

# Capital Improvement Plan

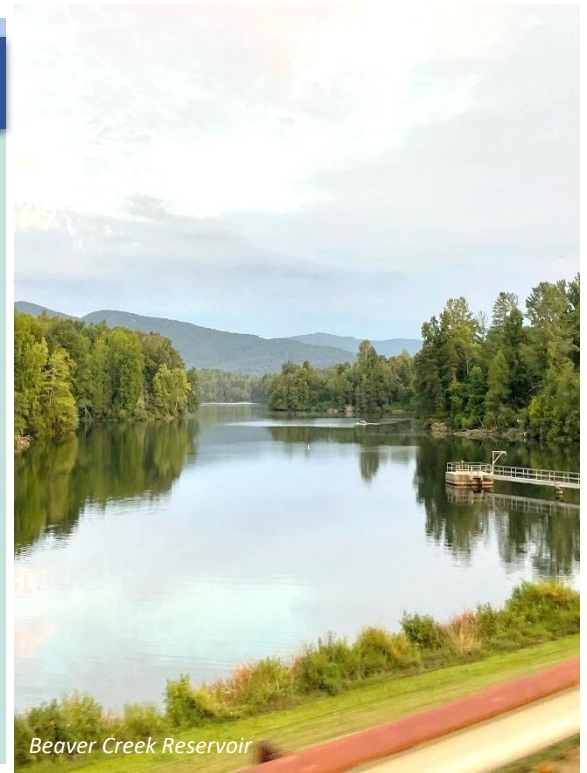
## Fiscal Years 2025-2029

Adopted May 2024



### OUR MISSION

Our knowledgeable and professional team serves the Charlottesville, Albemarle, and UVA community by providing high-quality water and wastewater treatment, refuse, and recycling services in a financially responsible and sustainable manner.



Rivanna Water & Sewer Authority  
695 Moores Creek Lane  
Charlottesville, Virginia 22902



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## Introduction

The Capital Improvement Plan (CIP) for Fiscal Years 2025-2029 has been prepared as a strategic and financially responsible plan for the Rivanna Water and Sewer Authority (RWSA) to complete major infrastructure construction projects. The projects included in the CIP are necessary to achieve the RWSA's core mission of providing safe, high-quality drinking water and environmentally responsible wastewater treatment services for the City of Charlottesville and the Albemarle County Service Authority (ACSA). The CIP is a 5-year planning document which provides an estimated budget and schedule for projects as they advance through the design and construction process.

The infrastructure requirements of the Capital Improvement Plan are developed through our Asset Management and Master Planning programs to address water and wastewater capacity demands, regulatory mandates and rehabilitation needs. Each year, these projects are reviewed and prioritized by the RWSA management team and brought forth for review by the Board of Directors.

During the past year, several capital projects were completed or are nearing the end of multi-year construction and as such are being removed from the 2025-2029 CIP. These projects account for approximately \$43.9 million or 13.5% of the FY 2024-2028 CIP. These projects include:

- 1 South Rivanna Reservoir to Ragged Mountain Reservoir Right-of-Way
- 7 Observatory Water Treatment Plant Improvements
- 18 South Rivanna Hydro Decommissioning
- 19 South Rivanna Water Treatment Plant Improvements
- 52 Asset Management
- 53 Security Enhancements
- 54 IT Infrastructure

The total 5-year 2025-2029 CIP is approximately \$371 million, with the previous expenditures on active projects totaling \$14.4 million, leaving a net proposed 5-year projected expenditure of \$356.6 million.

There are seven (7) new projects added to the CIP this year. The total estimated expenditures for the projects equal \$2.7 million and include:

- 6 South Rivanna Water Treatment Plants – Hypo Tank Replacements
- 13 Dam Concrete and Steel Repairs
- 15 Buck Mountain Property Dam Remediation
- 51 Moores Creek AWRRF Blower Building Ventilation Improvements
- 62 Radio Upgrades
- 63 IT Equipment Secure Cabinets
- 64 eV Charging Infrastructure

There were no projects with mid-year cost additions.

There were four (4) projects that rolled in to the 5-Year CIP totaling \$0.79 million:

- 11 South Rivanna Water Treatment Plant – Main Plant Generator Replacement
- 24 SCADA Panel Relocations
- 32 Crozet Ground Tank Painting
- 61 Climate Change Flood Resilience

There was one (1) project whose timeline was accelerated totaling \$13.62 million:

- 3 SFRR to RMR Pipeline, Intake & Facilities

There were thirty-nine (39) projects that were subject to inflation and scope progression resulting in a total proposed increase of \$25.1 million. Below are those projects showing the existing amount and the recommended total CIP amount:

- 1 Ragged Mountain Reservoir to Observatory WTP Raw Water Line (\$33 million existing / \$33.5 million proposed)
- 2 Ragged Mountain Reservoir to Observatory WTP Raw Water Pump Station (\$11.3 million existing / \$12.3 million proposed)
- 3 SFRR to RMR Pipeline, Intake & Facilities (\$39.6 existing / \$75.3 proposed)
- 4 SFRR Aeration & RMR HLOS Systems (\$1.4 million existing / \$6.6 million proposed)
- 7 Observatory WTP – Improvements (\$2 million existing / \$2 million proposed)
- 9 South Rivanna WTP – Improvements (\$1.9 million existing / \$1.9 million proposed)
- 10 Urban WTP's – GAC Building Dehumidification (\$0.2 million existing / \$2.2 proposed)
- 12 North Rivanna WTP – Decommissioning (\$2.7 million existing / \$2.9 million proposed)
- 16 Central Water Line (\$41 million existing / \$47 million proposed)
- 17 South Fork Rivanna River Crossing (\$6.9 million existing / \$7.3 million proposed)
- 19 Avon, Pantops and Observatory Tank Painting (\$2.2 million existing / \$10 million proposed)
- 21 Emmet Street Betterment (\$10.6 million existing / \$9.2 million proposed)
- 22 Berkmar Drive Ext. Waterline – Phase 2 (\$1.4 million existing / \$1.4 million proposed)
- 23 Urban Storage Evaluation and Tank(s) Addition (\$0.87 million existing / \$2.9 million proposed)
- 25 Beaver Creek Dam Alteration (\$22.7 million existing / \$23.7 million proposed)
- 26 Beaver Creek New Raw Water Pump Station & Intake (\$20.2 million existing / \$23.4 million proposed)
- 27 Buck's Elbow Tank and Waterball painting (\$1.1 million existing / \$1.7 million proposed)
- 28 Crozet WTP – GAC Building Dehumidification (\$0.05 million existing / \$0.65 million proposed)
- 31 Crozet Finished Water Greyrock Pump Station (\$0.18 million existing / \$1.5 million proposed)
- 34 Red Hill WTP – Upgrades & GAC Addition (\$0.74 million existing / \$0.8 million proposed)
- 35 Scottsville AC Pipe Replacement (\$0.08 million existing / \$0.275 million proposed)

- 36 Scottsville WTP – GAC Building Dehumidification (\$0.05 million existing / \$0.66 proposed)
- 37 Upper Schenks Branch Interceptor (\$5.3 million existing / \$5.9 million proposed)
- 39 Crozet Pump Station 1, 2, 3 Rehabilitation (\$10.3 million existing / \$10.9 million proposed)
- 40 Albemarle Berkeley Pump Station Upgrade (\$0.115 million existing / \$0.84 million proposed)
- 41 Interceptor Sewer and Manhole Repair – Phase 2 (\$1.2 million existing / \$1.4 million proposed)
- 42 Interceptor Sewer and Manhole Repair – Phase 2 (\$0.6 million existing / \$1.7 million proposed)
- 43 Moores Creek AWWRF Engineering and Administration Building (\$10.5 million existing / \$20 million proposed)
- 44 Moores Creek AWWRF Biogas Upgrades (\$3.6 million existing / \$5.6 million proposed)
- 45 Moores Creek AWWRF Building Upfits and Gravity Thickener Improvements (\$4.5 million existing / \$5.1 million proposed)
- 46 Moores Creek AWWRF Meter and Valve Replacements (\$0.775 million existing / \$0.475 million proposed)
- 47 Moores Creek AWWRF 5kV Electrical System Upgrade (\$5.6 million existing / \$6.2 million proposed)
- 48 Moores Creek AWWRF Yard Piping Upgrades (\$0.315 million existing / \$0.8 million proposed)
- 53 Scottsville WRRF Lagoon Outfall Rehabilitation (\$0.025 million existing / \$0.3 million proposed)
- 54 Scottsville WRRF Polymer Feed Addition (\$0.026 million existing / \$0.27 million proposed)
- 55 Glenmore WRRF Polymer Feed Addition (\$0.003 million existing / \$0.03 million proposed)
- 56 Glenmore WRRF Upgrade (\$0 million existing / \$1.3 million proposed)
- 59 IT Infrastructure (\$0.37 million existing / \$0.6 million proposed)
- 60 ACM Remediation (\$0.094 million existing / \$0.71 million proposed)

In summary, the FY 25-29 CIP is largely driven by an increase in project costs and accelerated projects. The impact of all cost factors can be seen in Table 1 below:

Table 1	
FY Line Item	Cost
24-28 Capital Improvement Plan	\$326,125,000
Mid-Year Additions	\$ 0
FY 29 Projects	\$ 47,391,000
Inflation and Scope Additions	\$ 25,082,750
New Projects	\$ 2,685,988
Accelerated Projects	\$ 13,620,000
Completed Projects	\$(43,904,302)
<b>Total</b>	<b>\$371,000,436</b>

**FINANCIAL SUMMARY**  
**MAJOR SYSTEM CATEGORIES**

## FINANCIAL SUMMARY

### Major System Categories – Water

	Five-Year Capital Program			Projected Future Expenses by Year						
System Description	Current CIP	Proposed Changes	Current Capital Budget	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	Recommended CIP	Work-in-Progress
<b>Urban Water (UW)</b>										
Community Water Supply Plan	\$85,365,000	\$42,410,000	\$10,855,000	\$10,955,000	\$28,215,000	\$28,250,000	\$24,860,000	\$24,640,000	\$127,775,000	\$1,079,491
Urban Water Treatment Plants & Reservoirs	\$7,925,000	\$5,095,000	\$4,445,000	\$945,000	\$3,930,000	\$325,000	\$600,000	\$2,775,000	\$13,020,000	\$76,110
Finished Water Storage/Distribution	\$73,050,000	\$9,546,000	\$22,515,000	\$9,670,000	\$14,130,000	\$12,800,000	\$14,715,000	\$8,766,000	\$82,596,000	\$8,252,084
<b>Subtotal (UW)</b>	\$166,340,000	\$57,051,000	\$37,815,000	\$21,570,000	\$46,275,000	\$41,375,000	\$40,175,000	\$36,181,000	\$223,391,000	\$9,407,685
<b>Non-Urban Water (NUW)</b>										
Crozet Water System	\$51,310,000	\$7,490,000	\$9,575,000	\$85,000	\$14,865,000	\$14,185,000	\$16,895,000	\$3,195,000	\$58,800,000	\$1,578,889
Scottsville Water System	\$1,420,000	\$1,680,000	\$511,000	\$299,000	\$0	\$0	\$695,000	\$1,595,000	\$3,100,000	\$42,486
<b>Subtotal (NUW)</b>	\$52,730,000	\$9,170,000	\$10,086,000	\$384,000	\$14,865,000	\$14,185,000	\$17,590,000	\$4,790,000	\$61,900,000	\$1,621,375
<b>WATER TOTAL</b>	\$219,070,000	\$66,221,000	\$47,901,000	\$21,954,000	\$61,140,000	\$55,560,000	\$57,765,000	\$40,971,000	\$285,291,000	\$11,029,060

# FINANCIAL SUMMARY

## Major System Categories – Wastewater

	Five-Year Capital Program			Projected Future Expenses by Year						
System Description	Current CIP	Proposed Changes	Current Capital Budget	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	Recommended CIP	Work-in-Progress
Urban Wastewater (UWW)										
Wastewater Interceptors and Pumping Stations	\$17,945,000	\$4,865,000	\$6,840,000	\$2,180,000	\$6,530,000	\$2,675,000	\$1,095,000	\$3,490,000	\$22,810,000	\$286,477
Moore's Creek AWWRF	\$40,275,000	\$13,500,000	\$19,860,000	\$13,525,000	\$19,105,000	\$515,000	\$390,000	\$380,000	\$53,775,000	\$1,751,403
Subtotal (UWW)	\$58,220,000	\$18,365,000	\$26,700,000	\$15,705,000	\$25,635,000	\$3,190,000	\$1,485,000	\$3,870,000	\$76,585,000	\$2,037,880
Non-Urban Wastewater (NUWW)										
Scottsville WRRF	\$571,000	\$519,000	\$495,000	\$25,000	\$0	\$0	\$60,000	\$510,000	\$1,090,000	\$65,940
Glenmore WRRF	\$30,000	\$1,615,000	\$0	\$75,000	\$750,000	\$60,000	\$40,000	\$720,000	\$1,645,000	\$0
Subtotal (NUWW)	\$601,000	\$2,134,000	\$495,000	\$100,000	\$750,000	\$60,000	\$100,000	\$1,230,000	\$2,735,000	\$65,940
WASTEWATER TOTAL	\$58,821,000	\$20,499,000	\$27,195,000	\$15,805,000	\$26,385,000	\$3,250,000	\$1,585,000	\$5,100,000	\$79,320,000	\$2,103,820
All Systems Security & Technology	\$4,329,698	\$2,059,738	\$3,915,698	\$787,738	\$155,000	\$80,000	\$131,000	\$1,320,000	\$6,389,436	\$1,229,368
TOTAL	\$282,220,698	\$88,779,738	\$79,011,698	\$38,546,738	\$87,680,000	\$58,890,000	\$59,481,000	\$47,391,000	\$371,000,436	\$14,362,248

## **PROJECT DETAILS**

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## Completed Projects

During fiscal year 2024, several capital improvement projects were completed, were advanced to the final phases of close-out, or were largely completed. Presented in the table below are the seven (7) completed projects, pertinent information on the adopted budgets, as well as the projected final costs and any anticipated savings. There was a total completed project cost savings of \$0.5 million.

