014 projected to 2020
Retirement Rates	Lowered retirement rates at older ages and extended final retirement age from 70 to 75
Withdrawal Rates	Adjusted termination rates to better fit experience at each age and service year
Disability Rates	Lowered disability rates
Salary Scale	No change
Line of Duty Disability	Increased rate from 14% to 20%

#### **Mortality Rates – Non-Largest Ten Locality Employers – General Employees**

**Pre-Retirement:**

RP-2014 Employee Rates to age 80, Healthy Annuitant Rates to 81 and older projected with scale BB to 2020; males 95% of rates; females 105% of rates.

**Post-Retirement:**

RP-2014 Employee Rates to age 49, Healthy Annuitant Rates at ages 50 and older projected with scale BB to 2020; males set forward 3 years; females 1.0% increase compounded from ages 70 to 90.

**Post-Disablement:**

RP-2014 Disability Mortality Rates projected with scale BB to 2020; males set forward 2 years, 110% of rates; females 125% of rates.

## RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

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### Note 12–Group Life Insurance (GLI) Program (OPEB Plan): (Continued)

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#### **Actuarial Assumptions: (Continued)**

#### **Mortality Rates – Non-Largest Ten Locality Employers – General Employees: (Continued)**

The actuarial assumptions used in the June 30, 2017 valuation were based on the results of an actuarial experience study for the period from July 1, 2012 through June 30, 2016. Changes to the actuarial assumptions as a result of the experience study are as follows:

Mortality Rates (pre-retirement, post-retirement healthy, and disabled)	Updated to a more current mortality table - RP-2014 projected to 2020
Retirement Rates	Lowered retirement rates at older ages and extended final retirement age from 70 to 75
Withdrawal Rates	Adjusted termination rates to better fit experience at each age and service year
Disability Rates	Lowered disability rates
Salary Scale	No change
Line of Duty Disability	Increased rate from 14% to 15%

#### **Mortality Rates – Largest Ten Locality Employers – Hazardous Duty Employees**

##### Pre-Retirement:

RP-2014 Employee Rates to age 80, Healthy Annuitant Rates to 81 and older projected with scale BB to 2020; males 90% of rates; females set forward 1 year.

##### Post-Retirement:

RP-2014 Employee Rates to age 49, Healthy Annuitant Rates at ages 50 and older projected with scale BB to 2020; males set forward 1 year with 1.0% increase compounded from ages 70 to 90; females set forward 3 years.

##### Post-Disablement:

RP-2014 Disability Mortality Rates projected with scale BB to 2020; males set forward 2 years; unisex using 100% male.

## RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

### Note 12–Group Life Insurance (GLI) Program (OPEB Plan): (Continued)

#### *Actuarial Assumptions: (Continued)*

#### **Mortality Rates – Largest Ten Locality Employers – Hazardous Duty Employees: (Continued)**

The actuarial assumptions used in the June 30, 2017 valuation were based on the results of an actuarial experience study for the period from July 1, 2012 through June 30, 2016. Changes to the actuarial assumptions as a result of the experience study are as follows:

Mortality Rates (pre-retirement, post-retirement healthy, and disabled)	Updated to a more current mortality table - RP-2014 projected to 2020
Retirement Rates	Lowered retirement rates at older ages
Withdrawal Rates	Adjusted termination rates to better fit experience at each age and service year
Disability Rates	Increased disability rates
Salary Scale	No change
Line of Duty Disability	Increased rate from 60% to 70%

#### **Mortality Rates – Non-Largest Ten Locality Employers – Hazardous Duty Employees**

##### Pre-Retirement:

RP-2014 Employee Rates to age 80, Healthy Annuitant Rates to 81 and older projected with scale BB to 2020; males 90% of rates; females set forward 1 year.

##### Post-Retirement:

RP-2014 Employee Rates to age 49, Healthy Annuitant Rates at ages 50 and older projected with scale BB to 2020; males set forward 1 year with 1.0% increase compounded from ages 70 to 90; females set forward 3 years.

##### Post-Disablement:

RP-2014 Disability Mortality Rates projected with scale BB to 2020; males set forward 2 years; unisex using 100% male.

The actuarial assumptions used in the June 30, 2017 valuation were based on the results of an actuarial experience study for the period from July 1, 2012 through June 30, 2016. Changes to the actuarial assumptions as a result of the experience study are as follows:

Mortality Rates (pre-retirement, post-retirement healthy, and disabled)	Updated to a more current mortality table - RP-2014 projected to 2020
Retirement Rates	Increased age 50 rates and lowered rates at older ages
Withdrawal Rates	Adjusted termination rates to better fit experience at each age and service year
Disability Rates	Adjusted rates to better match experience
Salary Scale	No change
Line of Duty Disability	Decreased rate from 60% to 45%

## RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

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### **Note 12—Group Life Insurance (GLI) Program (OPEB Plan): (Continued)**

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#### ***NET GLI OPEB Liability***

The net OPEB liability (NOL) for the GLI Program represents the program's total OPEB liability determined in accordance with GASB Statement No. 74, less the associated fiduciary net position. As of the measurement date of June 30, 2018, NOL amounts for the GLI Program are as follows (amounts expressed in thousands):

		<b>GLI OPEB Program</b>
Total GLI OPEB Liability	\$	3,113,508
Plan Fiduciary Net Position		1,594,773
Employers' Net GLI OPEB Liability (Asset)	\$	<u>1,518,735</u>
Plan Fiduciary Net Position as a Percentage of the Total GLI OPEB Liability		51.22%

The net OPEB liability (NOL) for the Group Life Insurance Program represents the program's total OPEB liability determined in accordance with GASB Statement No. 74, less the associated fiduciary net position. As of June 30, 2017, NOL amounts for the Group Life Insurance Program is as follows (amounts expressed in thousands):

		<b>GLI OPEB Program</b>
Total GLI OPEB Liability	\$	2,942,426
Plan Fiduciary Net Position		1,437,586
Employers' Net GLI OPEB Liability (Asset)	\$	<u>1,504,840</u>
Plan Fiduciary Net Position as a Percentage of the Total GLI OPEB Liability		48.86%

The total GLI OPEB liability is calculated by the System's actuary, and each plan's fiduciary net position is reported in the System's financial statements. The net GLI OPEB liability is disclosed in accordance with the requirements of GASB Statement No. 74 in the System's notes to the financial statements and required supplementary information.

## RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

### Note 12—Group Life Insurance (GLI) Program (OPEB Plan): (Continued)

#### *Long-Term Expected Rate of Return*

The long-term expected rate of return on the System's investments was determined using a log-normal distribution analysis in which best-estimate ranges of expected future real rates of return (expected returns, net of System's investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. The target asset allocation and best estimate of arithmetic real rates of return for each major asset class are summarized in the following table:

<b>Asset Class (Strategy)</b>	<b>Target Allocation</b>	<b>Arithmetic Long-term Expected Rate of Return</b>	<b>Weighted Average Long-term Expected Rate of Return</b>
Public Equity	40.00%	4.54%	1.82%
Fixed Income	15.00%	0.69%	0.10%
Credit Strategies	15.00%	3.96%	0.59%
Real Assets	15.00%	5.76%	0.86%
Private Equity	15.00%	9.53%	1.43%
Total	100.00%		4.80%
		Inflation	2.50%
		*Expected arithmetic nominal return	7.30%

\*The above allocation provides a one-year return of 7.30%. However, one-year returns do not take into account the volatility present in each of the asset classes. In setting the long-term expected return for the system, stochastic projections are employed to model future returns under various economic conditions. The results provide a range of returns over various time periods that ultimately provide a median return of 6.83%, including expected inflation of 2.50%.

#### *Discount Rate*

The discount rate used to measure the total GLI OPEB liability was 7.00%. The projection of cash flows used to determine the discount rate assumed that member contributions will be made per the VRS guidance and the employer contributions will be made in accordance with the VRS funding policy at rates equal to the difference between actuarially determined contribution rates adopted by the VRS Board of Trustees and the member rate. Through the fiscal year ended June 30, 2018, the rate contributed by the entity for the GLI OPEB will be subject to the portion of the VRS Board-certified rates that are funded by the Virginia General Assembly which was 100% of the actuarially determined contribution rate. From July 1, 2018 on, employers are assumed to continue to contribute 100% of the actuarially determined contribution rates. Based on those assumptions, the GLI OPEB's fiduciary net position was projected to be available to make all projected future benefit payments of eligible employees. Therefore, the long-term expected rate of return was applied to all periods of projected benefit payments to determine the total GLI OPEB liability.

## RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

### Note 12—Group Life Insurance (GLI) Program (OPEB Plan): (Continued)

#### ***Sensitivity of the Employer's Proportionate Share of the Net GLI OPEB Liability to Changes in the Discount Rate***

The following presents the employer's proportionate share of the net GLI OPEB liability using the discount rate of 7.00%, as well as what the employer's proportionate share of the net GLI OPEB liability would be if it were calculated using a discount rate that is one percentage point lower (6.00%) or one percentage point higher (8.00%) than the current rate:

Authority's proportionate share of the GLI Program Net OPEB Liability	Rate		
	1% Decrease	Current Discount	1% Increase
	(6.00%)	(7.00%)	(8.00%)
2019	\$ 509,000	\$ 389,000	\$ 292,000
	Rate		
	1% Decrease	Current Discount	1% Increase
	(6.00%)	(7.00%)	(8.00%)
2018	\$ 487,000	\$ 376,000	\$ 287,000

#### ***GLI Program Fiduciary Net Position***

Detailed information about the GLI Program's Fiduciary Net Position is available in the separately issued VRS 2018 Comprehensive Annual Financial Report (CAFR). A copy of the 2018 VRS CAFR may be downloaded from the VRS website at <http://www.varetire.org/Pdf/Publications/2018-annual-report.pdf>, or by writing to the System's Chief Financial Officer at P.O. Box 2500, Richmond, VA, 23218-2500.

### Note 13—Related Parties:

Rivanna Solid Waste Authority (RSWA) and Rivanna Water and Sewer Authority (RWSA) share office space and administrative staff. Procedures are in place to ensure proper segregation of funds, purchasing activity, personnel and similar matters. RSWA pays RWSA monthly for its share of joint administrative expenses, which totaled \$460,000 in FY 2019 and \$409,000 in FY 2018 and for leachate acceptance and treatment of \$4,285 in FY 2019 and \$1,563 in FY 2018. Rivanna Solid Waste Authority billed Rivanna Water & Sewer Authority \$40,547 for hauling and tipping fees in FY 2019 and \$51,889 in the previous year. RSWA owed RWSA \$49,683 and \$36,867 at June 30, 2019 and 2018, respectively.



## RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

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### Note 14—Construction Commitments:

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Rivanna Water and Sewer Authority had the following significant construction contract commitments for capital projects as of June 30, 2019:

<u>Project</u>	<u>Remaining Commitment</u>
South Rivanna WTP Improvements	\$ 979,717
Observatory WTP Improvements	1,172,845
Crozet WTP Expansion	6,488,676
Interceptor Sewer & Manhole Repair and Crozet Interceptor	921,762
Valve Repair-Replacement (Phase 2)	637,113
Beaver Creek Dam Alterations	712,760

The Authority had the following significant construction contract commitments for capital projects as of June 30, 2018:

<u>Project</u>	<u>Remaining Commitment</u>
Interceptor Sewer & Manhole Repair	\$ 1,264,575
S. Rivanna Reservoir to Ragged Mtn. Reservoir Water Line R/W	542,870

These contracts give the Authority the right to terminate the contract for any reason.

### Note 15—Fair Value Measures:

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Fair value for investments is determined as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants at the measurement date. The three-level fair value hierarchy prioritizes the inputs used to measure fair value. This hierarchy requires entities to maximize the use of observable inputs and minimize the use of unobservable inputs. The three levels of inputs used to measure fair value are as follows:

- Level 1 — Quoted prices in active markets for identical assets or liabilities.
- Level 2 — Significant observable inputs other than quoted prices included in Level 1, such as quoted prices for similar assets and liabilities in active markets; quoted prices for identical or similar assets and liabilities in markets that are not active; or other inputs that are observable or can be corroborated by observable market data.
- Level 3 — Significant unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities. This includes certain pricing models, discounted cash flow methodologies and similar techniques that use significant unobservable inputs.

# RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

## Note 15–Fair Value Measures: (Continued)

The Authority is providing the following information related to its investments:

<b>Fair Value Measurements at Reporting Date Using</b>				
	<b>Total</b>	<b>Quoted Prices</b>	<b>Significant</b>	<b>Significant</b>
	<b>June 30,</b>	<b>in Active</b>	<b>Other</b>	<b>Unobservable</b>
	<b>2019</b>	<b>Markets for</b>	<b>Observable</b>	<b>Inputs</b>
		<b>Identical</b>	<b>Inputs</b>	<b>Inputs</b>
		<b>Assets</b>	<b>(Level 2)</b>	<b>(Level 3)</b>
		<b>(Level 1)</b>		
U.S. Agencies Securities	\$ 2,454	\$ 2,454	\$ -	\$ -
U.S. Treasury & Agency Money Market Funds	7,118,324	7,118,324	-	-
U.S. Treasury Notes & Bonds	1,995,240	1,995,240	-	-
Total by fair value level	<u>\$ 9,116,018</u>	<u>\$ 9,116,018</u>	<u>\$ -</u>	<u>\$ -</u>

### Investments measured at the net asset value (NAV)

VML/VACo Virginia Investment Pool	<u>\$ 10,368,384</u>
Total measured at the NAV	<u>\$ 10,368,384</u>

<b>Fair Value Measurements at Reporting Date Using</b>				
	<b>Total</b>	<b>Quoted Prices</b>	<b>Significant</b>	<b>Significant</b>
	<b>June 30,</b>	<b>in Active</b>	<b>Other</b>	<b>Unobservable</b>
	<b>2018</b>	<b>Markets for</b>	<b>Observable</b>	<b>Inputs</b>
		<b>Identical</b>	<b>Inputs</b>	<b>Inputs</b>
		<b>Assets</b>	<b>(Level 2)</b>	<b>(Level 3)</b>
		<b>(Level 1)</b>		
U.S. Agencies Securities	\$ 3,148	\$ 3,148	\$ -	\$ -
U.S. Treasury & Agency Money Market Funds	6,215,861	6,215,861	-	-
U.S. Treasury Notes & Bonds	1,925,780	1,925,780	-	-
Total by fair value level	<u>\$ 8,144,789</u>	<u>\$ 8,144,789</u>	<u>\$ -</u>	<u>\$ -</u>

### Investments measured at the net asset value (NAV)

VML/VACo Virginia Investment Pool	<u>\$ 10,121,699</u>
Total measured at the NAV	<u>\$ 10,121,699</u>

## Note 16–Upcoming Pronouncements:

Statement No. 84, *Fiduciary Activities*, establishes criteria for identifying fiduciary activities of all state and local governments for accounting and financial reporting purposes and how those activities should be reported. The requirements of this Statement are effective for reporting periods beginning after December 15, 2018.

## RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

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### **Note 16–Upcoming Pronouncements: (Continued)**

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Statement No. 87, *Leases*, requires recognition of certain lease assets and liabilities for leases that previously were classified as operating leases and recognized as inflows of resources or outflows of resources based on the payment provisions of the contract. It establishes a single model for lease accounting based on the foundational principle that leases are financings of the right to use an underlying asset. The requirements of this Statement are effective for reporting periods beginning after December 15, 2019.

Statement No. 89, *Accounting for Interest Cost Incurred Before the End of a Construction Period*, provides guidance for reporting capital assets and the cost of borrowing for a reporting period and simplifies accounting for interest cost incurred before the end of a construction period. The requirements of this Statement are effective for reporting periods beginning after December 15, 2019.

Statement No. 90, *Majority Equity Interests – An Amendment of GASB Statements No. 14 and No. 61*, provides guidance for reporting a government's majority equity interest in a legally separate organization and for reporting financial statement information for certain component units. The requirements of this Statement are effective for reporting periods beginning after December 15, 2018.

Statement No. 91, *Conduit Debt Obligations*, provides a single method of reporting conduit debt obligations by issuers and eliminates diversity in practice associated with (1) commitments extended by issuers, (2) arrangements associated with conduit debt obligations, and (3) related note disclosures. The requirements of this Statement are effective for reporting periods beginning after December 15, 2020.

Management is currently evaluating the relevance of these standards to the Authority and the impact they will have on the financial statements if adopted.

### **Note 17–Restatement of Beginning Net Position–Fiscal Year Ending June 30, 2018:**

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The Authority implemented the financial reporting provisions of Governmental Accounting Standards Board Statement No. 75, *Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions*, during the fiscal year ended June 30, 2018. This Statement establishes standards for measuring and recognizing liabilities, deferred outflows of resources, deferred inflows of resources, and expense/expenditures related to postemployment benefits other than pensions (other postemployment benefits or OPEB). Note disclosure and required supplementary information requirements about OPEB are also addressed. The requirements of this Statement will improve accounting and financial reporting by state and local governments for OPEB. In addition, the Authority implemented Governmental Accounting Standards Board Statement No. 85, *Omnibus 2017* during the fiscal year ended June 30, 2018. This Statement addresses practice issues identified during implementation and application of certain GASB statements for a variety of topics including issues related to blending component units, goodwill, fair value measurement and application, and postemployment benefits (pensions and other postemployment benefits (OPEB)).

## RIVANNA WATER & SEWER AUTHORITY

Notes to the Financial Statements  
At June 30, 2019 and 2018 (Continued)

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### **Note 17—Restatement of Beginning Net Position—Fiscal Year Ending June 30, 2018: (Continued)**

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Beginning net position was restated as follows due to the implementation of GASB Statement No. 75. Information for the total OPEB liabilities under GASB Statement No. 75 were unavailable for periods prior to fiscal year 2018 and accordingly the comparative year presented for fiscal year ending June 30, 2017 has not been restated. Beginning net position was also restated to reflect a prior year loss on disposal of the Camelot Wastewater Treatment Plant, which was decommissioned and transferred back to Albemarle County Service Authority in 2013.

	<u>Amount</u>
Net Position as of July 1, 2017, previously reported	\$ 141,763,607
OPEB liability restated as of July 1, 2017 - group life insurance	(405,000)
Net capital assets restated as of July 1, 2017 - prior year disposal	<u>(515,165)</u>
Net Position as of July 1, 2017, as restated	<u>\$ 140,843,442</u>

### **Note 18—Adoption of Accounting Principles:**

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The Authority implemented the financial reporting provisions of Governmental Accounting Standards Board Statement No. 88, *Certain Disclosures Related to Debt, Including Direct Borrowings and Direct Placements*, during the fiscal year ended June 30, 2019. This Statement clarifies which liabilities governments should include when disclosing information related to debt. It also requires that additional essential information related to debt be disclosed in notes to financial statements. No restatement was required as a result of this implementation.

The Authority early implemented provisions of Governmental Accounting Standards Board Statement No. 89, *Accounting for Interest Cost Incurred Before the End of a Construction Period*, during the fiscal year ended June 30, 2019. This Statement simplifies accounting for interest cost incurred before the end of a construction period. Interest cost incurred during construction is expensed and no longer capitalized as part of project costs. No restatement was required as a result of this implementation.

### **Required Supplementary Information**

**RIVANNA WATER & SEWER AUTHORITY**

Schedule of Changes in Net Pension Liability and Related Ratios  
For Plan Years Ended June 30, 2014 through June 30, 2018

	<b>2018</b>	<b>2017</b>	<b>2016</b>	<b>2015</b>	<b>2014</b>
<b>Total pension liability</b>					
Service cost	\$ 414,140	\$ 398,833	\$ 420,980	\$ 397,302	\$ 408,618
Interest	1,501,555	1,465,426	1,376,398	1,308,253	1,243,939
Differences between expected and actual experience	(211,755)	(123,760)	343,405	43,130	-
Changes in assumptions	-	(241,172)	-	-	-
Benefit payments, including refunds of employee contributions	(1,053,473)	(912,902)	(825,031)	(725,341)	(742,220)
<b>Net change in total pension liability</b>	<b>\$ 650,467</b>	<b>\$ 586,425</b>	<b>\$ 1,315,752</b>	<b>\$ 1,023,344</b>	<b>\$ 910,337</b>
<b>Total pension liability - beginning</b>	<b>21,977,526</b>	<b>21,391,101</b>	<b>20,075,349</b>	<b>19,052,005</b>	<b>18,141,668</b>
<b>Total pension liability - ending (a)</b>	<b>\$ 22,627,993</b>	<b>\$ 21,977,526</b>	<b>\$ 21,391,101</b>	<b>\$ 20,075,349</b>	<b>\$ 19,052,005</b>
<b>Plan fiduciary net position</b>					
Contributions - employer	\$ 438,811	\$ 423,473	\$ 448,728	\$ 434,762	\$ 428,309
Contributions - employee	227,140	237,015	216,819	230,505	204,334
Net investment income	1,404,233	2,098,047	298,454	754,877	2,256,556
Benefit payments, including refunds of employee contributions	(1,053,473)	(912,902)	(825,031)	(725,341)	(742,220)
Administrative expense	(12,231)	(12,137)	(10,631)	(10,246)	(12,143)
Other	(1,245)	(1,862)	(126)	(160)	119
<b>Net change in plan fiduciary net position</b>	<b>\$ 1,003,235</b>	<b>\$ 1,831,634</b>	<b>\$ 128,213</b>	<b>\$ 684,397</b>	<b>\$ 2,134,955</b>
<b>Plan fiduciary net position - beginning</b>	<b>19,053,943</b>	<b>17,222,309</b>	<b>17,094,096</b>	<b>16,409,699</b>	<b>14,274,744</b>
<b>Plan fiduciary net position - ending (b)</b>	<b>\$ 20,057,178</b>	<b>\$ 19,053,943</b>	<b>\$ 17,222,309</b>	<b>\$ 17,094,096</b>	<b>\$ 16,409,699</b>
<b>Authority's net pension liability - ending (a) - (b)</b>	<b>\$ 2,570,815</b>	<b>\$ 2,923,583</b>	<b>\$ 4,168,792</b>	<b>\$ 2,981,253</b>	<b>\$ 2,642,306</b>
<b>Plan fiduciary net position as a percentage of the total pension liability</b>	<b>88.64%</b>	<b>86.70%</b>	<b>80.51%</b>	<b>85.15%</b>	<b>86.13%</b>
<b>Covered payroll</b>	<b>\$ 4,868,672</b>	<b>\$ 4,613,774</b>	<b>\$ 4,403,235</b>	<b>\$ 4,232,146</b>	<b>\$ 4,087,133</b>
<b>Authority's net pension liability as a percentage of covered payroll</b>	<b>52.80%</b>	<b>63.37%</b>	<b>94.68%</b>	<b>70.44%</b>	<b>64.65%</b>

This schedule is intended to report information for 10 years. Information prior to the 2014 valuation is not available. However, additional years will be included as they become available.

# **RIVANNA WATER & SEWER AUTHORITY**

## Schedule of Employer Contributions - Pension Plan For the Years Ended June 30, 2010 through June 30, 2019

<b>Fiscal Year</b>	<b>Contractually Required Contribution</b>	<b>Contributions in Relation to Contractually Required Contribution</b>	<b>Contribution Deficiency (Excess)</b>	<b>Employer's Covered Payroll</b>	<b>Contributions as a % of Covered Payroll</b>
<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>	<b>(5)</b>	
2019	\$ 389,097	\$ 389,097	\$ -	\$ 5,175,437	7.52%
2018	438,760	438,760	-	4,868,672	9.01%
2017	423,477	423,477	-	4,613,774	9.18%
2016	451,771	451,771	-	4,403,235	10.26%
2015	435,295	435,295	-	4,232,146	10.29%
2014	428,317	428,317	-	4,087,133	10.48%
2013	426,490	426,490	-	4,078,576	10.46%
2012	308,088	308,088	-	3,885,089	7.93%
2011	297,182	297,182	-	3,747,565	7.93%
2010	237,625	237,625	-	3,765,849	6.31%

## RIVANNA WATER & SEWER AUTHORITY

### Notes to Required Supplementary Information-Pension Plan For the Year Ended June 30, 2019

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**Changes of benefit terms** – There have been no actuarially material changes to the System benefit provisions since the prior actuarial valuation.