1. South Rivanna Reservoir to Ragged Mountain Reservoir Right Of Way: The approved 50-year Community Water Supply Plan includes the future construction of a new raw water pipeline from the South Fork Rivanna Reservoir to the Ragged Mountain Reservoir. This new pipeline will replace the Upper Sugar Hollow Pipeline along an alternative alignment to increase raw water transfer capacity in the Urban Water System. The project included a detailed routing study to account for recent and proposed development and road projects in Albemarle County and the University of Virginia, as well as preliminary design, preparation of easement documents, and acquisition of water line easements. Prior expenditures also covered a previous review of the 2009 conceptual design that was requested by the Board.
7. Observatory Water Treatment Plant Improvements: The Observatory Water Treatment Plant was originally constructed in the mid-1950s, and prior to this project, much of the original equipment remained. As a result, that equipment was inefficient, prone to unexpected failure, and did not have readily accessible replacement parts. Based on a Needs Assessment Study, the plant is undergoing a wholesale upgrade including improvements to the flocculators, sedimentation basins, filters, and chemical feed facilities to enhance future reliability. In addition, the existing reinforced concrete flume, which conveys treated water from the sedimentation basins to the filters, is being replaced, filter control valves and piping are being replaced, and electrical and SCADA control systems are being upgraded. A portion of this project was previously completed during the Granular Activated Carbon (GAC) project, where the flocculator systems were upgraded with new mechanical and electrical equipment, including variable speed drives for optimal efficiency. In addition to providing needed equipment upgrades, these improvements will increase the plant's capacity from 7.7 million gallons per day to 10 million gallons per day to provide needed reliability and redundancy in the Urban System. As part of this capacity increase, the plant's GAC treatment capacity is being increased as well, with the addition of four GAC contactors. A large portion of this project has been completed with only final startup and testing of the new chemical systems, final instrumentation and SCADA programming efforts and punch list items remaining.
18. South Rivanna Hydro Decommissioning: The South Fork Hydropower Plant was a small hydroelectric generating facility constructed in 1987. The plant had historically operated intermittently, as river flows allowed. The generated power was used at the South Rivanna Water Treatment Plant, thereby reducing power purchased off the electric grid. During an effort to troubleshoot and repair the turbine, a large rain and lightning event caused unexpected flooding into the facility. Insurance paid damages to more recent improvements, but not the pre-existing needs to repair the turbine. Engineering investigations in 2013 associated with the failed mechanical equipment and flood event confirmed the need for further disassembly and inspection of the turbine shaft and blade linkages from a remote factory location.

Due to the complexity of possible rehabilitation, the associated Federal Energy Regulatory Commission (FERC) dam permitting, and the numerous variables in the economic analysis, proposals were solicited from national hydropower experts to initiate a feasibility study to determine the cost effectiveness of rehabilitating the hydropower plant while making sure to account for FERC-related costs and issues. The feasibility study was completed in May 2016 and determined that rehabilitation of the facility had a small likelihood for a positive return on investment. This conclusion was brought to the Board of Directors along with a recommendation to initiate the surrender of the exemption to licensure and decommission the facility. The Board approved this recommendation and staff filed the Surrender Application with FERC. The application was approved in 2020 and the decommissioning of the facility, which includes removing defunct electrical components, abandoning components of the turbine, replacement of the 72” sluice gate and re-establishment of the penstock as a reservoir drain. All the work has been completed minus the replacement of the sluice gate which is delayed based on factory lead time. The gate replacement is expected in August of 2024.

19. South Rivanna Water Treatment Plant Improvements: The South Rivanna Water Treatment Plant previously completed limited upgrades as part of the Urban Granular Activated Carbon project. Over the course of that project, several other significant needs were identified and assembled into this single improvement project. Under this project the following improvements are being made: a new alum and fluoride storage facility; installation of two additional filters to meet firm capacity needs and new filter control panels; building around the lime storage facilities; the addition of a second variable frequency drive at the Raw Water Pump Station as well as other general pump station improvements; the relocation for the electrical gear from a subterranean location at the Sludge Pumping Station to a new aboveground enclosure; a new administration building on site for additional office, meeting, and storage space; high service pump improvements and the addition of variable frequency drives to three of the pumps; sedimentation basin improvements; replacement of filter inlet valves and actuators; remodeling of the existing filter building for better lab and control space and painting throughout; new clarifier drives; and incoming electrical system improvements for the facility. These upgrades will improve the reliability and resiliency of the plant, particularly at higher flow rates. The majority of this work is complete with only completion of sludge pumping improvements, a new IT data center in the Dewatering Building and punch list items remaining.
52. Asset Management: Asset management is the practice of managing infrastructure to minimize the total cost of owning and operating assets while providing desired levels of service. By doing so, asset management ensures planned maintenance activities occur and that capital assets are replaced, repaired, or upgraded at the right time, while guaranteeing the necessary resources are available to perform these activities. When the project began, RWSA had some components of an asset management program in place (i.e. GIS and a work order system), but through the Strategic Planning process identified the need to further develop the program. To fully realize the program, a consultant was procured to assist with a four-phase implementation process. Phase one included facilitation and development of an asset management strategic plan; phase two included development and management of a pilot study where the results of the strategic plan were applied to a specific facility; phase three included procurement and implementation of software (Cityworks) to facilitate the overall program; and phase 4 includes assistance through full implementation of the complete asset management program. With phases one through three

complete, RWSA is focusing its efforts on completing phase four, full asset management implementation.

53. Security Enhancements: Water utilities are required by federal law to conduct vulnerability assessments (VA) and have emergency response plans. RWSA completed an update of its VA for the water system in collaboration with other regional partners and identified a number of security improvements that could be applied to both its water and wastewater systems. The purpose of this project was to install security improvements at RWSA facilities, with the initial focus on an enhanced access control program. Other improvements will include: industrial strength door and window components, security gate and fencing modifications, an improved lock and key program, facility signage, closed circuit television (CCTV) enhancements, intrusion detection systems (IDS), additional security lighting, mass emergency notification systems, and emergency call stations/panic buttons. In addition, upgrades will be made to the entrance of MCAWRRF, to better secure the facility and vet individuals as they enter. In order to implement an access control system at Authority-owned facilities, staff procured an Implementer to finalize system design/requirements, procure all necessary equipment, and install the chosen system. Access control system implementation is nearly complete across all RWSA facilities; however, work continues to finalize this process. As such, the budget is being partially capitalized.
54. IT Infrastructure: Systematic Network upgrades and standardization for aging switches and other infrastructure. SCADA asset inventory assessment and management policy to help establish plans for PLC and other IO asset maintenance. New business process implementations are ongoing – the general ledger/accounting systems currently in use will most likely need replacing as the current system will have an end of life in the late 2020's.

## Completed Projects

Line No.	Proj. No.	Project Description	Five-Year Capital Program			
			Adopted Budget 5/2023	Previous Expenditures (6/30/2023)	Final Projected Costs/Close Out	Savings
1	20.01	South Rivanna Reservoir to Ragged Mountain Reservoir Right of Way	\$2,740,000	\$1,946,353	\$2,740,000	\$0
7	20.06	Observatory Water Treatment Plant Improvements - Partial Capitilization FY 24	\$70,000,000	\$17,404,211	\$20,000,000	\$0
18	20.15	South Rivanna Hydropower Plant Decommissioning	\$1,010,000	\$511,588	\$14,000,000	\$0
19	20.16	South Rivanna Water Treatment Plant Improvements - Partial Capitilization FY 24	\$19,500,000	\$18,952,244	\$19,500,000	\$0
52	20.45	Asset Management - Partial Capitilization FY 23	\$427,552	\$427,552	\$427,552	\$0
53	20.46	Security Enhancements - Partial Capitilization FY 24	\$2,227,552	\$1,076,034	\$2,227,552	\$0
54	20.47	IT Infrastructure - Partial Capitilization FY 23	\$226,750	\$226,750	\$226,750	\$0
<b>TOTAL</b>			\$96,131,854	\$40,544,732	\$59,121,854	\$0

CIP 24-28 Total	CIP 24-28 Completed or Removed	CIP 24-28 Remaining	CIP 25-29 New Funding	CIP 25-29 New Total
\$326,125	\$43,904,302	\$282,220,698	\$88,779,738	\$371,000,436

## Community Water Supply Plan

The Community Water Supply Plan represents the program developed with substantial community input to fulfill RWSA's contractual obligation to the City of Charlottesville (City) and the Albemarle County Service Authority (ACSA) to provide adequate drinking water for their future needs. This initiative started in 2003 to find a long-term solution that could achieve both local support and meet federal and state requirements. After multiple community meetings, updates with local officials, and frequent consultations with federal and state agencies, local support was obtained to apply for federal and state permits to expand the Ragged Mountain Reservoir and build a future pipeline between the South Rivanna and Ragged Mountain Reservoirs, with stream and wetlands mitigation to be provided through property in the Buck Mountain Creek area and property adjacent to a lower reach of Moores Creek near its confluence with the Rivanna River. Federal and state permits were granted in 2008 and amended in 2011.

The first phase of this long-term program centered around the expansion of the Ragged Mountain Reservoir, a project that would simultaneously address a legal obligation to correct safety deficiencies on the existing site. Through a combination of technical investigations, engineering evaluations, and continued public discussion, a decision was reached in February 2011 through the City Council and Board of Supervisors to build the new dam as an earthen dam, with the initial phase raising the reservoir pool height by 30 feet. The decision also outlined an objective of the further pursuit of water conservation through the City and ACSA, and the pursuit of opportunities for dredging of the South Rivanna Reservoir, with the second phase of reservoir expansion in the future. The Ragged Mountain Dam Agreement was amended in late 2023 and authorized the implementation and modifications for the additional 12 feet of storage at the Ragged Mountain Reservoir.

### Project Descriptions:

1. Ragged Mountain Reservoir to Observatory Water Treatment Plant Raw Water Line: Raw water is transferred from the Ragged Mountain Reservoir (RMR) to the Observatory Water Treatment Plant (OBWTP) by way of two 18-inch cast iron water lines which have been in service for more than 110 and 70 years, respectively. In addition to the need to increase transfer capacity between the RMR and OBWTP, increased frequency of emergency repairs and expanded maintenance requirements necessitates replacement of these water lines with a single, new raw water main. This new raw water main is expected to be constructed of 36-inch ductile iron pipe and will span a distance of approximately 21,400 linear feet, including the connection of the proposed RMR raw water pump station with the Southern terminus of the SRR-RMR raw water line constructed on the Birdwood Golf Course that was completed in 2019.
2. Ragged Mountain Reservoir to Observatory Water Treatment Plant Raw Water Pump Station: The Ragged Mountain Reservoir (RMR) to Observatory Water Treatment Plant (OBWTP) raw water pump station is planned to replace the existing Stadium Road and Royal Pump Stations, which have exceeded their design lives and would require significant upgrades to reliably meet the upgraded capacity of the Observatory WTP. The pump station will be designed initially to pump up to 10 million gallons per day (MGD) to the expanded Observatory WTP and will be integrated with the planned South Fork Rivanna Reservoir (SFRR) to RMR pipeline for

improved operational flexibility and cost efficiencies. This integrated pump station will include the capacity to transfer up to 16 MGD of raw water from RMR back to the South Rivanna WTP, as well as boost water from SFRR up to RMR and OBWTP. The pump station property was purchased as part of the SFRR to RMR raw water main preliminary design and right of way acquisition project.

3. South Fork Rivanna Reservoir to Ragged Mountain Pipeline, Intake and Facilities: The South Fork Rivanna Reservoir (SFRR) to Ragged Mountain Reservoir (RMR) Pipeline is a part of the approved and permitted Community Water Supply Plan. The pipeline and associated facilities will give RWSA the ability to move water between the two reservoirs, further enhancing the management capabilities of the Urban System water supply. The SFRR to RMR Pipeline, Intake, and Facilities Project will include construction of a 36" raw water pipeline, connecting SFRR and RMR, a new raw water intake and pump station at SFRR to bring total withdrawal capacity from SFRR to 41 MGD, and a discharge pipe at RMR to enable placement of the transferred water at the appropriate depth. Design and construction of approximately 380 LF of piping along the alignment, as a betterment opportunity through the Victorian Heights development, located on Woodburn Road, is also included in the work. Construction of the new intake and pump station will permanently close the existing boat ramp on RWSA property at SFRR to the public.

In addition, this project will also include raising of the RMR pool an additional 12', to bring the normal pool of the reservoir to the full design elevation of 683'. This portion of the project will include all clearing and grading work necessary to facilitate the raise, along with a geotechnical evaluation of the existing dam, and coordination with all community stakeholders impacted by the work. Prior to the completion of the SFRR-RMR pipeline, filling will take place as conditions allow via the existing Sugar Hollow Raw Waterline.

4. South Fork Rivanna Reservoir Aeration & Ragged Mountain Reservoir Hypolimnetic Oxygenation Systems: Through RWSA's ongoing Reservoir Water Quality Monitoring Program and the South Fork Rivanna Reservoir (SFRR) to Ragged Mountain Reservoir (RMR) Pretreatment Evaluation Study, water quality benefits for an Aeration System at SFRR and a Hypolimnetic Oxygenation System at RMR have been identified. While these systems would be configured differently for each reservoir, the purpose of each system is to inject Oxygen into the depths of each reservoir. Iron and manganese concentrations are reduced, thus improving water quality within the reservoir and for downstream treatment processes.

## Community Water Supply Plan

Line No.	Proj. No.	Project Description	Five-Year Capital Program			Projected Future Expenses by Year						
			Current CIP Adopted 5/2023	Proposed Changes	Current Capital Budget	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	Recommended CIP	Work-in-Progress (Prev. Expenses 6/30/2023)
1	20.03	Ragged Mountain Reservoir to Observatory Water Treatment Plant Raw Water Line	\$33,000,000	\$500,000	\$3,900,000	\$6,290,000	\$9,110,000	\$9,100,000	\$5,100,000		\$33,500,000	\$436,775
2	20.04	Ragged Mountain Reservoir to Observatory Water Treatment Plant Raw Water Pump Station	\$11,300,000	\$1,050,000	\$2,175,000	\$2,065,000	\$3,170,000	\$3,170,000	\$1,770,000		\$12,350,000	\$346,983
3	20.48 20.49	South Fork Rivanna Reservoir to Ragged Mountain Pipeline, Intake & Facilities	\$39,665,000	\$35,660,000	\$4,780,000	\$2,600,000	\$15,935,000	\$15,980,000	\$16,490,000	\$19,540,000	\$75,325,000	\$295,733
4	23.02	South Fork Rivanna Reservoir Aeration and Ragged Mountain Reservoir HLOS Systems	\$1,400,000	\$5,200,000					\$1,500,000	\$5,100,000	\$6,600,000	
		TOTAL	\$85,365,000	\$42,410,000	\$10,855,000	\$10,955,000	\$28,215,000	\$28,250,000	\$24,860,000	\$24,640,000	\$127,775,000	\$1,079,491

## Urban Water Treatment Plants and Reservoirs

The Urban Water Treatment Plants and Reservoirs consist of the Observatory Water Treatment Plant (OBWTP) and Ragged Mountain/Sugar Hollow Reservoir System which is comprised of the water treatment facility on Observatory Mountain and the associated raw water infrastructure that stores and conveys source water to the plant. The raw water storage system includes the new Ragged Mountain Dam (constructed in 2014, with a useable raw water storage capacity of 1.44 billion gallons) and the Sugar Hollow Dam (originally constructed in 1947, upgraded in 1999 and downstream discharge improvements completed in September 2014, with a useable raw water storage capacity of 339 million gallons as updated by a 2015 bathymetric survey). The system also includes 17.6 miles of 18-inch raw water cast-iron mains, originally installed in 1908, 1922, and 1946. The Sugar Hollow Raw Water Main historically conveyed water from the Sugar Hollow Dam to the Observatory Water Treatment Plant, however, as a result of the New Ragged Mountain Dam project, the main now discharges directly into Ragged Mountain Reservoir. The remaining downstream section of the Sugar Hollow main now conveys raw water from the Ragged Mountain Reservoir to the treatment plant. The line crosses the Mechums River (where an abandoned pumping station is sited) on its way to Ragged Mountain Reservoir, and eventually passes through the Royal Pumping Station and terminates at the OBWTP. The Ragged Mountain Raw Water Main conveys water from the Ragged Mountain Reservoir through the Stadium Road Pumping Station and terminates at the OBWTP.

It also includes the South Rivanna Water System which is comprised of the source water, storage, conveyance and treatment infrastructure currently serving the urban area from the South Fork Rivanna River. The system includes the South Fork Rivanna Reservoir and Dam (built in 1966) with a raw water storage capacity of 1,248 MG of which 885MG is useable. The Dam is co-located with the raw water intake and pump station, as well as a small hydroelectric generation facility. The source water from the South Rivanna Reservoir is treated at the South Rivanna treatment plant (12-mgd rated capacity).

The North Rivanna Water System is also a part of this area and is comprised of a river intake and raw water pumping station on the North Fork of the Rivanna River, as well as the North Fork Water Treatment Plant (2-mgd rated capacity built in 1973). The North Rivanna System provides water to the ACSA service area located along US Route 29, between Forest Lakes subdivision and Piney Mountain Road.

### Project Descriptions:

5. Observatory Water Treatment Plant Improvements: The Observatory Water Treatment Plant was originally constructed in the mid-1950s, and prior to this project, much of the original equipment remained. As a result, that equipment was inefficient, prone to unexpected failure, and did not have readily accessible replacement parts. Based on a Needs Assessment Study, the plant is undergoing a wholesale upgrade including improvements to the flocculators, sedimentation basins, filters, and chemical feed facilities to enhance future reliability. In addition, the existing reinforced concrete flume, which conveys treated water from the sedimentation basins to the filters, is being replaced, filter control valves and piping are being replaced, and electrical and SCADA control systems are being upgraded. A portion of this project was previously completed during the Granular Activated Carbon (GAC) project, where the flocculator systems were

upgraded with new mechanical and electrical equipment, including variable speed drives for optimal efficiency. In addition to providing needed equipment upgrades, these improvements will increase the plant's capacity from 7.7 million gallons per day to 10 million gallons per day to provide needed reliability and redundancy in the Urban System. As part of this capacity increase, the plant's GAC treatment capacity is being increased as well, with the addition of four GAC contactors. A large portion of this project has been completed with only final startup and testing of the new chemical systems, final instrumentation and SCADA programming efforts and punch list items remaining.

6. Observatory Water Treatment Plant – Hypo Tank Replacements: Sodium hypochlorite is fed at the OBWTP for disinfection of the treated water and maintenance of a free chlorine residual in the distribution system. The chemical is stored in two 12,000 gallon fiberglass reinforced plastic (FRP) tanks in a separate building at the plant which was constructed in 1999. One of the existing tanks is original to the building and the second tank was installed in 2005. Due to the age of the tanks and the critical nature of this chemical usage at the plant, the intent of this project is to replace the two existing tanks with new 12,000-gallon FRP tanks. In addition to the tanks themselves, this project would include the replacement of access ladders, platforms, piping connections and tank tie-downs.
7. Observatory Water Treatment Plant – Backwash Basin Sludge Removal and Inspection: The concrete backwash basins were built in the 1920's and 1950's as part of the original water treatment plant to be used as open storage for the filtered water. They are currently used to settle solids out of the backwash water before it is decanted to the sanitary sewer system. This project involves removal of the settled sludge and a complete inspection of the basins to determine the extent of concrete repairs needed to extend their useful life.
8. South Rivanna Water Treatment Plant Improvements: The South Rivanna Water Treatment Plant previously completed limited upgrades as part of the Urban Granular Activated Carbon project. Over the course of that project, several other significant needs were identified and assembled into this single improvement project. Under this project the following improvements are being made: a new alum and fluoride storage facility; installation of two additional filters to meet firm capacity needs and new filter control panels; building around the lime storage facilities; the addition of a second variable frequency drive at the Raw Water Pump Station as well as other general pump station improvements; the relocation for the electrical gear from a subterranean location at the Sludge Pumping Station to a new aboveground enclosure; a new administration building on site for additional office, meeting, and storage space; high service pump improvements and the addition of variable frequency drives to three of the pumps; sedimentation basin improvements; replacement of filter inlet valves and actuators; remodeling of the existing filter building for better lab and control space and painting throughout; new clarifier drives; and incoming electrical system improvements for the facility. These upgrades will improve the reliability and resiliency of the plant, particularly at higher flow rates. The majority of this work is complete with only completion of sludge pumping improvements, a new IT data center in the Dewatering Building and punch list items remaining.
9. South Rivanna Water Treatment Plant – Sanitary Sewer Connection: Residual liquids and solids produced during the water treatment process at the South Rivanna Water Treatment Plant are

routed through an equalization basin to two residuals clarifiers. Sludge is pumped to a belt filter press in the Solids Handling Facility, and clarified water is discharged to the South Fork Rivanna River under a VPDES permit issued by the Virginia DEQ. In the future, anticipated increases in solids processing will necessitate an alternative means of disposing of sludge from the treatment process. This project includes preliminary and final design of a new sewer connection to convey sludge to the sanitary sewer system, as well as right of way acquisition, permitting, and construction costs.

10. Urban Water Treatment Plants – GAC Building Dehumidification: Granular Activated Carbon (GAC) treatment was installed at the Urban water treatment plants (South Rivanna and Observatory) in 2018. The buildings constructed around the GAC vessels were not conditioned and only included unit heaters and portable dehumidifiers. As a result of the large GAC vessels in these buildings, the humidity levels in the area tend to promote condensation which can then lead to corrosion of the equipment and general degradation. While the portable dehumidifiers were beneficial, they tended to be unreliable and insufficient to maintain lower humidity levels in the buildings. As a result, the purpose of this project is to install permanent industrial dehumidification systems in the GAC buildings associated with the Urban water treatment plants. This project would include the dehumidification units as well as the necessary ductwork, electrical improvements, and architectural modifications required for a complete installation.
11. South Rivanna Water Treatment Plant – Main Plant Generator Replacement: During recent treatment plant upgrades, the condition of the existing main plant generator was evaluated, and it was determined that while the generator was capable of meeting our current needs at the plant, we should plan for a future replacement. This replacement would help ensure the appropriate level of electrical service resiliency for the plant and would include a new prime rated generator, automatic transfer switch, associated electrical switchgear, feeder cables and other appurtenances necessary to allow this replacement to take place while still providing the plant with backup power during the construction process.
12. North Rivanna Water Treatment Plant Decommissioning: The North Rivanna Water Treatment Plant (NRWTP) has been in use since the 1970's with minimal upgrades aside from the addition of Granular Activated Carbon in 2018. A Needs Assessment was performed that identified additional improvements that would be required for the plant to continue to reliably provide drinking water to the North Rivanna Pressure Zone. Due to the anticipated expense of these proposed improvements, a feasibility study was performed to determine if the NRWTP should be upgraded or decommissioned. The study concluded that the plant should be decommissioned, and expenses saved could be better applied to other improvements throughout the Urban Water System. As a result, this project includes demolition of the plant facilities, removal of the low head dam on the North Fork Rivanna River and returning the property to its pre-existing conditions.
13. Dam Concrete and Steel Repairs: RWSA operates several dams for water supply and sediment storage. These include concrete gravity dams and earthen embankment dams, ranging in age from 10 to over 80 years. Over time, normal wear and tear from water passage and weather can cause degradation of concrete and steel structures. To ensure continued safe operation of these dams into the future, it is imperative to complete periodic maintenance and repairs. This project

includes funding for the evaluation, design, and construction of concrete and steel repairs at the Lickinghole Creek Dam, Totier Creek Dam, South Rivanna Dam, and Sugar Hollow Dam. Repairs are expected to include injection grouting of voids in concrete structures, concrete surface repairs, recoating steel hoist beams, and installation of new hoist trolleys, among others.

14. South Rivanna Water Treatment Plant – PAC Upgrades: The SRWTP currently utilizes a repurposed lime silo reconfigured to feed powdered activated carbon (PAC). PAC is fed in the mixing basin where it is mixed with the raw water prior to entering the rapid mix basins. The PAC storage silo and feed system has reached the end of its useful life and requires frequent maintenance attention to maintain operations. The purpose of this project is to replace the existing PAC system with a new modern PAC storage and slurry feed system similar to the one installed at the Crozet WTP and the one under construction at the Observatory WTP. This project would include demolition of the existing PAC silo and feed pumps, site work and grading required for the new PAC silo location and installation of a new PAC storage and slurry feed system complete with all necessary dry feed equipment, metering pumps, HVAC equipment and electrical and control equipment.
15. Buck Mountain Property Dam Remediation: The RWSA Buck Mountain Property in Free Union includes a small pond dam acquired as part of the property acquisition in the early 1980's. Based on the height of the dam and volume of water impounded in the pond, the dam is considered a low-hazard impounding structure subject to Virginia Dam Safety Regulations. Recent evaluations by Schnabel Engineering revealed defects in the dam consistent with age and wear that should be addressed in order to comply with state regulations. This CIP project includes funds to dewater the pond and temporarily modify the dam for safety purposes until funding is allocated for the repair, modification, or removal of the dam, currently planned for 2030 or later.