**Changes of assumptions** – The following changes in actuarial assumptions were made effective June 30, 2016 based on the most recent experience study of the System for the four-year period ending June 30, 2016:

*Largest 10 – Non-Hazardous Duty:*

Mortality Rates (pre-retirement, post-retirement healthy, and disabled)	Updated to a more current mortality table - RP-2014 projected to 2020
Retirement Rates	Lowered rates at older ages and changed final retirement from 70 to 75
Withdrawal Rates	Adjusted rates to better fit experience at each year age and service through 9 years of service
Disability Rates	Lowered rates
Salary Scale	No change
Line of Duty Disability	Increased rate from 14% to 20%

*All Others (Non 10 Largest) – Non-Hazardous Duty:*

Mortality Rates (pre-retirement, post-retirement healthy, and disabled)	Updated to a more current mortality table - RP-2014 projected to 2020
Retirement Rates	Lowered rates at older ages and changed final retirement from 70 to 75
Withdrawal Rates	Adjusted rates to better fit experience at each year age and service through 9 years of service
Disability Rates	Lowered rates
Salary Scale	No change
Line of Duty Disability	Increased rate from 14% to 15%



**RIVANNA WATER & SEWER AUTHORITY**

Schedule of Authority's Share of Net OPEB Liability  
Group Life Insurance Program  
For the Measurement Dates of June 30, 2018 and 2017

---

<b>Date</b> <b>(1)</b>	<b>Employer's Proportion of the Net GLI OPEB Liability (Asset)</b> <b>(2)</b>	<b>Employer's Proportionate Share of the Net GLI OPEB Liability (Asset)</b> <b>(3)</b>	<b>Employer's Covered Payroll</b> <b>(4)</b>	<b>Employer's Proportionate Share of the Net GLI OPEB Liability (Asset) as a Percentage of Covered Payroll (3)/(4)</b> <b>(5)</b>	<b>Plan Fiduciary Net Position as a Percentage of Total GLI OPEB Liability</b> <b>(6)</b>
2018	0.02561%	\$ 389,000	\$ 4,868,672	7.99%	51.22%
2017	0.02503%	376,000	4,613,774	8.15%	48.86%

Schedule is intended to show information for 10 years. Information prior to the 2017 valuation is not available. However, additional years will be included as they become available.

## RIVANNA WATER & SEWER AUTHORITY

### Schedule of Employer Contributions

#### Group Life Insurance Program

For the Years Ended June 30, 2017 through June 30, 2019

---

<b>Date</b>	<b>Contributions in Relation to</b>			<b>Contributions as a % of</b>	
	<b>Contractually Required Contribution (1)</b>	<b>Contractually Required Contribution (2)</b>	<b>Contribution Deficiency (Excess) (3)</b>	<b>Employer's Covered Payroll (4)</b>	<b>Covered Payroll (5)</b>
2019	\$ 27,074	\$ 27,074	\$ -	\$ 5,175,437	0.52%
2018	25,512	25,512	-	4,868,672	0.52%
2017	24,197	24,197	-	4,613,774	0.52%

Schedule is intended to show information for 10 years. Information prior to 2017 is unavailable. However, additional years will be included as they become available.

Notes to Required Supplementary Information  
 Group Life Insurance Program  
 For the Year Ended June 30, 2019

---

**Changes of benefit terms** – There have been no actuarially material changes to the System benefit provisions since the prior actuarial valuation.

**Changes of assumptions** – The following changes in actuarial assumptions were made effective June 30, 2016 based on the most recent experience study of the System for the four-year period ending June 30, 2016:

**General State Employees**

Mortality Rates (pre-retirement, post-retirement)	Updated to a more current mortality table - RP-2014 projected
Retirement Rates	Lowered rates at older ages and changed final retirement
Withdrawal Rates	Adjusted rates to better fit experience at each year age and
Disability Rates	Adjusted rates to better match experience
Salary Scale	No change
Line of Duty Disability	Increased rate from 14% to 25%

**Teachers**

Mortality Rates (pre-retirement, post-retirement)	Updated to a more current mortality table - RP-2014 projected
Retirement Rates	Lowered rates at older ages and changed final retirement
Withdrawal Rates	Adjusted rates to better fit experience at each year age and
Disability Rates	Adjusted rates to better match experience
Salary Scale	No change

**SPORS Employees**

Mortality Rates (pre-retirement, post-retirement)	Updated to a more current mortality table - RP-2014 projected
Retirement Rates	Increased age 50 rates and lowered rates at older ages
Withdrawal Rates	Adjusted rates to better fit experience
Disability Rates	Adjusted rates to better match experience
Salary Scale	No change
Line of Duty Disability	Increased rate from 60% to 85%

**VaLORS Employees**

Mortality Rates (pre-retirement, post-retirement)	Updated to a more current mortality table - RP-2014 projected
Retirement Rates	Increased age 50 rates and lowered rates at older ages
Withdrawal Rates	Adjusted rates to better fit experience at each year age and
Disability Rates	Adjusted rates to better fit experience
Salary Scale	No change
Line of Duty Disability	Decreased rate from 50% to 35%

Notes to Required Supplementary Information  
 Group Life Insurance Program  
 For the Year Ended June 30, 2019 (Continued)

**JRS Employees**

Mortality Rates (pre-retirement, post-retirement)	Updated to a more current mortality table - RP-2014 projected
Retirement Rates	Decreased rates at first retirement eligibility
Withdrawal Rates	No change
Disability Rates	Removed disability rates
Salary Scale	No change

**Largest Ten Locality Employers - General Employees**

Mortality Rates (pre-retirement, post-retirement)	Updated to a more current mortality table - RP-2014 projected
Retirement Rates	Lowered retirement rates at older ages and extended final
Withdrawal Rates	Adjusted termination rates to better fit experience at each age
Disability Rates	Lowered disability rates
Salary Scale	No change
Line of Duty Disability	Increased rate from 14% to 20%

**Non-Largest Ten Locality Employers - General Employees**

Mortality Rates (pre-retirement, post-retirement)	Updated to a more current mortality table - RP-2014 projected
Retirement Rates	Lowered retirement rates at older ages and extended final
Withdrawal Rates	Adjusted termination rates to better fit experience at each age
Disability Rates	Lowered disability rates
Salary Scale	No change
Line of Duty Disability	Increased rate from 14% to 15%

**Largest Ten Locality Employers - Hazardous Duty Employees**

Mortality Rates (pre-retirement, post-retirement)	Updated to a more current mortality table - RP-2014 projected
Retirement Rates	Lowered retirement rates at older ages
Withdrawal Rates	Adjusted termination rates to better fit experience at each age
Disability Rates	Increased disability rates
Salary Scale	No change
Line of Duty Disability	Increased rate from 60% to 70%

**Non-Largest Ten Locality Employers - Hazardous Duty Employees**

Mortality Rates (pre-retirement, post-retirement)	Updated to a more current mortality table - RP-2014 projected
Retirement Rates	Increased age 50 rates and lowered rates at older ages
Withdrawal Rates	Adjusted termination rates to better fit experience at each age
Disability Rates	Adjusted rates to better match experience
Salary Scale	No change
Line of Duty Disability	Decreased rate from 60% to 45%

## Statistical Section

### Contents

### Tables

#### Financial Trends

These tables contain trend information to help the reader understand how the the Authority's financial performance has changed over time.

1-2

#### Revenue, Rates and Useage Information

These tables contain information to help the reader assess the factors affecting the Authority's change in revenues and its ability to generate revenues.

3-5

#### Expenses

This table contains comparative information about the Authority's expenses.

6

#### Debt Capacity

These tables present information to help the reader assess the affordability of the Authority's current levels of outstanding debt and the Authority's ability to issue debt in the future.

7-8

#### Demographic and Economic Information

These tables offer demographic and economic indicators to help the reader understand the environment within which the Authority's financial activities take place and to help make comparisons over time.

9-10

#### Operating Information

These tables contain information about the Authority's operations and resources to help the reader understand how the Authority's financial information relate to the activities it performs.

11-12

#### Other Information

These tables contain miscellaneous data such as insurance coverage and data from related organizations, Albemarle County Service Authority and City of Charlottesville.

13-15

#### Sources:

Unless otherwise noted, the information in these tables is derived from the comprehensive annual financial reports for the relevant year.

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**RIVANNA WATER & SEWER AUTHORITY**

**Table 1**

Net Position by Component  
Last Ten Fiscal Years

	Fiscal Years Ended June 30,									
	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Net investment in capital assets	\$ 113,396,071	\$ 114,137,186	\$ 105,412,275	\$ 101,129,762	\$ 99,020,753	\$ 93,538,673	\$ 87,302,949	\$ 86,135,840	\$ 77,662,172	\$ 62,172,653
Restricted	4,278,445	3,794,293	3,729,350	3,335,539	2,940,314	2,870,788	2,782,090	3,173,804	3,048,111	2,522,530
Unrestricted	34,593,713	29,141,487	32,621,982	31,189,295	28,812,875	32,388,908	31,510,133	24,483,936	23,156,625	26,697,587
Total net position	<u>\$ 152,268,229</u>	<u>\$ 147,072,966</u>	<u>\$ 141,763,607</u>	<u>\$ 135,654,596</u>	<u>\$ 130,773,942</u>	<u>\$ 128,798,369</u>	<u>\$ 121,595,172</u>	<u>\$ 113,793,580</u>	<u>\$ 103,866,908</u>	<u>\$ 91,392,770</u>

**RIVANNA WATER & SEWER AUTHORITY**
**Table 2**

Changes in Net Position  
Last Ten Fiscal Years

	Fiscal Years Ended June 30,									
	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Operating revenues:										
Metered water sales	\$ 15,216,180	\$ 14,034,080	\$ 13,753,977	\$ 13,014,328	\$ 12,555,666	\$ 11,353,630	\$ 11,728,840	\$ 11,058,083	\$ 10,895,551	\$ 10,746,260
Wastewater service charges	18,821,857	14,858,101	14,444,159	14,799,741	13,625,855	14,620,353	13,889,105	12,807,628	11,069,488	12,701,859
Total operating revenues	\$ 34,038,037	\$ 28,892,181	\$ 28,198,136	\$ 27,814,069	\$ 26,181,521	\$ 25,973,983	\$ 25,617,945	\$ 23,865,711	\$ 21,965,039	\$ 23,448,119
Operating expenses:										
Personnel costs	\$ 7,728,340	\$ 7,385,978	\$ 7,483,807	\$ 6,155,243	\$ 5,878,175	\$ 5,756,273	\$ 5,928,994	\$ 5,879,080	\$ 5,525,332	\$ 5,428,691
Professional services	994,207	738,823	885,072	602,891	473,193	418,858	282,427	336,166	338,814	238,975
Other services and charges	3,770,051	3,341,421	2,764,905	2,607,118	2,532,408	2,683,136	2,430,718	2,463,176	2,341,123	2,137,741
Operations and maintenance	5,799,962	4,169,065	4,214,246	4,710,701	3,991,590	3,543,311	3,383,574	3,201,971	2,415,211	2,412,752
Depreciation	6,704,908	5,773,757	5,411,996	5,396,029	4,983,753	4,662,094	3,601,730	2,965,612	2,962,912	2,966,823
Total operating expenses	\$ 24,997,468	\$ 21,409,044	\$ 20,760,026	\$ 19,471,982	\$ 17,859,119	\$ 17,063,672	\$ 15,627,443	\$ 14,846,005	\$ 13,583,392	\$ 13,184,982
Operating income	\$ 9,040,569	\$ 7,483,137	\$ 7,438,110	\$ 8,342,087	\$ 8,322,402	\$ 8,910,311	\$ 9,990,502	\$ 9,019,706	\$ 8,381,647	\$ 10,263,137
Nonoperating revenues (expenses):										
Investment earnings	\$ 1,599,486	\$ 525,039	\$ 296,433	\$ 369,675	\$ 82,083	\$ 92,839	\$ 157,526	\$ 124,832	\$ 120,623	\$ 149,587
Buck Mountain revenue	111,700	125,900	115,700	84,000	74,900	89,000	78,000	68,200	52,400	93,300
Administrative reimbursement	474,246	436,329	328,000	299,000	265,000	257,000	257,000	276,000	277,000	418,000
Other revenues	380,737	302,920	305,763	370,173	337,148	251,373	225,034	214,908	256,541	110,396
Interest expense	(5,947,988)	(2,643,801)	(2,248,229)	(4,027,843)	(3,608,072)	(2,336,245)	(2,552,331)	(1,830,696)	(2,607,502)	(2,107,381)
Debt issuance costs	(463,487)	-	(126,766)	(556,438)	(59,273)	(61,081)	(580,404)	-	-	-
Amortization expense	-	-	-	-	-	-	-	-	(86,827)	(39,525)
Total nonoperating revenues (expenses)	\$ (3,845,306)	\$ (1,253,613)	\$ (1,329,099)	\$ (3,461,433)	\$ (2,908,214)	\$ (1,707,114)	\$ (2,415,175)	\$ (1,146,756)	\$ (1,987,765)	\$ (1,375,623)
Income before capital grants and contributions	\$ 5,195,263	\$ 6,229,524	\$ 6,109,011	\$ 4,880,654	\$ 5,414,188	\$ 7,203,197	\$ 7,575,327	\$ 7,872,950	\$ 6,393,882	\$ 8,887,514
Capital grants	-	-	-	-	-	-	226,265	3,003,552	6,080,256	11,531,027
Change in net position	\$ 5,195,263	\$ 6,229,524	\$ 6,109,011	\$ 4,880,654	\$ 5,414,188	\$ 7,203,197	\$ 7,801,592	\$ 10,876,502	\$ 12,474,138	\$ 20,418,541



## RIVANNA WATER &amp; SEWER AUTHORITY

Table 3

Revenues by Source  
Last Ten Fiscal Years

Fiscal Years Ended June 30,	Operating Revenues			Nonoperating Revenues				Other	Total Revenues
	Water Sales	Wastewater Service Charges	Total Operating Revenues	Investment Earnings	Buck Mountain Revenue	Other Revenue	Total Nonoperating Revenues	Capital Grants and Contributions	
2010	\$ 10,746,260	\$ 12,701,859	\$ 23,448,119	\$ 149,587	\$ 93,300	\$ 528,396	\$ 771,283	\$ 11,531,027	\$ 35,750,429
2011	10,895,551	11,069,488	21,965,039	120,623	52,400	533,541	706,564	6,080,256	28,751,859
2012	11,058,083	12,807,628	23,865,711	124,832	68,200	490,908	683,940	3,003,552	27,553,203
2013	11,728,840	13,889,105	25,617,945	157,526	78,000	482,034	717,560	226,265	26,561,770
2014	11,353,630	14,620,353	25,973,983	92,839	89,000	508,373	690,212	-	26,664,195
2015	12,555,666	13,625,855	26,181,521	82,083	74,900	602,148	759,131	-	26,940,652
2016	13,014,328	14,799,741	27,814,069	369,675	84,000	669,173	1,122,848	-	28,936,917
2017	13,753,977	14,444,159	28,198,136	296,433	115,700	633,763	1,045,896	-	29,244,032
2018	14,034,080	14,858,101	28,892,181	525,039	125,900	739,249	1,390,188	-	30,282,369
2019	15,216,180	18,821,857	34,038,037	1,599,486	111,700	854,983	2,566,169	-	36,604,206

**RIVANNA WATER & SEWER AUTHORITY**
**Table 4**

Water and Wastewater Rates and Flows  
Last Ten Fiscal Years

	Fiscal Years Ended June 30,									
	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
<b>Rates:</b>				*Note 1 (7/1-10/31/15)						
Urban Water - City (per 1,000 gallons)	***	***	***	\$ 2.756	\$ 2.663	\$ 2.341	\$ 2.443	\$ 2.403	\$ 2.438	\$ 2.461
Urban Water - ACSA (per 1,000 gallons)	***	***	***	\$ 3.795	\$ 3.687	\$ 3.333	\$ 3.465	\$ 3.439	\$ 3.305	\$ 3.320
Crozet Water (per month)	\$ 162,746	\$ 133,901	\$ 124,149	\$ 111,330	\$ 91,942	\$ 84,630	\$ 82,916	\$ 60,853	\$ 50,712	\$ 52,315
Scottsville Water (per month)	\$ 47,717	\$ 45,140	\$ 43,382	\$ 49,012	\$ 41,343	\$ 41,047	\$ 36,280	\$ 31,665	\$ 32,834	\$ 32,089
Urban Wastewater - City (per 1,000 gallons)	***	***	***	\$ 3.954	\$ 3.822	\$ 3.593	\$ 3.565	\$ 3.179	\$ 2.878	\$ 2.784
Urban Wastewater - ACSA (per 1,000 gallons)	***	***	***	\$ 3.560	\$ 3.435	\$ 3.463	\$ 3.732	\$ 3.348	\$ 3.048	\$ 3.063
Glenmore Wastewater (per month)	\$ 31,192	\$ 29,494	\$ 26,694	\$ 25,211	\$ 24,451	\$ 24,189	\$ 23,436	\$ 23,246	\$ 21,806	\$ 22,968
Scottsville Wastewater (per month)	\$ 25,823	\$ 24,410	\$ 21,941	\$ 21,425	\$ 28,879	\$ 28,295	\$ 27,619	\$ 26,579	\$ 25,603	\$ 25,216

\*Note 1:

The Fiscal Year 2016 Urban Water and Urban Wastewater rates were revised from the above stated rates to the following rates, effective 11/1/15-6/30/16:  
In FY 2016, the Board of Directors amended the Service Agreement to go from a rate per 1,000 gallons to a fixed monthly charge for all debt service costs.  
Urban rates are stated below along with prior years' rates restated below as fixed monthly charges for comparison purposes based on estimated flows.

\*\*\*Urban Rates:

Urban Water:

Operations - City & ACSA (per 1,000 gallons)	\$ 2.070	\$ 1.969	\$ 1.833	\$ 1.713	\$ 1.683	\$ 1.462	\$ 1.320	\$ 1.315	\$ 1.288	\$ 1.230
Debt Service - City (per month)	\$ 181,008	\$ 160,039	\$ 162,968	\$ 158,099	\$ 148,549	\$ 133,156	\$ 173,354	\$ 177,435	\$ 177,607	\$ 190,117
Debt Service - ACSA (per month)	\$ 307,598	\$ 285,439	\$ 284,031	\$ 279,864	\$ 269,379	\$ 251,418	\$ 282,114	\$ 267,054	\$ 265,358	\$ 274,962
Urban Wastewater:										
Operations - City & ACSA (per 1,000 gallons)	\$ 2.146	\$ 1.951	\$ 1.835	\$ 1.789	\$ 1.768	\$ 1.827	\$ 1.869	\$ 1.734	\$ 1.637	\$ 1.583
Debt Service - City (per month)	\$ 408,260	\$ 392,841	\$ 369,037	\$ 333,645	\$ 310,678	\$ 272,220	\$ 254,371	\$ 224,549	\$ 192,848	\$ 180,084
Debt Service - ACSA (per month)	\$ 246,308	\$ 222,550	\$ 222,280	\$ 232,493	\$ 223,598	\$ 214,771	\$ 228,557	\$ 189,209	\$ 165,411	\$ 181,570

	Fiscal Years Ended June 30,									
	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
<b>Flows (in million gallons per day):</b>										
Urban Water	8.967	9.100	9.535	9.359	9.540	9.618	9.647	9.454	9.569	9.352
Crozet Water	0.563	0.532	0.544	0.541	0.546	0.566	0.503	0.450	0.436	0.420
Scottsville Water	0.043	0.045	0.050	0.048	0.049	0.056	0.053	0.049	0.056	0.077
	9.573	9.677	10.129	9.948	10.135	10.240	10.203	9.953	10.061	9.849
Urban Wastewater	12.530	9.083	9.483	10.352	9.481	10.566	9.719	10.014	9.442	11.158
Glenmore Wastewater	0.138	0.120	0.107	0.107	0.101	0.114	0.121	0.122	0.137	0.125
Scottsville Wastewater	0.086	0.056	0.053	0.071	0.050	0.066	0.050	0.054	0.054	0.083
	12.754	9.259	9.643	10.530	9.632	10.746	9.890	10.190	9.633	11.366

# RIVANNA WATER & SEWER AUTHORITY

Table 5

Ten Largest Customers  
Current Year and Nine Years Ago

	Fiscal Year 2019 (Current Year)			
	Water Revenue		Wastewater Revenue	
	Amount	%	Amount	%
Albemarle County Service Authority	\$ 9,577,368	62.94%	\$ 8,630,511	45.85%
City of Charlottesville	\$ 5,638,812	37.06%	\$ 9,745,389	51.78%
Others	\$ -	0.00%	\$ 445,957	2.37%
	<u>\$ 15,216,180</u>	<u>100.00%</u>	<u>\$ 18,821,857</u>	<u>100.00%</u>
	Fiscal Year 2010 (Nine Years Ago)			
	Water Revenue		Wastewater Revenue	
	Amount	%	Amount	%
Albemarle County Service Authority	\$ 6,165,571	57.37%	\$ 5,974,752	47.04%
City of Charlottesville	\$ 4,580,689	42.63%	\$ 6,477,064	50.99%
Others	\$ -	0.00%	\$ 250,043	1.97%
	<u>\$ 10,746,260</u>	<u>100.00%</u>	<u>\$ 12,701,859</u>	<u>100.00%</u>

Note: The Authority's two wholesale customers, which are both governmental entities, provided 100% of water revenue and 97% of wastewater revenue in FY 2018 and FY 2009. The remaining wastewater revenue came from septage acceptance customers. Due to lack of materiality, the number of customers by type that provide that revenue is not presented here.

**RIVANNA WATER & SEWER AUTHORITY**

**Table 6**

Expenses by Type  
Last Ten Fiscal Years

<b>Fiscal Years Ended June 30,</b>	<b>Operations</b>	<b>Depreciation</b>	<b>Interest and Amortization</b>	<b>Bond Issuance Costs</b>	<b>Total</b>
2010	\$ 10,218,159	\$ 2,966,823	\$ 2,146,906	\$ -	\$ 15,331,888
2011	10,620,480	2,962,912	2,694,329	-	16,277,721
2012	11,880,393	2,965,612	1,830,696	-	16,676,701
2013	12,025,713	3,601,730	2,552,331	580,404	18,760,178
2014	12,401,578	4,662,094	2,336,245	61,081	19,460,998
2015	12,875,366	4,983,753	3,608,072	59,273	21,526,464
2016	14,075,953	5,396,029	4,027,843	556,438	24,056,263
2017	15,348,030	5,411,996	2,248,229	126,766	23,135,021
2018	15,635,287	5,805,362	2,643,801	-	24,084,450
2019	18,292,560	6,704,908	5,947,988	463,487	31,408,943

**RIVANNA WATER & SEWER AUTHORITY**
**Table 7**
**Outstanding Debt by Type  
Last Ten Fiscal Years**

	Fiscal Years Ended June 30,									
	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Revenue bonds payable	\$ 200,123,490	\$ 167,896,198	\$ 173,020,453	\$ 160,512,250	\$ 124,670,205	\$ 125,680,526	\$ 127,548,686	\$ 103,834,145	\$ 73,831,274	\$ 57,250,353
Total outstanding debt	<u>\$ 200,123,490</u>	<u>\$ 167,896,198</u>	<u>\$ 173,020,453</u>	<u>\$ 160,512,250</u>	<u>\$ 124,670,205</u>	<u>\$ 125,680,526</u>	<u>\$ 127,548,686</u>	<u>\$ 103,834,145</u>	<u>\$ 73,831,274</u>	<u>\$ 57,250,353</u>
Debt per capita	\$ 1,285	\$ 1,078	\$ 1,126	\$ 1,058	\$ 834	\$ 852	\$ 873	\$ 721	\$ 517	\$ 406
Debt as a percentage of personal income	1.9%	1.6%	1.7%	1.7%	1.4%	1.5%	1.5%	1.4%	1.0%	0.8%

**Notes:**

Debt per capita was calculated based on population figures for the calendar year (CY) ending within the fiscal year (FY) obtained from U.S. Department of Commerce - Bureau of Economic Analysis for the City of Charlottesville and County of Albemarle. See Table 9.