## Urban Water Treatment Plants and Reservoirs

Line No.	Proj. No.	Project Description	Five-Year Capital Program			Projected Future Expenses by Year						
			Current CIP Adopted 5/2023	Proposed Changes	Current Capital Budget	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	Recommended CIP	Work-in-Progress (Prev. Expenses 6/30/2023)
5	20.06	Observatory Water Treatment Plant - Improvements	\$2,000,000		\$2,000,000						\$2,000,000	
6	25.05	Observatory Water Treatment Plants - Hypo Tank Replacements		\$300,000		\$35,000	\$105,000	\$160,000			\$300,000	
7	23.05	Observatory Water Treatment Plant - Backwash Basin Sludge Removal and Inspection	\$50,000	\$515,000					\$80,000	\$485,000	\$565,000	
8	20.16	South Rivanna Water Treatment Plant - Improvements	\$1,900,000		\$1,900,000						\$1,900,000	
9	23.11	South Rivanna Water Treatment Plant - Sanitary Sewer Connection		\$750,000				\$165,000	\$285,000	\$300,000	\$750,000	
10	23.04 23.09	Urban Water Treatment Plants - GAC Building Dehumidification	\$200,000	\$1,975,000					\$235,000	\$1,940,000	\$2,175,000	
11	22.08	South Rivanna Water Treatment Plant - Main Plant Generator Replacement		\$50,000						\$50,000	\$50,000	
12	20.18	North Rivanna Water Treatment Plant - Decommissioning	\$2,675,000	\$265,000	\$485,000	\$195,000	\$2,260,000				\$2,940,000	\$76,110
13	25.01	Dam Concrete and Steel Repairs		\$1,190,000		\$415,000	\$775,000				\$1,190,000	
14	24.01	South Rivanna Water Treatment Plant - PAC Upgrades	\$1,100,000		\$60,000	\$250,000	\$790,000				\$1,100,000	
15	25.04	Buck Mountain Property Dam Remediation		\$50,000		\$50,000					\$50,000	
		TOTAL	\$7,925,000	\$5,095,000	\$4,445,000	\$945,000	\$3,930,000	\$325,000	\$600,000	\$2,775,000	\$13,020,000	\$76,110

## **Finished Water Storage/Transmission – Urban System**

The urban finished water storage and transmission system serves to provide transmission of treated water from the three RWSA water plants (Observatory, South Rivanna, and North Rivanna) to the distribution networks of the Albemarle County Service Authority, the City of Charlottesville, and the University of Virginia. The system includes approximately 40 miles of pipeline, six water storage tanks: Avon Street (2 MG), Pantops (5 MG), Piney Mountain (0.7 MG), Stillhouse (0.7 MG), Observatory (3 MG), and Lewis Mountain (0.5 MG), and the Alderman Road and Stillhouse pumping stations.

### **Project Descriptions:**

16. Central Water Line: The southern half of the Urban Area water system is currently served by the Avon Street and Pantops storage tanks. The Avon Street tank is hydraulically well connected to the Observatory Water Treatment Plant while the Pantops tank is well connected to the South Rivanna Water Treatment Plant. The hydraulic connectivity between the two tanks, however, is less than desired, creating operational challenges and reducing system flexibility. In 1987, the City and ACSA developed the Southern Loop Agreement, outlining project phasing and cost allocations, as envisioned at the time. The first two phases of the project were constructed shortly thereafter. The third phase, known as the “Eastern Branch” is the subject of the current project. The initial funding for this project was used for route alignment determination, hydraulic modeling, and preliminary design. Due to the complicated nature of our finished water systems, it was decided at the August 2018 Board meeting that a more comprehensive approach was warranted and we should complete the Finished Water Master Plan prior to moving forward with final design and construction of the Avon to Pantops Water Main. The Finished Water Master plan was completed in 2021 and the Central Water Line project was prioritized for design and construction in coordination with the City and ACSA. The project will consist of approximately 5 miles of new 24-inch and 30-inch through the City to connect the Observatory Water Treatment Plant to an existing RWSA transmission main at East High and Long St. to ensure the increased hydraulic capacity of 10 MGD from the water treatment plant upgrades can be utilized. As part of this project, several City water mains will be replaced where co-located with the Central Water Line and the City will reimburse RWSA for that work.
17. South Fork Rivanna River Crossing: RWSA has previously identified through master planning that a 24-inch water main will be needed from the South Rivanna Water Treatment Plant (SRWTP) to Hollymead Town Center to meet future water demands. Two segments of this water main were constructed as part of the VDOT Rt. 29 Solutions projects, including approximately 10,000 linear feet (lf) of 24-inch water main along Rt. 29 and 600 lf of 24-inch water main along the new Berkmar Drive Extension, behind the Kohl’s department store. To complete the connection between the SRWTP and the new 24-inch water main in Rt. 29, there is a need to construct a new river crossing at the South Fork Rivanna River. The selected alternative will include a 1,200 lf trenchless river crossing to minimize environmental impacts. Acquisition of right-of-way is required for the river crossing and along Rio Mills Road.
18. Airport Rd. Pump Station and North Rivanna Transmission Main: The Rt. 29 Pipeline and Pump Station master plan was developed in 2007 and originally envisioned a multi-faceted

project that reliably connected the North and South Rivanna pressure bands, reduced excessive operating pressures, and developed a new Airport pressure zone to serve the highest elevations near the Airport and Hollymead Town Center. The master plan was updated in 2018 to reflect the changes in the system and demands since 2007. This project, along with the South Rivanna River Crossing project, will provide a reliable and redundant finished water supply to the North Rivanna area. Once the North Rivanna Water Treatment Plant is abandoned, the Airport Road Pump Station will be the primary means to supply water to the North Zone. The proposed pump station will be able to serve system demands at both the current high pressure and a future low-pressure condition. These facilities will also lead to a future phase implementation which will include a storage tank and the creation of the Airport pressure zone. To complete the connection between the new 24-inch water main in Rt. 29 and the pump station, construction will include two “gap” sections of 24-inch water main between the already completed sections in the vicinity of Kohl’s. Much of the new water main route is within VDOT right-of-way; however, acquisition of right-of-way was required on the Kohl’s Property at Hollymead Town Center.

19. Avon, Pantops, and Observatory Tank Painting: The Avon, Pantops and Observatory Ground Storage Tanks have volumes of 2-million, 3-million, and 5-million gallons respectively, and each of the tanks are located within the Urban Pressure Band of RWSA’s Finished water Distribution System. The Urban Pressure Band services most of the City and ACSA critical customers (UVA, UVA/MJ Hospital, Senior Living Facilities, Defense Contractors, etc.). Each of the tanks play a pivotal role in maintaining system pressures and providing increased flows during fires and other system emergencies.

RWSA inspects its tanks on a regular basis and following recent inspections of the interior and exterior of each of the three tanks it was determined that these tanks are due for rehabilitation and necessary repairs. Each tank is slated to have its interior and exterior coatings rehabilitated, taken out of service, in turn, in order to complete repairs. While each tank is offline, roofing/structural repairs and safety enhancements will be made as appropriate to further protect the integrity of the tank.

20. Second N. Rivanna River Crossing & Select Pipe Replacement: The North Rivanna water distribution system has a 12-inch water line crossing of the North Rivanna River which is difficult to access and vulnerable to erosion and washout. The Finished Water Master Plan recommended we install a second redundant river crossing to ensure water can be conveyed north of the river to the Piney Mountain Tank from the new Airport Road Pump Station once the North Rivanna Water Treatment Plant is decommissioned. Approximately 1.2 miles of cast iron water line which has the highest system pressures and has experienced numerous emergency line breaks will be replaced as part of this project to improve system resiliency.
21. Emmet Street Betterment: The Urban Finished Water Master Plan identified several necessary upgrades to the urban water distribution system to improve system performance and reliability. One of the identified improvements is an upgrade and extension of the existing RWSA water main along the Emmet Street corridor from the UVA Dell Pond to Hydraulic Road. This project will utilize planned road, streetscape, utility, and development projects along the Emmet Street corridor to complete portions of the Emmet Street water main improvements as betterment, with the goal of completing the approximately 2-mile-long water main by 2030. The project scope

includes planning and coordination between RWSA, UVA, the City of Charlottesville, and VDOT, design services for the betterment and “gap” sections of water line, construction funding, and construction management services. Current identified projects with betterment opportunities include: the UVA Ivy Corridor Redevelopment, UVA Contemplative Commons, the City of Charlottesville Emmet Streetscape Projects (multiple phases), and intersection improvements at Barracks Road, and the US-250/Emmet Street Interchange.

22. Berkmar Drive Ext. Waterline Phase 2: This water line project will be completed as betterment with the construction of the last section of the VDOT Berkmar Drive Extended project. VDOT has begun preliminary design, however, the construction is not anticipated for several years. This betterment will include approximately 1,000 feet of 16-inch waterline which will connect the new Airport Road Pump Station to an RWSA main in Airport Road. This second feed out of the new pump station will provide more redundancy to supply the North Zone once the North Rivanna Water Treatment Plant is decommissioned.
23. Urban Storage Evaluation and Tank(s) Addition: The Finished Water Master Plan outlined the need to evaluate our water storage system for fire suppression, to address frequent tank cycling, and to evaluate alternatives for realizing more useable volume in each tank. Once an evaluation is completed, this project will determine the best pressure bands to add storage to ease operational constraints. This project envisions the addition of two more water storage tanks which may be at existing tank locations or new ones.
24. SCADA Panel Relocations: At many remote water storage tank sites, control panels and PLCs associated with operation and monitoring of the tanks are located in valve vaults. These locations are a concern based on limited access to the electrical and instrumentation components as well as the condition of the space and the associated impact to the longevity of the devices. This project includes installation of new control panels and PLCs aboveground in weatherproof enclosures under a self-supporting canopy that would protect staff from direct weather impacts during operation or maintenance activities at seven water storage tank sites throughout the RWSA water distribution system. The components located in the valve vaults would be demolished after the new components were installed to minimize monitoring downtime.

## Finished Water Storage/Transmission – Urban System

Line No.	Proj. No.	Project Description	Five-Year Capital Program			Projected Future Expenses by Year						
			Current CIP Adopted 5/2023	Proposed Changes	Current Capital Budget	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	Recommended CIP	Work-in-Progress (Prev. Expenses 6/30/2023)
16	20.10	Central Water Line	\$41,000,000	\$6,000,000	\$4,300,000	\$7,250,000	\$10,350,000	\$10,350,000	\$10,350,000	\$4,400,000	\$47,000,000	\$1,040,961
17	20.12	South Fork Rivanna River Crossing	\$6,900,000	\$400,000	\$5,500,000	\$400,000	\$1,400,000				\$7,300,000	\$307,143
18	20.13	Airport Rd. Pump Station and North Rivanna Transmission Main	\$10,000,000		\$10,000,000						\$10,000,000	\$5,792,592
19	20.50 20.51 20.64	Avon, Pantops and Observatory Tank Painting	\$2,200,000	\$1,745,000				\$245,000	\$2,100,000	\$1,600,000	\$3,945,000	
20	20.58	Second North Rivanna River Crossing and Select Pipe Replacement	\$30,000	\$620,000					\$30,000	\$620,000	\$650,000	
21	23.06	Emmet Street Betterment	\$10,650,000	(\$1,415,000)	\$2,495,000	\$2,020,000	\$2,225,000	\$1,250,000	\$1,245,000		\$9,235,000	\$1,111,388
22	24.09	Berkmar Drive Ext. Waterline - Phase 2	\$1,400,000	\$40,000	\$220,000		\$100,000	\$650,000	\$470,000		\$1,440,000	
23	24.12	Urban Storage Evaluation and Tank(s) Addition	\$870,000	\$2,110,000			\$55,000	\$305,000	\$520,000	\$2,100,000	\$2,980,000	
24	24.13	SCADA Panel Relocations		\$46,000						\$46,000	\$46,000	
		TOTAL	\$73,050,000	\$9,546,000	\$22,515,000	\$9,670,000	\$14,130,000	\$12,800,000	\$14,715,000	\$8,766,000	\$82,596,000	\$8,252,084

## Crozet Water System

The Crozet Water System includes the source water, raw water conveyance, finished water treatment, transmission and storage infrastructure for the Crozet community in western Albemarle County. The source water for this system is the Beaver Creek Reservoir and Beaver Creek (Garnett) Dam which were built in 1964 with a current useable storage capacity of 521 million gallons. Raw water is treated at the Crozet Water Treatment Plant (2.0 mgd rated capacity) and provides finished water to the Albemarle County Service Authority. The system includes the Crozet Elevated (Waterball) Tank (0.05 MG) for water treatment plant backwash; the Crozet Ground Storage Tank (0.5 MG) and pump station, and the Buck's Elbow Storage Tank (2.0 MG).

### Project Descriptions:

25. Beaver Creek Dam Alteration: 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 the 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. Following the completion of a planning study in 2023, staff will proceed with final design and construction of a labyrinth spillway and chute with a bridge to allow Browns Gap Turnpike to cross over the new spillway. Work for this project will be coordinated with the new relocated raw water pump station and intake. Federal funding through the Natural Resources Conservation Service (NRCS) is being pursued to cover a portion of the design and construction costs.
26. Beaver Creek New Raw Water Pump Station & Intake: The existing Raw Water Pump Station and Intake at the Beaver Creek Reservoir was constructed in 1964 and is located at the foot of the Beaver Creek Dam. Obligatory dam safety upgrades to the Beaver Creek Dam spillway necessitate moving the pump station away from its current location downstream of the dam. Additionally, the Drinking Water Infrastructure Plan for the Crozet water service area recommends installation of a new Raw Water Pump Station and Intake 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 new pump station will be constructed adjacent to the dam on the Beaver Creek Reservoir. The new intake structure will include enhanced controls as well as a Hypolimnetic Oxygenation System to enhance water quality within the reservoir.
27. Buck's Elbow Tank and Waterball Painting: The 2,000,000-gallon Buck's Elbow Ground Storage Tank provides finished water storage for the Crozet Area while the 50,000-gallon Crozet Waterball Tank serves as filter backwash storage at the Crozet Water Treatment Plant (CZWTP). Routine inspections of these tanks in 2012 indicated that the tanks would require recoating by 2020. The current coating system has lasted beyond this initial prediction and as such was moved to 2028. The project includes recoating the interior and top-coating the exterior of both tanks to prevent corrosion. Minor repairs and improvements to both tanks, such as foundation repairs and safety enhancements, will precede the painting work due to necessity of repairs.