Debt as a percentage of personal income was calculated based on personal income for the CY ending within the FY obtained from U.S. Department of Commerce - Bureau of Economic Analysis for the City of Charlottesville and County of Albemarle. See Table 9.

**RIVANNA WATER & SEWER AUTHORITY**
**Table 8**

Revenue Bond Debt Service Coverage  
Last Ten Fiscal Years

<b>Fiscal Years Ended June 30,</b>	<b>Gross Revenue (1)</b>	<b>Direct Operating Expense (2)</b>	<b>Net Available</b>	<b>Required Debt Service Payments (3)</b>	<b>Coverage</b>
2010	\$ 24,219,402	\$ 10,218,159	\$ 14,001,243	\$ 5,592,641	2.5X
2011	22,671,603	10,620,480	12,051,123	6,962,703	1.7X
2012	24,549,651	11,880,393	12,669,258	6,724,261	1.9X
2013	26,335,505	12,025,713	14,309,792	8,234,169	1.7X
2014	26,664,195	12,401,578	14,262,617	9,089,702	1.6X
2015	26,940,652	12,875,366	14,065,286	9,094,732	1.5X
2016	28,936,917	14,075,953	14,860,964	9,567,370	1.6X
2017	29,244,032	15,348,030	13,896,002	11,912,673	1.2X
2018	30,282,369	15,635,287	14,647,082	12,370,197	1.2X
2019	36,604,206	18,292,560	18,311,646	13,087,353	1.4X

(1) Excluding grant revenue

(2) Excluding depreciation expense

(3) Including payments on revenue bonds and excluding any refunding since the payments were not required to be made in that year

**RIVANNA WATER AND SEWER AUTHORITY****Table 9**

Demographic Data for the Service Area  
City of Charlottesville & Albemarle County, Virginia  
Last Ten Calendar Years

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<u>Calendar Year</u>	<u>Population (2)</u>	<u>Personal Income (thousands of \$) (2)</u>	<u>Per Capita Personal Income (\$) (2)</u>	<u>Unemployment Rate (1)</u>
2009	141,125	6,825,990	48,368	5.8%
2010	142,703	7,209,179	50,519	6.5%
2011	144,094	7,623,402	52,906	5.9%
2012	146,077	8,402,062	57,518	5.5%
2013	147,430	8,270,217	56,096	5.0%
2014	149,410	8,881,388	59,443	4.6%
2015	151,694	9,494,461	62,590	3.9%
2016	153,705	9,981,222	64,938	3.6%
2017	155,721	10,531,351	67,630	3.3%
2018	not available	not available	not available	2.7%

(1) Virginia Employment Commission - Virginia Workforce Connection - for Charlottesville Metropolitan Service Area

(2) U.S. Department of Commerce - Bureau of Economic Analysis - for City of Charlottesville and Albemarle County

# RIVANNA WATER & SEWER AUTHORITY

Table 10

Principal Employers in the Charlottesville Area  
Current Year and Nine Years Ago

Employer	Fourth Quarter of 2018		Fourth Quarter of 2009	
	Number of Employees	Rank	Number of Employees	Rank
University of Virginia/ Blue Ridge Hospital	1,000 & over	1	1,000 & over	1
University of Virginia Medical Center	1,000 & over	2	1,000 & over	2
County of Albemarle	1,000 & over	3	1,000 & over	3
Sentara Health Care	1,000 & over	5		
Martha Jefferson Hospital			1,000 & over	4
UVA Health Services Foundation	1,000 & over	4	1,000 & over	7
City of Charlottesville	1,000 & over	6	1,000 & over	5
Charlottesville City School Board	500-999	7	500-999	8
State Farm Mutual Automobile Insurance	500-999	8	1,000 & over	6
U.S. Department of Defense	500-999	9		
Servicelink Management Com Inc	500-999	10		
Northrop Grumman Corporation			500-999	10
Aramark Campus LLC			500-999	9

Source: Virginia Employment Commission, Quarterly Census of Employment and Wages  
- for Charlottesville Metropolitan Service Area (MSA)

Each employer's percentage of total employment is not available.



# RIVANNA WATER & SEWER AUTHORITY

Table 11

## Number of Employees by Indentifiable Activity Last Ten Fiscal Years

	Fiscal Years Ended June 30,									
	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Number of budgeted full-time equivalent positions:										
Water (2)	26	25	23	23	23	22	23	23	23	23
Wastewater	16	16	17	17	17	17	18	18	15	16
Operations Management (2)	1	1	2	2	2	2	2	2	2	2
Administration & IT (3)	17	16	15	13	12	12	12	12	12	13
Laboratory	3	3	3	3	3	3	3	3	3	3
Director of Engineering & Maintenance	1									
Engineering	10	11	9	9	9	9	9	9	9	11
Maintenance (1)	17	16	16	17	17	17	16	16	15	14
Total	91	88	85	84	83	82	83	83	79	82

(1) Maintenance includes mechanics and maintenance workers for Water and Wastewater.

(2) The Water Resources Manager was reclassified from Operations Management to Engineering effective in fiscal year ended June 30, 2018.  
Beginning in FY 2010, grounds crew maintenance positions are included in Maintenance.

(3) Administration staff is shared with Rivanna Solid Waste Authority.

**RIVANNA WATER & SEWER AUTHORITY**

**Table 12**

Operating and Capital Indicators  
Last Ten Fiscal Years

	Fiscal Years Ended June 30,									
	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Water										
Size of watershed (square miles)	766	766	766	766	766	766	766	766	766	766
Raw water safe yield (mgd)										
Urban system	18.8	18.8	18.8	18.8	12.8	12.8	12.8	12.8	12.8	12.8
Rural system	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Miles of pipelines	64.3	64.3	64.3	64.3	64.3	64.3	64.3	64.3	64.3	64.3
Number of treatment plants	5	5	5	5	5	5	5	5	5	5
Number of pumping stations	7	7	7	7	7	7	7	7	7	7
Number of reservoirs	4	4	4	4	4	4	4	4	4	4
Number of finished water storage tanks	11	11	11	11	11	11	11	11	11	11
Maximum treatment capacity (mgd)	22.750	22.750	22.750	22.750	22.750	22.750	22.750	22.750	22.750	22.750
Water treated (mgd)	9.573	9.677	10.129	9.948	10.135	10.240	10.203	9.953	10.061	9.849
Unused capacity (mgd)	13.177	13.073	12.621	12.802	12.615	12.510	12.547	12.797	12.689	12.901
Percentage of capacity utilized	42.08%	42.54%	44.52%	43.73%	44.55%	45.01%	44.85%	43.75%	44.22%	43.29%
Wastewater										
Miles of pipelines	37	37	37	37	37	37	37	37	37	37
Number of treatment plants	4	4	4	4	4	4	4	5	5	5
Number of pumping stations	7	7	7	7	7	7	7	7	7	7
Maximum treatment capacity (mgd)	15.945	15.945	15.945	15.945	15.945	15.945	15.945	15.945	15.945	15.945
Wastewater treated (mgd)	12.754	9.259	9.643	10.561	9.632	10.746	9.890	10.190	9.633	11.366
Unused capacity (mgd)	3.191	6.686	6.302	5.384	6.313	5.199	6.055	5.755	6.312	4.579
Percentage of capacity utilized	79.99%	58.07%	60.48%	66.23%	60.41%	67.39%	62.03%	63.91%	60.41%	71.28%

Notes: mgd = millions of gallons per day  
Safe yield is a measure of raw water resources during a drought of record.

**RIVANNA WATER & SEWER AUTHORITY****Table 13**

Schedule of Insurance in Force  
June 30, 2019

---

Type Coverage/Company Name		Coverage	Annual Premium
<u>Commercial Property</u>			
Virginia Association of Counties 07/01/18-07/01/19	\$ 201,545,980	Property Value and Business Income/ Extra Expense	\$ 82,645
<u>Worker's Compensation</u>			
Virginia Association of Counties 07/01/18-07/01/19	\$ 1,000,000	Each Occurrence	\$ 72,463
<u>Comprehensive Automobile</u>			
Virginia Association of Counties 07/01/18-07/01/19	\$ 10,000,000		\$ 18,481
<u>General Liability</u>			
Virginia Association of Counties 07/01/18-07/01/19	\$ 10,000,000	Each Occurrence	\$ 12,603
<u>Public Officials Liability</u>			
Virginia Association of Counties 07/01/18-07/01/19	\$ 10,000,000		\$ 5,936
<u>Crime Coverage</u>			
Virginia Association of Counties 07/01/18-07/01/19	\$ 500,000		\$ 1,075

**RIVANNA WATER & SEWER AUTHORITY**
**Table 14**

Miscellaneous Statistical Data  
Albemarle County Service Authority

Year of Incorporation: 1964

Type of Entity:

Independent authority created pursuant to the "Virginia Water & Waste Authorities Act",  
Section 15.1-1239, Code of Virginia (1950), as amended

Number of water connections	20,252
Number of sewer connections	17,273
Miles of water lines	353
Miles of sewer lines	298
Number of fire hydrants	2,747

**Rates (effective FY 2019) per 1,000 gallons metered consumption**

**Water**

Residential Water Rates and all irrigation usage:

Level 1 (0-3,000 gallons per month)	\$4.27
Level 2 (3,001-6,000 gallons per month)	\$8.55
Level 3 (6,001-9,000 gallons per month)	\$12.82
Level 4 (over 9,000 gallons per month)	\$17.10

Non-Residential and Multi-Family Residential Water Rate  
(except irrigation water)

\$8.25

**Wastewater**

\$8.93

**Ten Largest Customers in FY 2019**

	Water			Wastewater		
	Billed (in gallons)	Rank	Percentage of Total	Billed (in gallons)	Rank	Percentage of Total
Old Salem Apartments	22,503,100	1	1.37%	22,503,100	1	1.60%
University of Virginia	21,786,500	2	1.33%	21,382,100	2	1.52%
Southwood Mobile Homes	21,523,000	3	1.31%	15,839,279	10	1.13%
ACRJ	21,176,000	4	1.29%	20,035,000	4	1.42%
Martha Jefferson Hospital	20,358,700	5	1.24%			
SEMF Charleston	20,057,375	6	1.22%	20,057,375	3	1.43%
Abbingdon Crossing	19,564,200	7	1.19%	19,564,200	5	1.39%
Westminster Canterbury	18,359,000	8	1.12%	17,359,000	6	1.23%
Four Seasons Apts.	16,308,000	9	0.99%	16,308,000	7	1.16%
Westgate Apartments	16,168,000	10	0.99%	16,156,900	8	1.15%
Turtle Creek Apts				15,967,000	9	1.13%
	<u>197,803,875</u>		<u>12.07%</u>	<u>185,171,954</u>		<u>13.16%</u>

**RIVANNA WATER & SEWER AUTHORITY**
**Table 15**

Miscellaneous Statistical Data  
City of Charlottesville, Virginia

Date of incorporation	1888
Date present charter adopted	1976
Form of government	Council Manager
Area	10.4 square miles
Miles of streets	159.91
Number of water customers	14,661
Number of sewer customers	14,564
Miles of water lines	183
Miles of sanitary sewer lines	171
Number of fire hydrants	1088
Bond Rating	AAA/Aaa