28. Crozet Water Treatment Plant – GAC Building Dehumidification: Granular Activated Carbon (GAC) treatment was installed at the Crozet Water Treatment Plant in 2018. The building constructed around the GAC vessels was not conditioned and only included unit heaters and portable dehumidifiers. As a result of the large GAC vessels in this building, the humidity levels in the area tend to promote condensation which can then lead to corrosion of the equipment and general degradation. While the portable dehumidifiers were beneficial, they tended to be unreliable and insufficient to maintain lower humidity levels in the building. As a result, the purpose of this project is to install a permanent industrial dehumidification system in the GAC building. This project would include the dehumidification units as well as the necessary ductwork, electrical improvements, and architectural modifications required for a complete installation.
29. Crozet AC Pipe Replacement: This project includes the installation of approximately 5,000 linear feet of new 18-inch ductile iron water line along Three Notched Road in Crozet. It will replace the final remaining section of 12-inch RWSA transite (asbestos cement) pipe built in the 1970's which is difficult to repair due to health and safety hazards. The new water line will connect the new Crozet Finished Water Pump Station at the Water Treatment Plant to the end of the previous transite replacement project at the entrance to Western Ridge and will provide more reliable service to carry the capacity of the recent water treatment plant upgrades.
30. Crozet Water Treatment Plant – Full GAC Treatment: In order to enhance RWSA's resiliency and commitment to long term finished water quality, the Authority has committed to expanding the Granular Activated Carbon (GAC) capacity at the Crozet WTP to match the current plant capacity. GAC has been identified as a leading best management practice to remove disinfection by product pre-cursors and similar potential contaminants from source water and can be used to manage removal of other emerging contaminants and compounds that are under consideration for regulation in the future. As a result, GAC treatment capacity will provide the Crozet WTP with the flexibility to provide high quality drinking water under various future conditions. This project includes an expansion of the existing GAC building, additional GAC vessels and the necessary pumps, piping, and electrical components to connect the expanded facility to the existing treatment plant.
31. Crozet Finished Water Greyrock Pump Station: RWSA's Bucks Elbow Ground Storage Tank (BET) currently can only be cycled as low as 26-feet (11-feet below overflow), due to the high elevation of several homes in the Greyrock area of Crozet. This results in about 0.6 million gallons (MG) of the total 2 MG being available for use. As a part of the proposed improvements, a small booster station will be installed near the tank site with a series of pressure reducing valves in order to allow the tank to cycle as low as 18-feet, making an additional 0.4 MG of water inside BET available for use. This will allow RWSA staff to cycle the tank lower, reducing water age and improving overall water quality in this area of the distribution system.
32. Crozet Ground Tank Painting: The 500,000-gallon Crozet Ground Storage Tank provides Chlorine Contact Time at the Crozet Water Treatment Plant (CZWTP) and serves as a clearwell for the Crozet Finished Water Pump Station. Inspections of this tank in 2018 and 2022 indicated that the tank's exterior will require top-coating by 2028 to prevent corrosion. The

project includes design, construction, and bid-phase services for top-coating of the tank exterior plus minor repairs and safety improvements as needed.

## Crozet Water System

Line No.	Proj. No.	Project Description	Five-Year Capital Program			Projected Future Expenses by Year					Recommended CIP	Work-in-Progress (Prev. Expenses 6/30/2023)
			Current CIP Adopted 5/2023	Proposed Changes	Current Capital Budget	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029		
25	20.19	Beaver Creek Dam Alteration	\$22,700,000	\$1,000,000	\$3,975,000		\$5,825,000	\$6,900,000	\$7,000,000		\$23,700,000	\$987,079
26	20.20 21.15	Beaver Creek New Raw Water Pump Station & Intake	\$20,200,000	\$3,200,000	\$4,150,000		\$5,150,000	\$6,000,000	\$8,100,000		\$23,400,000	\$591,810
27	21.01	Buck's Elbow Tank and Waterball Painting	\$1,180,000	\$520,000		\$85,000		\$75,000	\$1,100,000	\$440,000	\$1,700,000	
28	23.10	Crozet Water Treatment Plant - GAC Building Dehumidification	\$50,000	\$615,000					\$60,000	\$605,000	\$665,000	
29	23.13	Crozet AC Pipe Replacement	\$450,000	\$725,000					\$450,000	\$725,000	\$1,175,000	
30	23.14	Crozet Water Treatment Plant - Full GAC Treatment	\$6,550,000		\$1,450,000		\$3,890,000	\$1,210,000			\$6,550,000	
31	23.30	Crozet Finished Water Greyrock Pump Station	\$180,000	\$1,405,000					\$185,000	\$1,400,000	\$1,585,000	
32	20.55	Crozet Ground Tank Painting		\$25,000						\$25,000	\$25,000	
		<b>TOTAL</b>	<b>\$51,310,000</b>	<b>\$7,490,000</b>	<b>\$9,575,000</b>	<b>\$85,000</b>	<b>\$14,865,000</b>	<b>\$14,185,000</b>	<b>\$16,895,000</b>	<b>\$3,195,000</b>	<b>\$58,800,000</b>	<b>\$1,578,889</b>

## Scottsville Water System

The Scottsville Water System is comprised of the raw water conveyance, finished water treatment, transmission and storage infrastructure for the Town of Scottsville in southern Albemarle County. The source water for this system is the Totier Creek Intake, and the backup supply is the Totier Creek Reservoir, which was built in 1971 with a current useable capacity of 182 million gallons. Raw water is treated at the Scottsville Water Treatment Plant (0.25 mgd rated capacity) and provides finished water to the Albemarle County Service Authority. The system includes the Scottsville Storage Tank (0.25 MG). In 2023 ACSA conveyed to RWSA the Scottsville Finished Water Pump Station on James River Road, the Rt. 795 Tank (0.7 MG) and the piping in between.

### Project Description:

33. Scottsville Water Treatment Plant – Upgrade: The Scottsville Water Treatment Plant was originally constructed in 1967, and other than the addition of Granular Activated Carbon (GAC) treatment and interior finished water piping improvements, much of the original plant, including process and electrical equipment, remains in service. As a result, a needs assessment for the plant was completed that identified a number of additional improvements required to maintain a high level of treatment and water quality for the Scottsville community. Improvements include upgrades to the raw water pump stations, general electrical system upgrades, construction of a building addition to allow for more effective chemical storage and other general space needs, rehabilitation of the existing lab space, and other treatment process-based upgrades.
34. Red Hill Water Treatment Plant – Upgrades & GAC Addition: The Red Hill Water Treatment Plant was constructed in a joint effort of ACSA and RWSA in 2009 and consists of a well, pneumatic tank and pump house that provides treated water to the Red Hill Elementary School and adjoining neighborhood. Originally the facility was operated primarily as a well head and pump house. More recently the facility has operated as a water treatment facility with a well as source water. As such, there have been several chemical process additions, automation, online monitoring and an increase in operator wet chemistry testing. The current building is well beyond its physical capacity and this project will serve to expand the building and improve the configuration of the process and laboratory needs of the WTP.

Furthermore, to enhance RWSA's resiliency and commitment to long term finished water quality, the Authority has committed to adding Granular Activated Carbon (GAC) treatment at the Red Hill WTP, sized to match the current plant capacity. GAC has been identified as a leading best management practice to remove disinfection by product pre-cursors and similar potential contaminants from source water and can be used to manage removal of other emerging contaminants and compounds that are under consideration for regulation in the future. As a result, full GAC treatment capacity will provide the Red Hill WTP with the flexibility to provide high quality drinking water under various future conditions. This project includes a building expansion to independently house sodium hypochlorite, fluoride and GAC treatment as well as piping, valves and pumping improvements necessary to incorporate these components into the existing treatment plant.

35. Scottsville Asbestos-Cement Pipeline Replacement: This project is intended to replace all remaining RWSA waterline in Scottsville that is currently constructed of asbestos-cement not included under ACSA's Phase 4 Waterline Replacement Project. The scope of the project generally includes approximately 500 linear feet of raw waterline replacement between the filter building and Totier Creek intake behind Scottsville WTP. The proposed budget includes design for the new water main, as well as bid/quote package assistance.
36. Scottsville Water Treatment Plant – GAC Building Dehumidification: Granular Activated Carbon (GAC) treatment was installed at the Scottsville Water Treatment Plant in 2018. The building constructed around the GAC vessels was not conditioned and only included unit heaters and portable dehumidifiers. As a result of the large GAC vessels in this building, the humidity levels in the area tend to promote condensation which can then lead to corrosion of the equipment and general degradation. While the portable dehumidifiers were beneficial, they tended to be unreliable and insufficient to maintain lower humidity levels in the building. As a result, the purpose of this project is to install a permanent industrial dehumidification system in the GAC building. This project would include the dehumidification units as well as the necessary ductwork, electrical improvements, and architectural modifications required for a complete installation.

## Scottsville Water System

Line No.	Proj. No.	Project Description	Five-Year Capital Program			Projected Future Expenses by Year					Recommended CIP	Work-in-Progress (Prev. Expenses 6/30/2023)
			Current CIP Adopted 5/2023	Proposed Changes	Current Capital Budget	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029		
33	22.06	Scottsville Water Treatment Plant - Upgrade	\$550,000	\$800,000					\$550,000	\$800,000	\$1,350,000	
34	22.07 23.17	Red Hill Water Treatment Plant - Upgrades & GAC Addition	\$740,000	\$70,000	\$511,000	\$299,000					\$810,000	\$42,486
35	23.16	Scottsville AC Pipe Replacement	\$80,000	\$195,000					\$85,000	\$190,000	\$275,000	
36	23.18	Scottsville Water Treatment Plant - GAC Building Dehumidification	\$50,000	\$615,000					\$60,000	\$605,000	\$665,000	
		TOTAL	\$1,420,000	\$1,680,000	\$511,000	\$299,000	\$0	\$0	\$695,000	\$1,595,000	\$3,100,000	\$42,486

## Wastewater Interceptors/Pumping Stations

The RWSA wastewater interceptors and pumping stations convey wastewater from the collection systems of the City of Charlottesville and Albemarle County Service Authority to the Moores Creek Advanced Water Resource Recovery Facility (MCAWRRF). This grouping includes: the Crozet Interceptor and four associated pumping stations; the Moores Creek Interceptor and Relief Sewer; the Morey Creek, Maury Hills, Powell Creek, Meadow Creek, Schenks Branch, Woodbrook and Rivanna Interceptors; as well as the Albemarle-Berkley Interceptor and associated Albemarle Pumping Station. Also included in this system are the two primary pump stations into the MCAWRRF, the Rivanna and Moores Creek Pump Stations.

### Project Descriptions:

37. Upper Schenks Branch Interceptor: The Schenks Branch Interceptor is located in the eastern part of the City of Charlottesville and ties into the Meadowcreek Interceptor. The interceptor was constructed in the mid-1950s of 21-inch clay and concrete pipe. The existing interceptor is undersized to serve present and future wet weather flows as determined by the City, and is to be upgraded to 30-inch pipe. The Upper Schenks Branch Interceptor consists of two sections along McIntire Road. Both of these sections have been designed with the first phase of this project located in the City's Schenks Branch Greenway, completed in early 2016. The second phase of the Upper Schenks Interceptor will be replaced by RWSA in coordination with the City of Charlottesville's sewer upgrades as easement negotiations with Albemarle County are completed.
38. Maury Hill Branch Sewer Replacement: The Maury Hill Branch Sewer is an 8-inch diameter clay sewer constructed in the 1970's. It ties into the Morey Creek Interceptor and primarily collects wastewater from the UVA Fontaine Research Park and a small portion of the adjacent City of Charlottesville neighborhoods. As a result of growth at the research park and increasing wastewater flows, the sewer line will need to be upsized to 12-inch diameter ductile iron pipe to properly convey flows for current and future needs. Since the existing pipe is also a clay sewer, the system has experienced a significant amount of inflow and infiltration (I&I). Installing a new ductile iron pipe and concrete manholes will reduce the I&I in the system and have a positive impact on the capacity of downstream sewers as well. Staff continues to coordinate with UVA staff on the upcoming expansion of the Fontaine Research Park, so flows in the existing sewer can be monitored accordingly.
39. Crozet Pump Station 1, 2, and 3 Rehabilitation: The Crozet Interceptor Pump Stations were constructed in the 1980's and many of the components are original. This project initially included the replacement of pumps and valves at Pump Station 2 in order to improve pumping capabilities at this location and provide spare parts for the pumps at Pump Station 1. It also included roof replacements at all four pump stations, siding replacement for the wet well enclosure at Pump Station 3, and installation of new wells at Pump Stations 3 and 4. The pump station improvements now also include new electrical motor control centers as they are obsolete and past their useful life, generators, power transfer switches, pumps and valves at all pump stations.

40. Albemarle Berkley Pump Station Upgrade: The Albemarle-Berkeley Pump Station was constructed in 1975 and conveys flows from several Albemarle County Public Schools (ACPS) and other ACSA customers into RWSA's gravity Albemarle-Berkeley Interceptor. Recently, the pump station's run times have increased, with the pumps running nearly continuously for some periods. It is anticipated that much of the pumping infrastructure has reached or exceeded its expected lifespan, and that the equipment may be in need of replacement.