Rates FY 2019 per 1,000 cubic feet:

Water	
May - Sept.	\$ 64.66
Oct. - Apr.	\$ 49.74
Wastewater	\$ 78.57

**Ten Largest Customers in Fiscal Year 2019:**

	Water			Wastewater		
	Water Consumption (in cubic feet)	Billed Revenue	Percentage of Total Revenue	Wastewater Treated (in cubic feet)	Billed Revenue	Percentage of Total Revenue
University of Virginia	59,570,327	\$ 2,114,942	18.88%	60,091,373	\$ 2,720,317	18.78%
Pepsi Cola	3,707,350	219,587	1.96%			
Charlottesville Redevelopment and Housing	2,842,938	163,424	1.46%	2,842,921	221,045	1.53%
City of Charlottesville	2,110,181	137,889	1.23%	1,592,845	133,433	0.92%
Woodard Properties	1,934,207	129,384	1.15%	1,934,207	161,216	1.11%
Omni Charlottesville Hotel	1,433,600	88,044	0.79%	1,209,103	95,976	0.66%
City Schools	1,340,150	79,726	0.71%	1,221,846	98,136	0.68%
Pavilion UVA	1,330,055	83,424	0.74%	1,340,150	105,856	0.73%
Madison Loft	1,139,780	69,150	0.62%	1,007,040	80,316	0.55%
EDR				1,139,780	90,616	0.63%
Neighborhood Properties	1,107,079	71,585	0.64%	1,107,079	90,557	0.63%
	76,515,667	\$ 3,157,155	28.18%	73,486,344	\$ 3,797,466	26.21%

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**Independent Auditors' Report on Internal Control over Financial Reporting and on  
Compliance and Other Matters Based on an Audit of Financial Statements  
Performed in Accordance with *Government Auditing Standards***

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**To the Board of Directors  
Rivanna Water & Sewer Authority  
Charlottesville, Virginia**

We have audited, in accordance with the auditing standards generally accepted in the United States of America; the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States; and the *Specifications for Audits of Authorities, Boards, and Commissions*, issued by the Auditor of Public Accounts of the Commonwealth of Virginia, the financial statements of the business-type activities of Rivanna Water & Sewer Authority as of and for the year ended June 30, 2019, and the related notes to the financial statements, which collectively comprise Rivanna Water & Sewer Authority's basic financial statements and have issued our report thereon dated October 25, 2019.

**Internal Control over Financial Reporting**

In planning and performing our audit of the financial statements, we considered Rivanna Water & Sewer Authority's internal control over financial reporting (internal control) to determine the audit procedures that are appropriate in the circumstances for the purpose of expressing our opinion on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of Rivanna Water & Sewer Authority's internal control. Accordingly, we do not express an opinion on the effectiveness of Rivanna Water & Sewer Authority's internal control.

A *deficiency in internal control* exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, misstatements on a timely basis. A *material weakness* is a deficiency, or a combination of deficiencies, in internal control such that there is a reasonable possibility that a material misstatement of the entity's financial statements will not be prevented or detected and corrected on a timely basis. A *significant deficiency* is a deficiency, or a combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance.

Our consideration of internal control was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control that might be material weaknesses or significant deficiencies. Given these limitations, during our audit we did not identify any deficiencies in internal control that we consider to be material weaknesses. However, material weaknesses may exist that have not been identified.

## Compliance and Other Matters

As part of obtaining reasonable assurance about whether Rivanna Water & Sewer Authority's financial statements are free from material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements, noncompliance with which could have a direct and material effect on the determination of financial statement amounts. However, providing an opinion on compliance with those provisions was not an objective of our audit, and accordingly, we do not express such an opinion. The results of our tests disclosed no instances of noncompliance or other matters that are required to be reported under *Government Auditing Standards*.

## Purpose of this Report

The purpose of this report is solely to describe the scope of our testing of internal control and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the entity's internal control or on compliance. This report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the entity's internal control and compliance. Accordingly, this communication is not suitable for any other purpose.

*Robinson, Farmer, Cox Associates*  
Charlottesville, Virginia  
October 25, 2019



# Observatory and South Rivanna Water Treatment Plants, Rehabilitation and Expansion Project



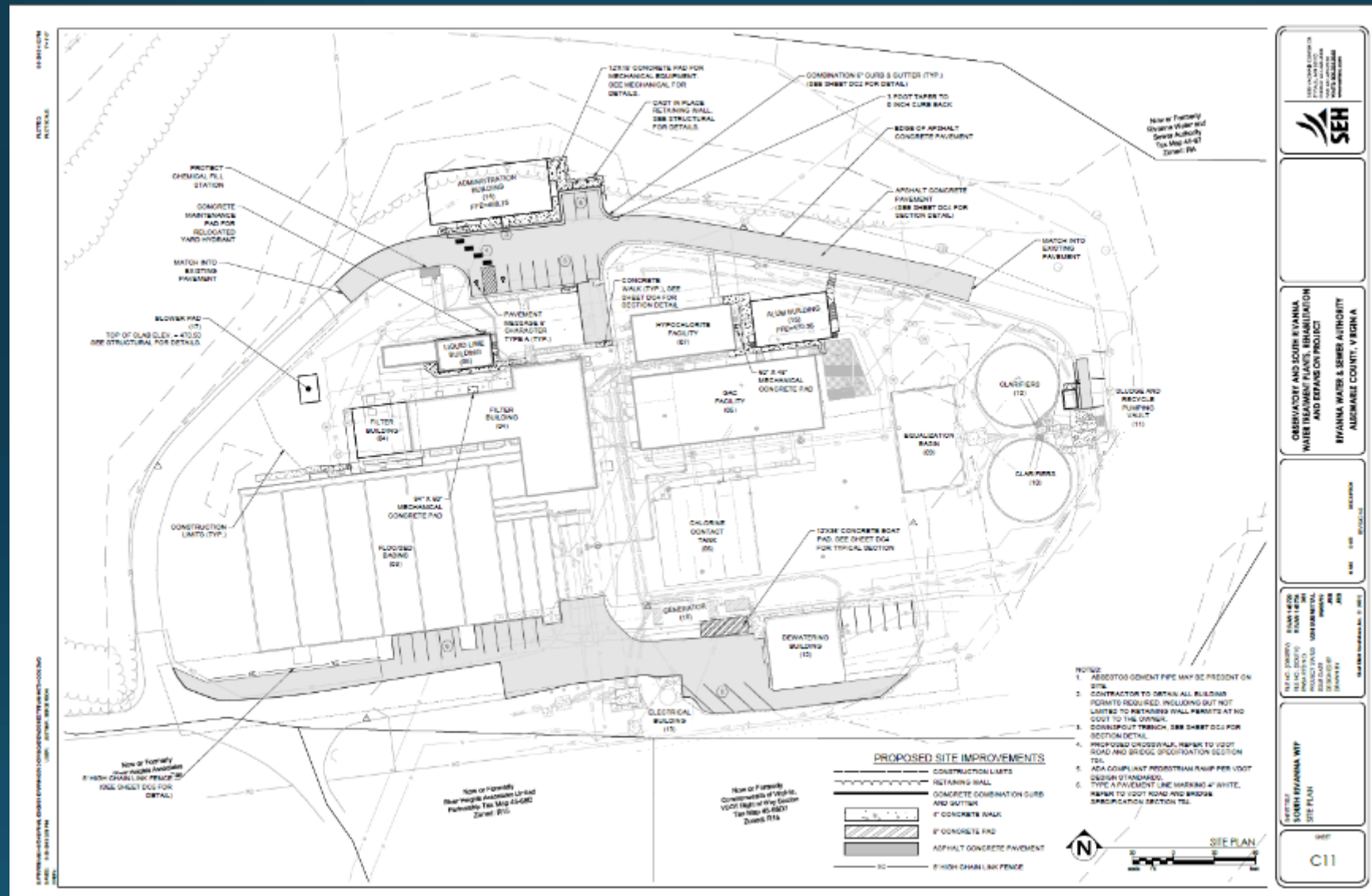
Presented to the RWSA Board of Directors by:

Scott Schiller, Engineering Manager

November 19, 2019

[illegible]

# South Rivanna WTP – Proposed Site Plan

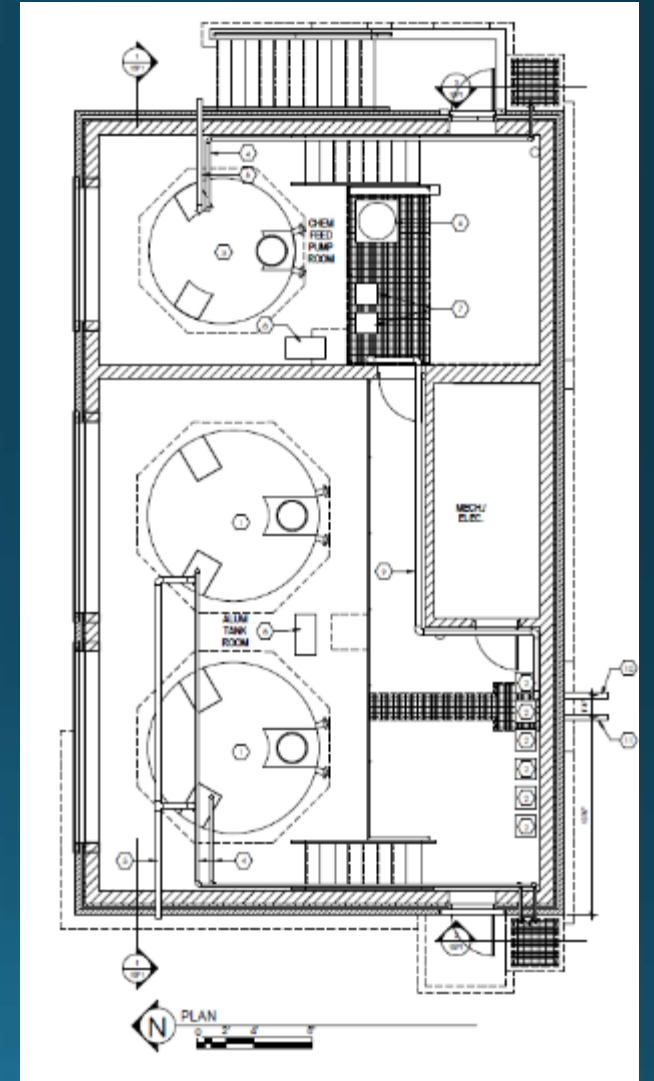




# South Rivanna WTP – Filter Building Expansion



# South Rivanna WTP – Alum/Fluoride Building

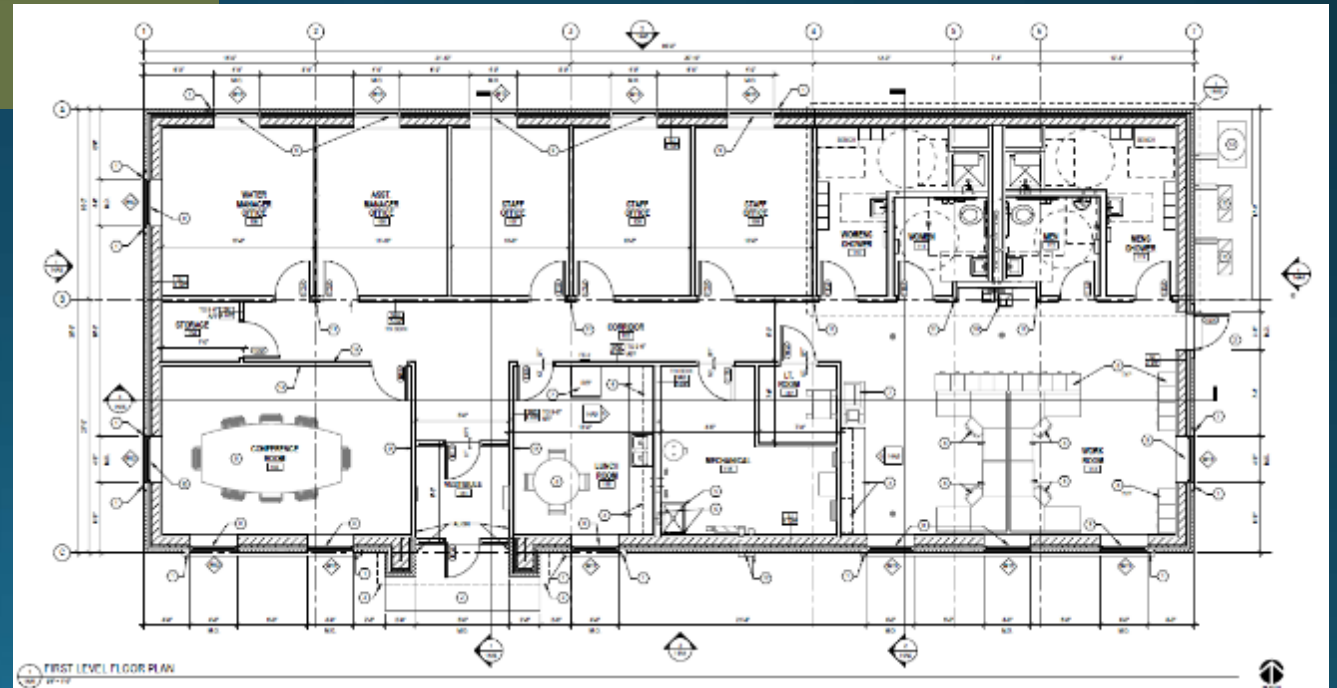




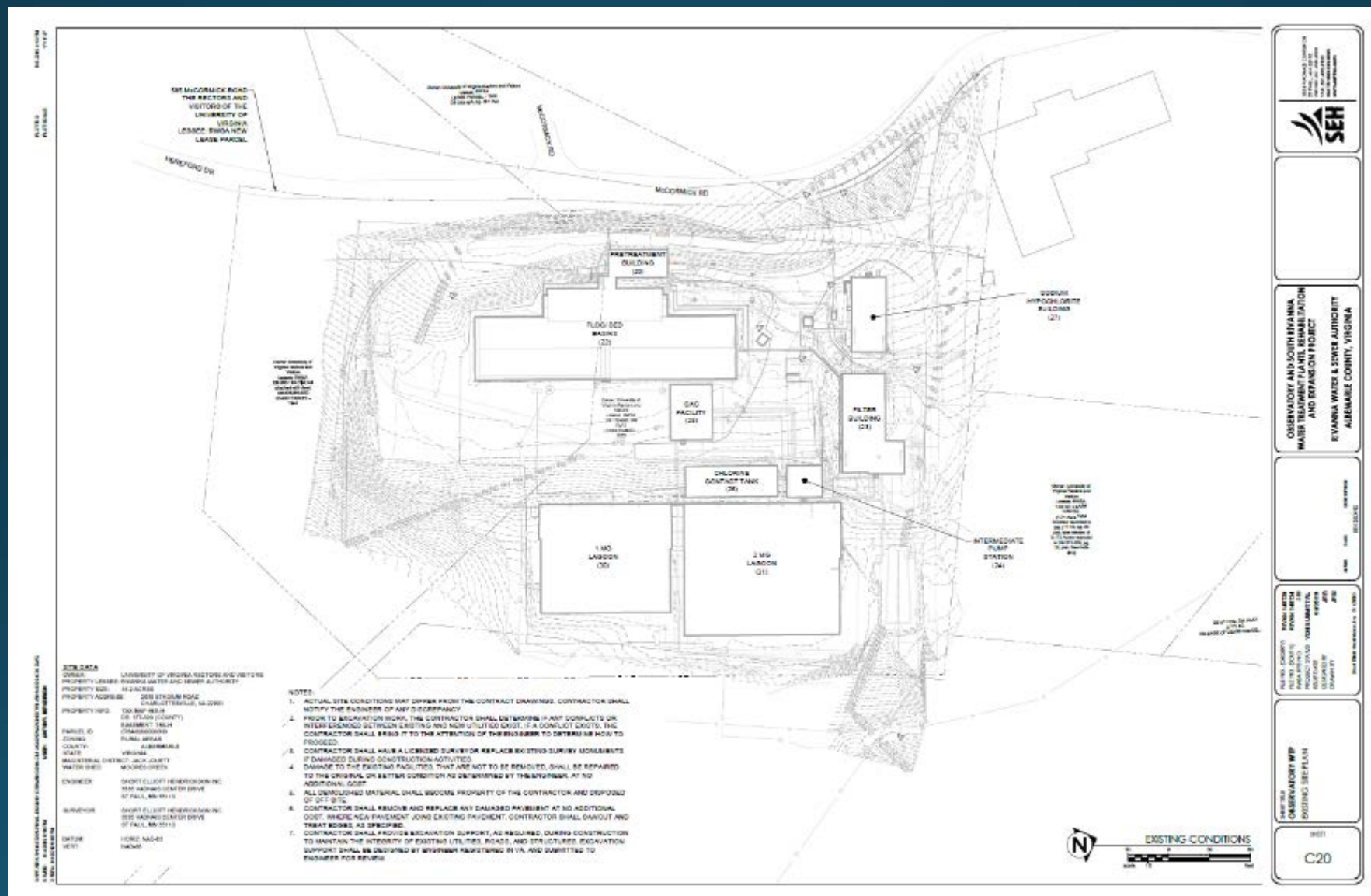
# South Rivanna WTP – Liquid Lime Building