A Capacity Analysis of the existing pump station has been completed, utilizing present flow rates, area-specific population projections, and known development projects on and adjacent to the ACPS campus in order to provide pump station buildout sizing to serve the area for the next 50 years. With the Capacity Analysis complete, this Pump Station Upgrade Project will utilize consultant assistance in order to formulate a set of bidding documents that will include the construction of a new pumping station that is sized to meet the current and future flows as determined by the Capacity Analysis, along with all equipment necessary for staff to safely remove individual pumps from service for maintenance purposes or temporarily bypass the station entirely as needed. Once the new pump station has been constructed and is in service, the existing pump station will be demolished, with that portion of the site returned to pre-existing conditions. This project is also being coordinated with the ongoing ACPS Master Planning Process.

39. Interceptor Sewer and Manhole Repair - Phase 2: This project is used to conduct assessments of various interceptors as well as rehabilitation of interceptors that do not have a separate CIP project. Phase 1 of the Interceptor Sewer and Manhole Repair Project included completion of the baseline evaluation of all RWSA interceptors (except the 42/48" Upper Rivanna Interceptor & those replaced with new pipe), as well as completion of rehabilitation on the Upper Morey Creek Interceptor and high-priority rehabilitation on the Powell Creek and Woodbrook Interceptors. Planned projects for Phase 2 include completion of the baseline evaluation by performing closed-circuit television inspections of the Upper Rivanna Interceptor. In addition, the force mains on the Crozet and Albemarle-Berkely Interceptors will be inspected, as well as inverted siphons on the Powell Creek and Moores Creek Interceptors. These inspections will require specialty equipment to complete due to the vastly different flow conditions in these portions of the interceptors. Additional high-priority rehabilitation, possibly on the Maury Hills Branch Interceptor and other sewers, will be completed under this phase as funds allow, with additional rehabilitation efforts to take place under Phase 3. Sanitary sewer evaluation includes identification of inflow & infiltration (I & I), as well as structural defects and other maintenance issues to enable overall program planning and future rehabilitation scoping. Rehabilitation of existing sanitary sewer pipe and manholes reduces Inflow & Infiltration (I & I) in the system, thus reducing the chance for sanitary sewer overflows (SSOs) during high flow events and protecting downstream treatment processes.
40. Interceptor Sewer and Manhole Repair - Phase 3: This project is used to conduct assessments of various interceptors as well as rehabilitation of interceptors that do not have a separate CIP project. Phase 2 of the Interceptor Sewer and Manhole Repair Project, which is currently underway, includes completion of the baseline evaluation of all RWSA interceptors, including the 42-48" Upper Rivanna Interceptor, gravity portions of the Crozet Interceptor (downstream of Crozet Pump Station No. 4), force mains on the Crozet and Albemarle-Berkeley

Interceptors, as well as inverted siphons on the Powell Creek and Moores Creek Interceptors. Phase 3 of this project will take data from the previous two phases and utilize that to perform rehabilitation on RWSA's largest interceptors, including the Moores Creek Interceptor, Upper Rivanna Interceptor, Crozet Interceptor, and others. Rehabilitation is anticipated to include continued usage of cured in place piping (CIPP) and point replacements of pipe as necessary, as well as cementitious manhole coatings and frame and cover replacements.

## Urban Wastewater Interceptors/Pumping Stations

Line No.	Proj. No.	Project Description	Five-Year Capital Program			Projected Future Expenses by Year					Recommended CIP	Work-in-Progress (Prev. Expenses 6/30/2023)
			Current CIP Adopted 5/2023	Proposed Changes	Current Capital Budget	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029		
37	20.25	Upper Schenks Branch Interceptor	\$5,300,000	\$600,000	\$4,725,000		\$400,000	\$775,000			\$5,900,000	\$50,787
38	20.29	Maury Hill Branch Sewer Replacement	\$350,000	\$1,650,000					\$350,000	\$1,650,000	\$2,000,000	
39	20.30	Crozet Pump Station 1, 2, 3 Rehabilitation	\$10,350,000	\$550,000	\$1,105,000	\$2,100,000	\$5,795,000	\$1,900,000			\$10,900,000	\$42,267
40	20.31	Albemarle Berkley Pump Station Upgrade	\$115,000	\$725,000					\$130,000	\$710,000	\$840,000	
41	21.07	Interceptor Sewer and Manhole Repair (Phase 2)	\$1,230,000	\$195,000	\$1,010,000	\$80,000	\$335,000				\$1,425,000	\$193,423
42	24.02	Interceptor Sewer and Manhole Repair (Phase 3)	\$600,000	\$1,145,000					\$615,000	\$1,130,000	\$1,745,000	
		TOTAL	\$17,945,000	\$4,865,000	\$6,840,000	\$2,180,000	\$6,530,000	\$2,675,000	\$1,095,000	\$3,490,000	\$22,810,000	\$286,477

## **Moores Creek Advanced Water Resource Recovery Facility**

The Moores Creek Advanced Water Resource Recovery Facility (MCAWRRF) is the largest wastewater treatment facility within the RWSA system. The plant was originally constructed in 1958 and upgraded and expanded in 1981 and 1982, and currently has a rated capacity of 15 mgd. From 2009 thru 2012 the facility was again upgraded to provide enhanced nutrient removal, and increased wet weather pumping and treatment capacity. This site includes the infrastructure for the wastewater treatment process as well as the RWSA administration facilities.

### **Project Descriptions:**

43. Moores Creek AWRRF Engineering and Administration Building: RWSA currently has its administrative headquarters in two buildings on the grounds of the Moores Creek Advanced Water Resource Recovery Facility. The two-story Administration Building was constructed in the late 1970's and houses offices, IT server space, meeting space and a full-service laboratory. The second building is a series of four trailers installed between 2003-2010 that house the Engineering department. There is currently a need to house additional staff; increase office and meeting space; plan for the replacement of the trailers; increase available parking; bring the IT server workrooms to modern standards; and provide classroom space for education outreach. This project was coordinated with the recent MCAWRRF Master Plan and expansion of the building will take place primarily in the lower parking lot adjacent to the existing building.
44. Moores Creek AWRRF Biogas Upgrades: The MCAWRRF has an existing cogeneration facility that was constructed in 2011. The purpose of the facility was to provide a beneficial purpose for using the gas produced by the digester process at the plant, and in doing so provide both process heating fluid to the digester tanks and electrical energy to the plant's electrical distribution system. Unfortunately, the existing cogeneration facility requires expensive recurring maintenance services, has proprietary equipment which further complicates servicing needs, and has had a number of operational issues that have impeded the benefit this facility was intended to provide. As a result, a Cogeneration System Analysis was performed to determine a recommended approach for proceeding with improvements to the existing facility, installation of a new cogeneration facility without the issues of the previous facility or removing the cogeneration facility altogether and providing a backup boiler. Following this analysis and the initial decision to proceed with replacement of the cogeneration facility, a State of the Industry study was performed, which found that many of the aforementioned issues are common across almost all cogeneration installations. This prompted staff to perform a wider study of the industry as a whole in which it was found that many facilities are transitioning to treating the digester gas produced and transferring the gas into local natural gas pipelines so it can be reused by residential and commercial consumers. While this is still being examined by RWSA and the City of Charlottesville, whom operates the gas utility in this area, the current project budget assumes implementation of this type of system. In addition to the gas conditioning system, this project also includes rehabilitation of the existing Methane Sphere at MCAWRRF, in order to extend its service life in accordance with the MCAWRRF Master Plan.

As the preliminary biogas evaluation is completed and a method to beneficially reuse the gas is finalized, staff will utilize consultant assistance to design and bid a project that not only allows the chosen technology to be implemented, but also performs critical spot and coating repairs to the existing gas sphere that was constructed in the 1980s. The work will also include adjustments as appropriate to the biogas processing system.

45. Moore's Creek AWWRF Building Upfits and Gravity Thickener Improvements: This project will address the renovation needs of the current Maintenance and Operations building space requirements, improvements to the existing gravity thickener system, and installation of actuators on the secondary clarifier influent gate valves. The Moore's Creek Maintenance and Operations Department facilities are over 40 years old, no longer meeting current staffing and operational needs. In accordance with the Moore's Creek Master Plan, this project will increase and update personnel spaces such as offices, lunchrooms, labs, and locker rooms in the Maintenance, Blower, and Sludge Pumping Buildings to meet needs over an interim timeframe of approximately 15 years. Additionally, the project will construct increased oil and grease storage that will meet all current best practices for safety and address the need for additional parts storage. As part of the existing gravity thickener system, RWSA added temporary provisions to dose polymer to improve settling and thickening performance, which has proved to be effective and increased operational performance. The current polymer feed system consists of a bulk polymer tote stored on grade adjacent to the gravity thickener rapid mix and splitter structure. The current system is uncovered and manually operated with totes being moved as needed for chemical feed. This project will allow for a permanent polymer feed system with proper provisions for chemical deliveries and weather protection, including additional space for sodium hypochlorite chemical storage and feed as part of the gravity thickener odor control system. The relocation of the sodium hypochlorite storage and feed will also allocate spacing needs as part of the previously discussed operational building renovations in the existing Sludge Pumping Building. Furthermore, access points will be installed on the thickener effluent line feeding the existing sludge pumps to allow for flushing, cleaning and inspection efforts to occur. Finally, the current secondary clarifier influent gate valves are manually operated, which can be time consuming, and during a wet weather event, the clarifiers need to be placed in service as quickly and safely as possible. The use of SCADA controlled actuators would streamline the process immensely. This work includes the installation of eight (8) new actuators on the influent gates of the secondary clarifiers.
46. Moore's Creek AWWRF Meter and Valve Replacements: As part of the 2018 Odor Control Phase II Project, the post digestion clarifiers were eliminated from use and the gravity thickener overflow was diverted through existing piping directly to the Moore's Creek Pump Station at the head of the treatment facility. This resulted in less odor generation, however, the gravity thickener overflow lost its metering location at the post digestion clarifiers. A new metering manhole location was installed near the Moore's Creek Pump Station where several plant recycle flows come together. Unfortunately, this meter location has been problematic and is subject to backwater flows from the pump station and meter fouling from grease and solids. This project includes evaluation and implementation of alternatives for installation of individual meters on each recycle flow line at locations that will provide less operation and maintenance problems.

The circulation of Waste Activated Sludge (WAS) and Return Activated Sludge (RAS) is important in the wastewater process to maintain a healthy balance of microorganisms. The existing WAS and RAS flow meters are original to the 1980's construction of the facility and are nearly 40 years old. These meters can no longer be calibrated and replacement parts are not available. Replacement of these existing meters, in addition to installation of new meters for the primary and thickened sludge is necessary for process and operational efficiency and is currently under construction.

47. Moore's Creek AWWRF 5kV Electrical System Upgrade: After discussions through the Moore's Creek Facilities Master Plan, it was identified that several areas of the MCAWWRF, including the Blower Building, Sludge Pumping Building, Grit Removal Building, Moore's Creek Pumping Station, and the Administration Building are all still connected to the original 5kV switchgear in the Blower Building. This equipment, including the associated cabling, switchgear, transformers, and motor control centers (MCCs), has a useful life expectancy of 20-30 years. Most of this equipment was installed around 1980. With the equipment having well exceeded its useful life expectancy at this point, safety is a concern given the large electric loads that the cabling and other equipment are handling on a day-to-day basis. Failure of the existing 5kV infrastructure could also result in temporary outages of certain treatment processes, and repairs could take weeks to months given the lead times associated with equipment of this age. In July 2020, staff recommended that a CIP Project be started as soon as possible to encompass replacement of the original 1980s-vintage 5kV cables, switchgear, transformers, and MCCs. Construction is underway, although severe lead time issues have been experienced on the new electrical equipment being installed under the project. All work has been coordinated with the Moore's Creek Facilities Master Plan.
48. Moore's Creek AWWRF Yard Piping Upgrades: The original 36-inch Rivanna Pump Station force main was constructed around 1980 and carried flow from the original 25 MGD pump station in Riverview Park. Now that the pump station has been relocated to MCAWWRF and upsized to 53 MGD, it is desirable to install a second force main based on the age of the pipe and for redundancy. This work will include construction of a second parallel 36-inch force main from the Rivanna Pump Station, across Moore's Creek, and up to the headworks. A routing study will be completed prior to completion of the new Administration Building to minimize potential conflicts with future force main construction.
49. Moore's Creek AWWRF Structural and Concrete Rehabilitation: This project comprises rehabilitation, repair and installation of multiple structural components throughout the MCAWWRF facility, to include concrete repairs in both the equalization basins and holding ponds, rehabilitation to the existing primary clarifiers and associated influent splitter box, installation of a bridge crane over the aeration basins for NRCY pump removal, improved access to the elevated valves and associated actuators in the Rivanna pump station, and rehabilitation to both the digester complex and compost shed roof and drainage system.

The existing holding ponds and equalization basins were constructed in 1977 and are showing signs of degradation. With now completed condition assessment inspections and subsequent recommendations, this project includes crack repair, spalling repair, joint repair, and coating of miscellaneous metals and valves associated with these critical structures.

Inspections performed on the two existing primary clarifiers and associated influent splitter box noted several deficiencies including structural and mechanical components, concrete degradation and corrosion around pipe penetrations in need of repair or replacement, and due to advanced corrosion of metal components within the clarifiers, coatings were recommended to avoid additional deterioration. This project will provide for the rehabilitation, replacement and/ or coatings of these previously identified components within the primary clarifiers and influent splitter box.

The aeration basins located at Moores Creek are a series of chambers that each have uniquely controlled oxygen and nutrient loading conditions. Mid-way thru the basins is ten nutrient recycle (NRCY) pumps. When maintenance or replacement of these pumps are required, staff must currently hire a long boom crane, which can be costly and disruptive to operations, especially in emergency conditions. This project will provide for the permanent means to remove and reinstall existing NRCY pumps.

Two of the six pumps in the Rivanna Pump Station are smaller and were designed to be replaced if future average day flows warrant increased capacity. The current configuration resulted in some valves being located approximately 40 feet above the pump floor level. Valve maintenance activities have been challenging due to their height. A project is proposed to either modify the piping configuration or install a catwalk from the upper mezzanine level to each valve to provide a safer means of accessing each valve.

Moores Creek AWRRF has five digester vessels. The two smaller digesters were part of the original 1958 plant construction. The three larger digesters were part of the 1979 plant upgrades following construction of the bridge over Moores Creek and the south side of the plant. Although numerous upgrades have been constructed at the digester complex over the last 11 years (including heating, mixing, gas compression, and roof repairs), the overall condition of the concrete and complex is reaching its useful life. This project includes addressing remaining repairs to the existing digester complex, including safety repairs, to extend the useful life approximately 10-15 years while RWSA plans, designs, and constructs a new digester complex at another location on the Moores Creek site.

Finally, in the early 1980's a large metal-framed roof was constructed to house the biosolids composting operations, which has subsequently ceased operation. The area was repurposed as a covered equipment maintenance yard, solids handling facility and material storage lock-up. The roof system is exhibiting signs of rafter deterioration and ongoing drainage and leakage issues. This project will evaluate and perform remediation needs at this facility.

50. Moores Creek AWRRF MCPS Slide Gates, Valves and Bypass & Septage Receiving Upgrades: Through separate procurements, previous inspections of the large aluminum slide gates at the influent side of the Moores Creek Pump Station have been conducted to determine the extent of repairs needed to stop them from leaking. Results of these investigations will be used to design the repair of the existing slide gates and add new gates so staff can have the flexibility to stop or divert flow to perform maintenance activities. In addition, this project will include the repair of 3 control valves within the pump station and provide permanent

bypass connections so the entire pump station can be bypassed more efficiently in the future when needed. To reduce odors and address maintenance concerns at the existing north septage receiving station, the project will enclose the leachate discharge pit, provide for better containment of discharged materials, and install rock traps and grinders with all associated process piping to prevent downstream blockages at the Moores Creek Pump Station.

51. Moores Creek AWRRF Blower Building Ventilation Improvements: The existing blower building at the MCAWWRF currently experiences issues related to high temperatures occurring within the building. The original building was designed for aeration blowers and a plant generator and was retrofitted to remove all this equipment and now houses upgraded blowers for the plant aeration treatment system. However, the heat generation from the newer equipment has been creating intermittent issues with high ambient temperatures causing blower equipment to fault out in warmer months due to current ventilation not being adequate. This project will look to evaluate and upgrade the ventilation system to ensure reliability for critical process operation and eliminate the excessive heat generation issues.

## Moores Creek Advanced Water Resource Recovery Facility

Line No.	Proj. No.	Project Description	Five-Year Capital Program			Projected Future Expenses by Year					Recommended CIP	Work-in-Progress (Prev. Expenses 6/30/2023)
			Current CIP Adopted 5/2023	Proposed Changes	Current Capital Budget	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029		
43	20.34	Moores Creek AWRRF Engineering and Administration Building	\$10,500,000	\$9,500,000	\$1,200,000	\$8,300,000	\$10,500,000				\$20,000,000	\$246,592
44	20.40 20.67	Moores Creek AWRRF Biogas Upgrades	\$3,595,000	\$2,055,000	\$3,365,000		\$1,770,000	\$515,000			\$5,650,000	\$61,484
45	20.68	Moores Creek AWRRF Building Upfits and Gravity Thickener Improvements	\$4,555,000	\$595,000	\$1,265,000	\$2,990,000	\$895,000				\$5,150,000	\$17,011
46	21.11 21.17	Moores Creek AWRRF Meter and Valve Replacements	\$775,000	(\$300,000)	\$775,000	(\$300,000)					\$475,000	\$163,254
47	21.18	Moores Creek AWRRF 5kV Electrical System Upgrade	\$5,635,000	\$565,000	\$5,830,000	\$370,000					\$6,200,000	\$1,245,490
48	22.10	Moores Creek AWRRF Yard Piping Upgrades	\$315,000	\$485,000		\$30,000			\$390,000	\$380,000	\$800,000	
49	20.39 20.67 22.11 22.12 24.07	Moores Creek AWRRF Structural and Concrete Rehabilitation	\$11,300,000		\$7,095,000		\$4,205,000				\$11,300,000	\$17,572
50	24.08 21.19	Moores Creek AWRRF MCPS Slide Gates, Valves, Bypass and Septage Receiving Upgrades	\$3,600,000		\$330,000	\$2,055,000	\$1,215,000				\$3,600,000	
51	25.07	Moores Creek AWRRF Blower Building Ventilation Improvements		\$600,000		\$80,000	\$520,000				\$600,000	
		<b>TOTAL</b>	<b>\$40,275,000</b>	<b>\$13,500,000</b>	<b>\$19,860,000</b>	<b>\$13,525,000</b>	<b>\$19,105,000</b>	<b>\$515,000</b>	<b>\$390,000</b>	<b>\$380,000</b>	<b>\$53,775,000</b>	<b>\$1,751,403</b>

## Scottsville Wastewater System

The Scottsville Wastewater System includes the influent pumping station, the Water Resource Recovery Facility (WRRF) constructed in 1983, and the historical treatment lagoon (now incorporated into the plant operation). The water resource recovery facility has a rated capacity of 0.2 mgd.

### Project Descriptions:

52. Scottsville WRRF Whole Plant Generator and ATS: The current back-up power generator at the Scottsville Water Resource Recovery Facility does not power the entire plant. It serves only the facilities needed to send flow to the lagoon for storage and UV disinfection. This project will provide back-up power for the entire plant and influent pump station and will offer greater treatment flexibility and monitoring capability for the operations staff, particularly when the plant is unmanned and monitored remotely.
53. Scottsville Lagoon Outfall Rehabilitation: The Scottsville Wastewater Lagoon outfall is original to the wastewater plant from its construction. The overflow tower was recently inspected in 2021 by Bander Smith and repairs were recommended. The concrete tower has four intakes, and the fourth intake is currently buried under debris. The tower is in fair condition and could use some general concrete repairs. All valves are recommended for replacement and removal of 2-3 feet of material is recommended from around the outflow tower.
54. Scottsville WRRF Polymer Feed Addition: The Scottsville WRRF Polymer Feed system has reached the end of its useful life and needs replacement. This project will focus on constructing a new polymer feed system and an enclosure to house the chemicals for the plant.

## Scottsville Water Resource Recovery Facility

Line No.	Proj. No.	Project Description	Five-Year Capital Program			Projected Future Expenses by Year					Recommended CIP	Work-in-Progress (Prev. Expenses 6/30/2023)
			Current CIP Adopted 5/2023	Proposed Changes	Current Capital Budget	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029		
52	21.12	Scottsville WRRF Whole Plant Generator and ATS	\$520,000		\$495,000	\$25,000					\$520,000	\$65,940
53	23.24	Scottsville WRRF Lagoon Outfall Rehabilitation	\$25,000	\$275,000					\$30,000	\$270,000	\$300,000	
54	23.25	Scottsville WRRF Polymer Feed Addition	\$26,000	\$244,000					\$30,000	\$240,000	\$270,000	
		TOTAL	\$571,000	\$519,000	\$495,000	\$25,000	\$0	\$0	\$60,000	\$510,000	\$1,090,000	\$65,940

## **Glenmore Wastewater System**

The 0.381-mgd water resource recovery facility, located within the Glenmore subdivision, is owned by ACSA and operated by RWSA. The facility includes an influent pumping station located immediately adjacent to the treatment facility.

### **Project Descriptions:**

55. Glenmore WRRF - Polymer Feed Addition: The Glenmore WRRF currently has two existing automated chemical feed systems, one of which includes polymer. The polymer system is primarily used to feed polymer to the WAS as a settling aid for the sludge holding tank. The current systems are near the end of their useful life and are in need of replacement. The new polymer feed system will consist of drums or totes and chemical feed pumps to dose polymer to the WAS to improve sludge settling in the digester.
56. Glenmore WRRF - Upgrade: The Glenmore WRRF was originally constructed in 1993 and much of the original facility remains in service. As a result of the age several needs assessment for the facility were completed that identified a number of additional improvements required to maintain quality service for the Glenmore community. The most recent needs assessment included improvements to the influent pump station coarse screen, influent pump station dry well ventilation, aeration blower, aeration basin, RAS/WAS pump station, chemical feed system, flocculator paddle, UV disinfection channel, non-potable water system, emergency generator, and capital equipment replacement or rehabilitation.

## Glenmore Water Resource Recovery Facility

Line No.	Proj. No.	Project Description	Five-Year Capital Program			Projected Future Expenses by Year					Recommended CIP	Work-in-Progress (Prev. Expenses 6/30/2023)
			Current CIP Adopted 5/2023	Proposed Changes	Current Capital Budget	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029		
55	23.26	Glenmore WRRF Polymer Feed Addition	\$30,000	\$280,000					\$40,000	\$270,000	\$310,000	
56	24.14	Glenmore WRRF Upgrade		\$1,335,000		\$75,000	\$750,000	\$60,000		\$450,000	\$1,335,000	
		TOTAL	\$30,000	\$1,615,000	\$0	\$75,000	\$750,000	\$60,000	\$40,000	\$720,000	\$1,645,000	\$0

## All Systems

### Project Descriptions:

57. Asset Management: Asset management is the practice of managing infrastructure to minimize the total cost of owning and operating assets while providing desired levels of service. By doing so, asset management ensures planned maintenance activities occur and that capital assets are replaced, repaired, or upgraded at the right time, while guaranteeing the necessary resources are available to perform these activities. When the project began, RWSA had some components of an asset management program in place (i.e. GIS and a work order system), but through the Strategic Planning process identified the need to further develop the program. To fully realize the program, a consultant was procured to assist with a four-phase implementation process. Phase one included facilitation and development of an asset management strategic plan; phase two included development and management of a pilot study where the results of the strategic plan were applied to a specific facility; phase three included procurement and implementation of software (Cityworks) to facilitate the overall program; and phase 4 includes assistance through full implementation of the complete asset management program. With phases one through three complete, RWSA is focusing its efforts on completing phase four, full asset management implementation.
58. Security Enhancements: Water utilities are required by federal law to conduct vulnerability assessments (VA) and have emergency response plans. RWSA completed an update of its VA for the water system in collaboration with other regional partners and identified a number of security improvements that could be applied to both its water and wastewater systems. The purpose of this project was to install security improvements at RWSA facilities, with the initial focus on an enhanced access control program. Other improvements will include: industrial strength door and window components, security gate and fencing modifications, an improved lock and key program, facility signage, closed circuit television (CCTV) enhancements, intrusion detection systems (IDS), additional security lighting, mass emergency notification systems, and emergency call stations/panic buttons. In addition, upgrades will be made to the entrance of MCAWRRF, to better secure the facility and vet individuals as they enter. In order to implement an access control system at Authority-owned facilities, staff procured an Implementer to finalize system design/requirements, procure all necessary equipment, and install the chosen system. Access control system implementation is nearly complete across all RWSA facilities; however, work continues to finalize this process. As such, the budget is being partially capitalized.
59. IT Infrastructure: At many remote water storage tank sites, control panels and PLCs associated with operation and monitoring of the tanks are located in valve vaults. These locations are a concern based on limited access to the electrical and instrumentation components as well as the condition of the space and the associated impact to the longevity of the devices. This project includes installation of new control panels and PLCs aboveground in weatherproof enclosures under a self-supporting canopy that would protect staff from direct weather impacts during operation or maintenance activities at seven water storage tank sites throughout the RWSA water distribution system. The components located in the valve vaults would be demolished after the new components were installed to minimize monitoring downtime.

60. ACM Remediation: Based on the age of many RWSA facilities, the potential for the presence of Asbestos-Containing Materials (ACM) in various buildings has been assumed. A 2005 Workplace Assessment that evaluated the presence of ACM at the Moores Creek Advanced Water Resource Recovery Facility (MCAWRRF) was performed and then many facilities had individual assessments prior to construction projects where the ACM needed to be disposed of properly before refurbishment of the existing building or as a part of a larger demolition process. In order to confirm the presence of any ACM at all remaining RWSA facilities, an asbestos survey was completed in 2022. Based on this report, additional abatement procedures were identified for seven buildings at the MCAWRRF that had not been remediated previously and the filter building at the Scottsville Water Treatment Plant. This project includes proper removal and disposal of these ACM and refurbishment of the associated building components required as a result.
61. Climate Change Flood Resilience Enhancements: RWSA owns and operates a number of water and wastewater facilities that may be at risk of future flooding. One of the ways climate change is expected to manifest itself in Central Virginia is via more frequent and intense rainfall and flooding events. While RWSA facilities were generally designed to perform during 100-year flood level conditions, future flooding could result in higher water levels that would require facility improvements to ensure continued operation during these events. This project includes installation of flood mitigation measures at vulnerable assets/facilities throughout the RWSA system that are likely to be impacted by these potential higher flood levels. Necessary improvements have been identified at six separate facilities and multiple structures and buildings at many of the sites. Improvements include raising electrical and control equipment to higher levels, replacement of existing pumps with submersible style/rated pumps, raising HVAC intakes and exhausts to higher elevations, and dry floodproofing structures when feasible to minimize floodwater intrusion.
62. Radio Upgrades: The regional 800 MHz Public Safety Communication System, in which the Rivanna Water and Sewer Authority participates in to provide internal and emergency radio communication, was nearing the end of its service life. Because of technology changes (software and hardware) the Charlottesville-UVA-Albemarle County Emergency Communications Center (ECC) needed to upgrade or replace the system to keep it useable. This project planned for the upgrade or replacement of major technology components and equipment of the existing system include electronic components at all tower sites and the prime site at the ECC facility; new console equipment at the regional ECC; equipment such as tower site generators and UPS systems; an additional tower site (to improve service in southern Albemarle County); microwave backbone; and replacement of the system recording facilities. RWSA was apportioned a part of the project cost proportionately based on the number of radios. In addition to this assessment from the ECC, the Authority replaced its fleet of portable radios.
63. IT Equipment Secure Cabinets: As part of our overall Cyber Security initiatives, specifically physical security, we are in the process of making sure all of our facilities have a locked network cabinet/rack or a locked closet for all IT networking equipment. This also includes all of our remote Tanks, and Pump Stations. Currently we are over 50% complete. Any new or current capital improvement projects at all locations, we are securing the network cabinets

and when appropriate, separating the network equipment in an environmentally controlled closet.