# South Rivanna WTP – Administration Building

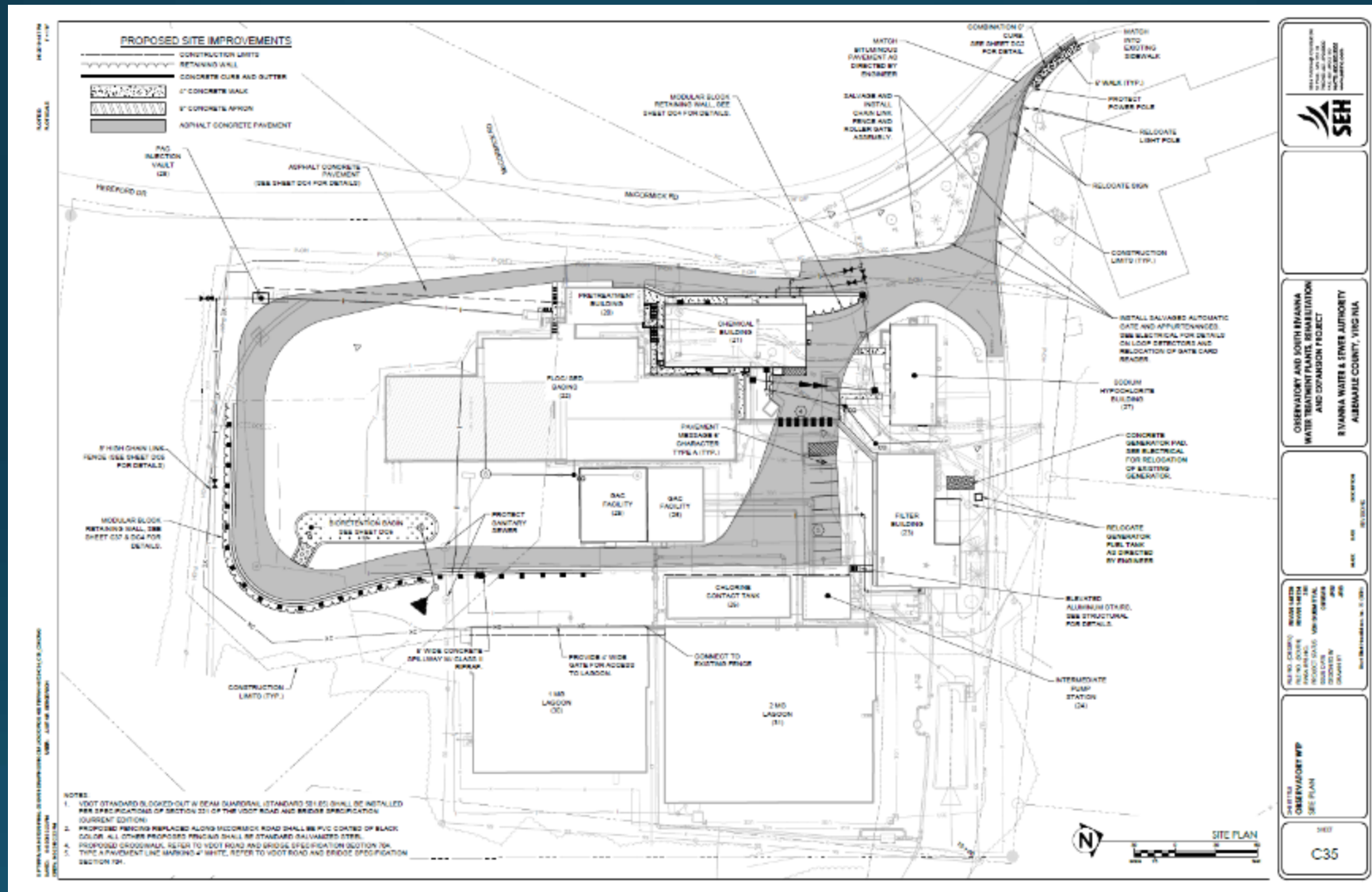


# Observatory WTP – Existing Site Plan

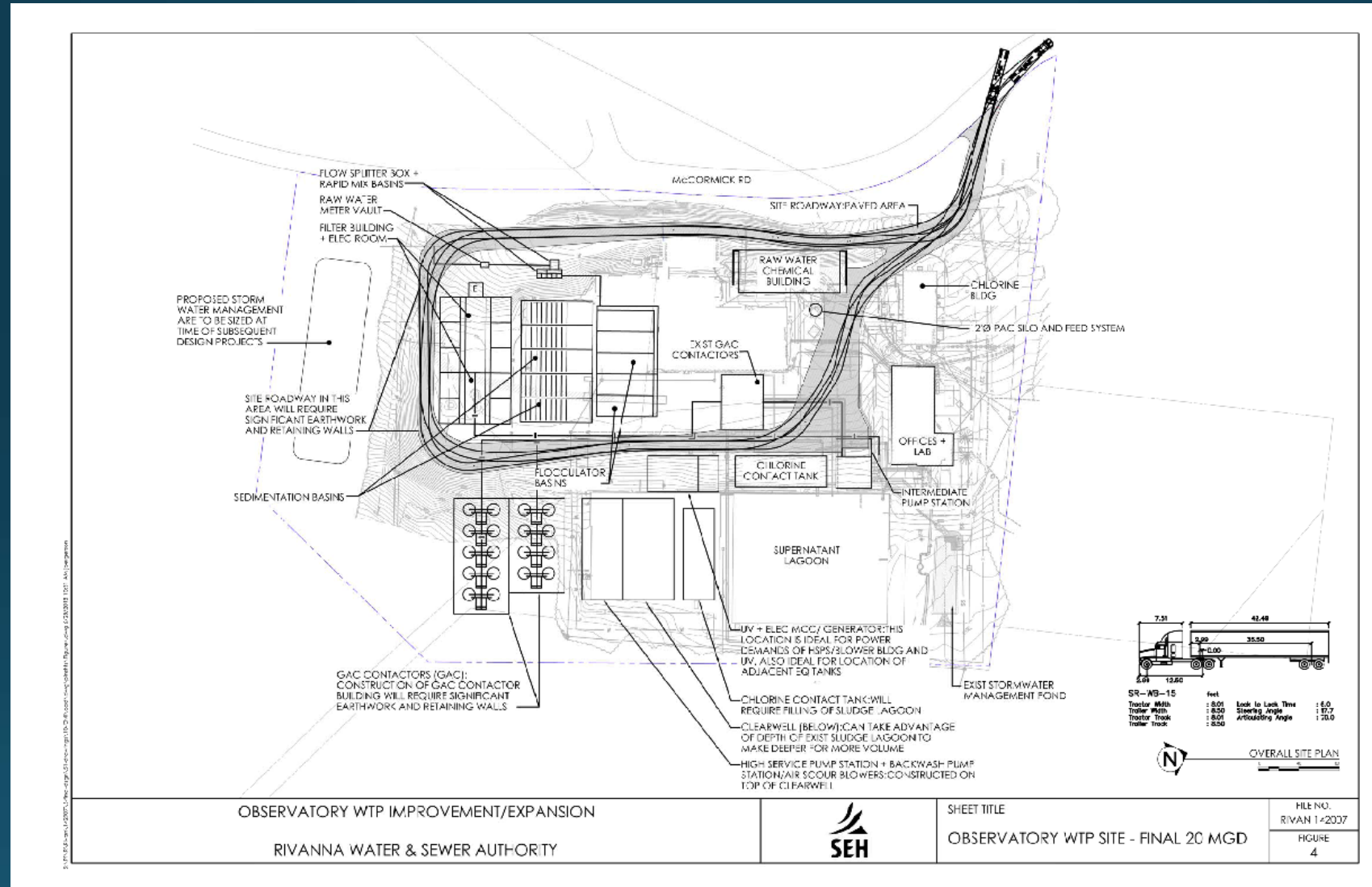




# Observatory WTP – Proposed Site Plan



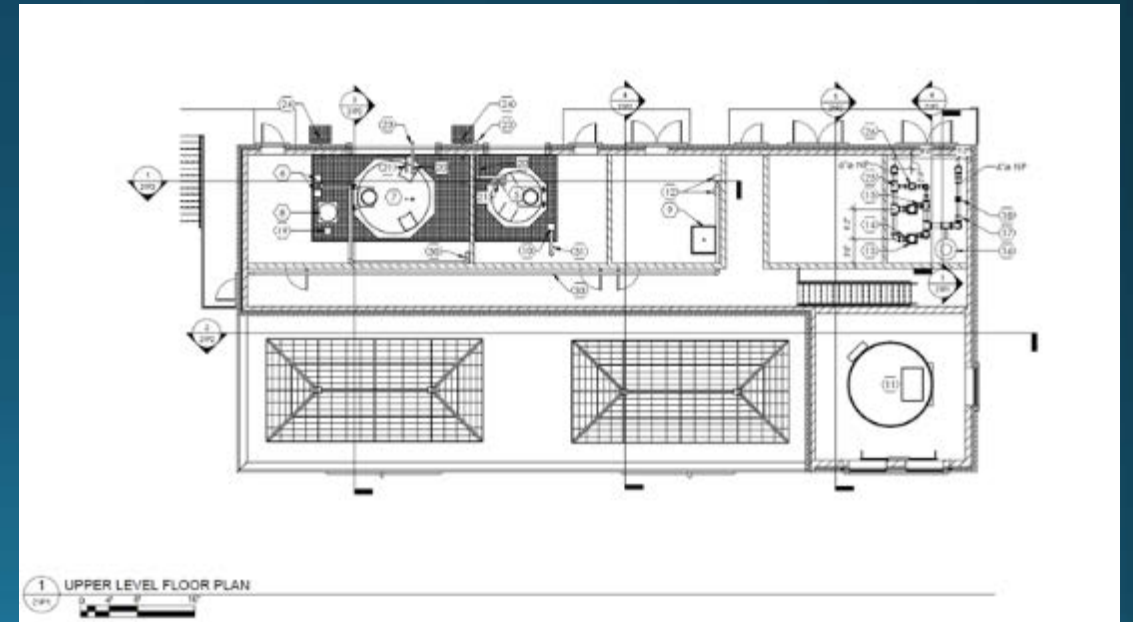
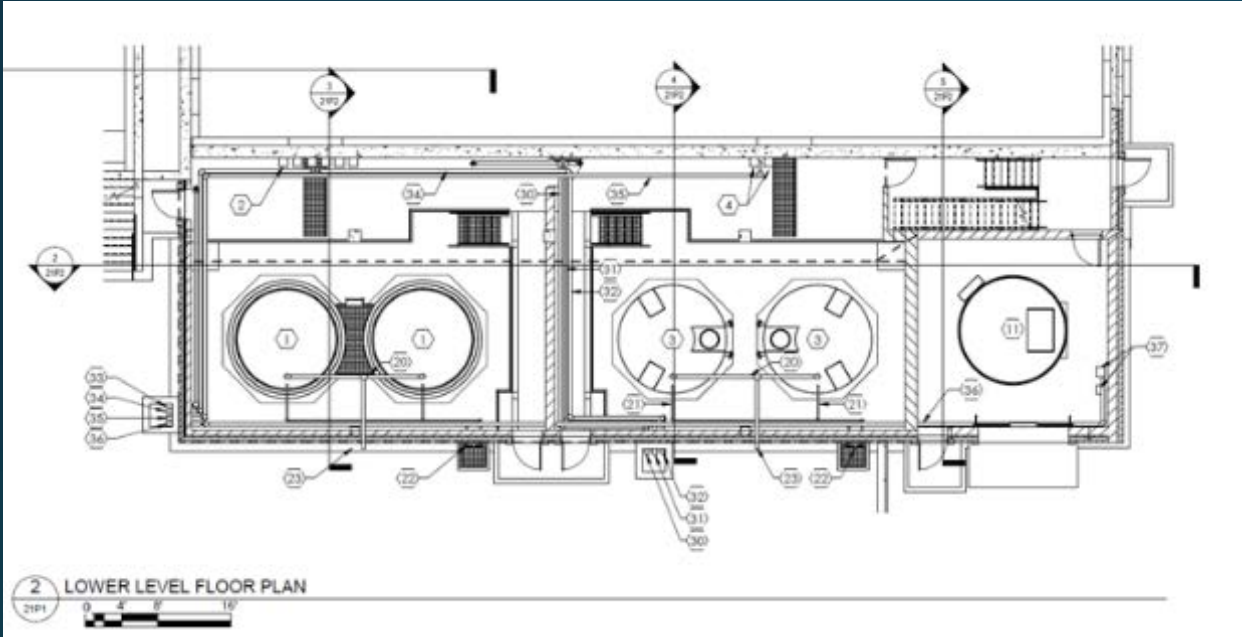
# Observatory WTP – Proposed Future 20 MGD Site Layout



# Observatory WTP – Chemical Building

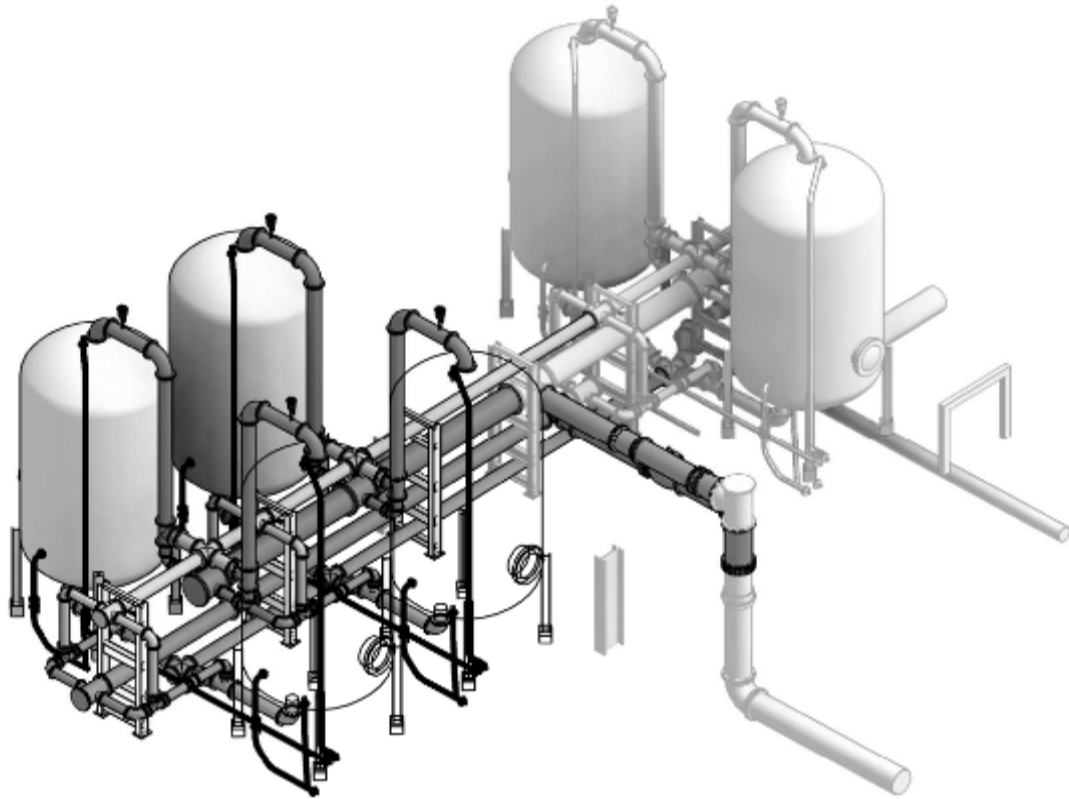


# Observatory WTP – Chemical Building





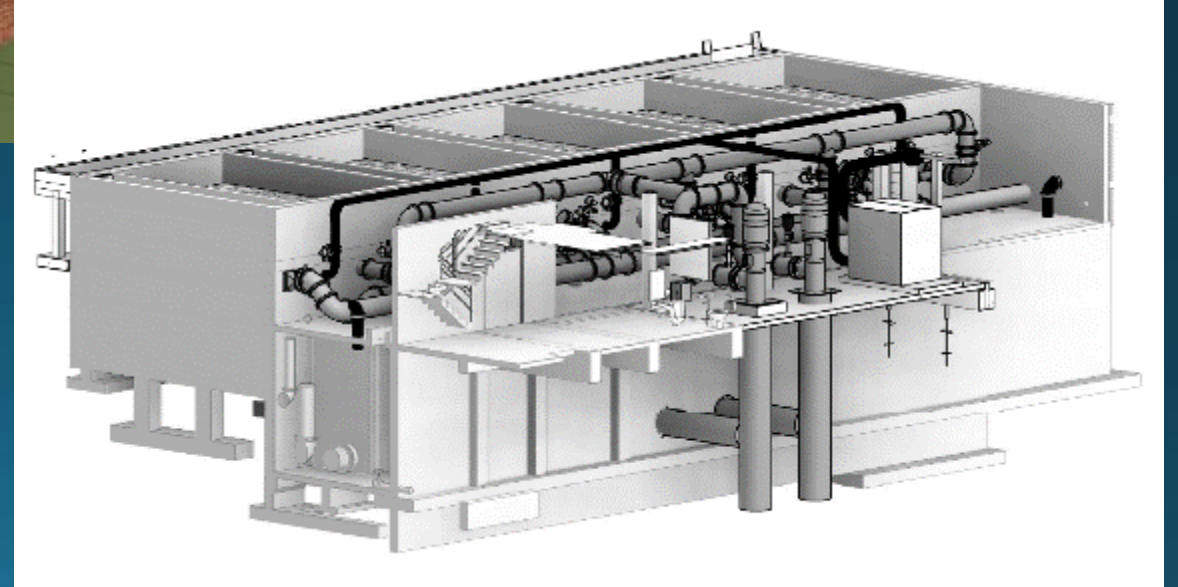
# Observatory WTP – GAC Expansion



2 3D REFERENCE VIEW  
20P1



# Observatory WTP – Backwash Pump Addition



# Proposed Schedule

- Issue Plans for Bidding November 2019
- Bid Opening December 2020
- Request Board Approval January 2020
- Start Construction March 2020
- Construction Phasing
  - SRWTP Substantial Completion – Summer 2021
  - OBWTP Shutdown – December 2021 to February 2022\*\*  
\*\*(UVA Holiday break: shutdown cannot be rescheduled)
  - SRWTP and OBWTP Final Completion – Fall 2022