64. eV Charging Infrastructure: This project will investigate and implement eV charging infrastructure for staff and visitor vehicles as well as RWSA fleet vehicles and rolling stock. Initially charging facilities will be predominantly at Moores Creek AWRRF, where staff and visitor density is the highest. This will allow for greater utilization of the charging facilities. As the eV fleet expands, additional charging locations will be added. This project will be performed in concert with building renovations and fleet conversion to hybrid and electric vehicles.

## All Systems

Line No.	Proj. No.	Project Description	Five-Year Capital Program			Projected Future Expenses by Year					Recommended CIP	Work-in-Progress (Prev. Expenses 6/30/2023)
			Current CIP Adopted 5/2023	Proposed Changes	Current Capital Budget	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029		
57	20.45	Asset Management	\$752,448		\$717,448	\$35,000					\$752,448	\$3,884
58	20.46	Security Enhancements	\$2,980,000		\$2,695,000	\$285,000					\$2,980,000	\$1,225,484
59	20.47	IT Infrastructure	\$373,250	\$226,750	\$373,250	\$226,750					\$600,000	
60	23.27	ACM Remediation	\$94,000	\$617,000					\$96,000	\$615,000	\$711,000	
61	24.06	Climate Change Flood Resilience	\$130,000	\$670,000	\$130,000					\$670,000	\$800,000	
62	25.10	Radio Upgrades		\$210,988		\$210,988					\$210,988	
63	25.08	IT Equipment Secure Cabinets		\$200,000			\$120,000	\$80,000			\$200,000	
64	25.09	eV Charging Infrastructure		\$135,000		\$30,000	\$35,000		\$35,000	\$35,000	\$135,000	
		TOTAL	\$4,329,698	\$2,059,738	\$3,915,698	\$787,738	\$155,000	\$80,000	\$131,000	\$1,320,000	\$6,389,436	\$1,229,368

## **APPENDICES**

**CIP Financial Summary**

**Water System Summary**

**Wastewater System Summary**

**All Systems Summary**

## CIP Financial Summary

Line No.	Proj. No.	Project Description	Five-Year Capital Program			Projected Future Expenses by Year					Recommended CIP	Work-in-Progress (Prev. Expenses 6/30/2023)
			Current CIP Adopted 5/2023	Proposed Changes	Current Capital Budget	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029		
1	20.03	Ragged Mountain Reservoir to Observatory Water Treatment Plant Raw Water Line	\$33,000,000	\$500,000	\$3,900,000	\$6,290,000	\$9,110,000	\$9,100,000	\$5,100,000	\$0	\$33,500,000	\$436,775
2	20.04	Ragged Mountain Reservoir to Observatory Water Treatment Plant Raw Water Pump Station	\$11,300,000	\$1,050,000	\$2,175,000	\$2,065,000	\$3,170,000	\$3,170,000	\$1,770,000	\$0	\$12,350,000	\$346,983
3	20.48	South Rivanna Reservoir to Ragged Mountain Pipeline, Intake & Facilities	\$39,665,000	\$35,660,000	\$4,780,000	\$2,600,000	\$15,935,000	\$15,980,000	\$16,490,000	\$19,540,000	\$75,325,000	\$295,733
4	23.02	South Rivanna Reservoir Aeration and Ragged Mountain Reservoir HLOS Sytems	\$1,400,000	\$5,200,000	\$0	\$0	\$0	\$0	\$1,500,000	\$5,100,000	\$6,600,000	\$0
5	20.06	Observatory Water Treatment Plant - Improvements	\$2,000,000		\$2,000,000						\$2,000,000	
6	25.05	Observatory Water Treatment Plants - Hypo Tank Replacements		\$300,000		\$35,000	\$105,000	\$160,000			\$300,000	
7	23.05	Observatory Water Treatment Plant - Backwash Basin Sludge Removal and Inspection	\$50,000	\$515,000	\$0	\$0	\$0	\$0	\$80,000	\$485,000	\$565,000	\$0
8	20.16	South Rivanna Water Treatment Plant - Improvements	\$1,900,000		\$1,900,000						\$1,900,000	
9	23.11	South Rivanna Water Treatment Plant - Sanitary Sewer Connection		\$750,000				\$165,000	\$285,000	\$300,000	\$750,000	
10	23.04 23.09	Urban Water Treatment Plants - GAC Building Dehumidification	\$200,000	\$1,975,000					\$235,000	\$1,940,000	\$2,175,000	

## CIP Financial Summary

(Continued)

Line No.	Proj. No.	Project Description	Five-Year Capital Program			Projected Future Expenses by Year					Recommended CIP	Work-in-Progress (Prev. Expenses 6/30/2023)
			Current CIP Adopted 5/2023	Proposed Changes	Current Capital Budget	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029		
11	22.08	South Rivanna Water Treatment Plant - Main Plant Generator Replacement		\$50,000						\$50,000	\$50,000	
12	20.18	North Rivanna Water Treatment Plant - Decommissioning	\$2,675,000	\$265,000	\$485,000	\$195,000	\$2,260,000				\$2,940,000	\$76,110
13	25.01	Dam Concrete and Steel Repairs		\$1,190,000		\$415,000	\$775,000				\$1,190,000	
14	24.01	South Rivanna Water Treatment Plant - PAC Upgrades	\$1,100,000		\$60,000	\$250,000	\$790,000				\$1,100,000	
15	25.04	Buck Mountain Property Dam Remediation	\$0	\$50,000	\$0	\$50,000	\$0	\$0	\$0	\$0	\$50,000	\$0
16	20.10	Central Water Line	\$41,000,000	\$6,000,000	\$4,300,000	\$7,250,000	\$10,350,000	\$10,350,000	\$10,350,000	\$4,400,000	\$47,000,000	\$1,040,961
17	20.12	South Fork Rivanna River Crossing	\$6,900,000	\$400,000	\$5,500,000	\$400,000	\$1,400,000	\$0	\$0	\$0	\$7,300,000	\$307,143
18	20.13	Airport Rd. Pump Station and North Rivanna Transmission Main	\$10,000,000	\$0	\$10,000,000	\$0	\$0	\$0	\$0	\$0	\$10,000,000	\$5,792,592
19	20.50	Avon, Pantops and Observatory Tank Painting	\$2,200,000	\$1,745,000	\$0	\$0	\$0	\$245,000	\$2,100,000	\$1,600,000	\$3,945,000	\$0
20	20.58	Second North Rivanna River Crossing and Select Pipe Replacement	\$30,000	\$620,000	\$0	\$0	\$0	\$0	\$30,000	\$620,000	\$650,000	\$0

## CIP Financial Summary

(Continued)

Line No.	Proj. No.	Project Description	Five-Year Capital Program			Projected Future Expenses by Year					Recommended CIP	Work-in-Progress (Prev. Expenses 6/30/2023)
			Current CIP Adopted 5/2023	Proposed Changes	Current Capital Budget	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029		
21	23.06	Emmet Street Betterment	\$10,650,000	(\$1,415,000)	\$2,495,000	\$2,020,000	\$2,225,000	\$1,250,000	\$1,245,000	\$0	\$9,235,000	\$1,111,388
22	24.09	Berkmar Drive Ext. Waterline - Phase 2	\$1,400,000	\$40,000	\$220,000	\$0	\$100,000	\$650,000	\$470,000	\$0	\$1,440,000	\$0
23	24.12	Urban Storage Evaluation and Tank(s) Addition	\$870,000	\$2,110,000	\$0	\$0	\$55,000	\$305,000	\$520,000	\$2,100,000	\$2,980,000	\$0
24	24.13	SCADA Panel Relocations	\$0	\$46,000	\$0	\$0		\$0	\$0	\$46,000	\$46,000	\$0
25	20.19	Beaver Creek Dam Alteration	\$22,700,000	\$1,000,000	\$3,975,000	\$0	\$5,825,000	\$6,900,000	\$7,000,000	\$0	\$23,700,000	\$987,079
26	20.20 21.15	Beaver Creek New Raw Water Pump Station & Intake	\$20,200,000	\$3,200,000	\$4,150,000	\$0	\$5,150,000	\$6,000,000	\$8,100,000	\$0	\$23,400,000	\$591,810
27	21.01	Buck's Elbow Tank and Waterball Painting	\$1,180,000	\$520,000	\$0	\$85,000	\$0	\$75,000	\$1,100,000	\$440,000	\$1,700,000	\$0
28	23.10	Crozet Water Treatment Plant - GAC Building Dehumidification	\$50,000	\$615,000	\$0	\$0	\$0	\$0	\$60,000	\$605,000	\$665,000	\$0
29	23.13	Crozet AC Pipe Replacement	\$450,000	\$725,000	\$0	\$0	\$0	\$0	\$450,000	\$725,000	\$1,175,000	\$0
30	23.14	Crozet Water Treatment Plant - Full GAC Treatment	\$6,550,000	\$0	\$1,450,000	\$0	\$3,890,000	\$1,210,000	\$0	\$0	\$6,550,000	\$0

## CIP Financial Summary

(Continued)

Line No.	Proj. No.	Project Description	Five-Year Capital Program			Projected Future Expenses by Year					Recommended CIP	Work-in-Progress (Prev. Expenses 6/30/2023)
			Current CIP Adopted 5/2023	Proposed Changes	Current Capital Budget	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029		
31	23.30	Crozet Finished Water Greyrock Pump Station	\$180,000	\$1,405,000	\$0	\$0	\$0	\$0	\$185,000	\$1,400,000	\$1,585,000	\$0
32	20.55	Crozet Ground Tank Painting	\$0	\$25,000	\$0	\$0	\$0	\$0	\$0	\$25,000	\$25,000	\$0
33	22.06	Scottsville Water Treatment Plant - Upgrade	\$550,000	\$800,000	\$0	\$0	\$0	\$0	\$550,000	\$800,000	\$1,350,000	\$0
34	22.07 23.17	Red Hill Water Treatment Plant - Upgrades & GAC Addition	\$740,000	\$70,000	\$511,000	\$299,000	\$0	\$0	\$0	\$0	\$810,000	\$42,486
35	23.16	Scottsville AC Pipe Replacement	\$80,000	\$195,000	\$0	\$0	\$0	\$0	\$85,000	\$190,000	\$275,000	\$0
36	23.18	Scottsville Water Treatment Plant - GAC Building Dehumidification	\$50,000	\$615,000	\$0	\$0	\$0	\$0	\$60,000	\$605,000	\$665,000	\$0
37	20.25	Upper Schenks Branch Interceptor	\$5,300,000	\$600,000	\$4,725,000	\$0	\$400,000	\$775,000	\$0	\$0	\$5,900,000	\$50,787
38	20.29	Maury Hill Branch Sewer Replacement	\$350,000	\$1,650,000	\$0	\$0	\$0	\$0	\$350,000	\$1,650,000	\$2,000,000	\$0
39	20.30	Crozet Pump Station 1, 2, 3 Rehabilitation	\$10,350,000	\$550,000	\$1,105,000	\$2,100,000	\$5,795,000	\$1,900,000	\$0	\$0	\$10,900,000	\$42,267
40	20.31	Albemarle Berkley Pump Station Upgrade	\$115,000	\$725,000	\$0	\$0	\$0	\$0	\$130,000	\$710,000	\$840,000	\$0

## CIP Financial Summary

(Continued)

Line No.	Proj. No.	Project Description	Five-Year Capital Program			Projected Future Expenses by Year					Recommended CIP	Work-in-Progress (Prev. Expenses 6/30/2023)
			Current CIP Adopted 5/2023	Proposed Changes	Current Capital Budget	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029		
41	21.07	Interceptor Sewer and Manhole Repair (Phase 2)	\$1,230,000	\$195,000	\$1,010,000	\$80,000	\$335,000	\$0	\$0	\$0	\$1,425,000	\$193,423
42	24.02	Interceptor Sewer and Manhole Repair (Phase 3)	\$600,000	\$1,145,000	\$0	\$0	\$0	\$0	\$615,000	\$1,130,000	\$1,745,000	\$0
43	20.34	Moore's Creek AWWRF Engineering and Administration Building	\$10,500,000	\$9,500,000	\$1,200,000	\$8,300,000	\$10,500,000	\$0			\$20,000,000	\$246,592
44	20.67	Moore's Creek AWWRF Biogas Upgrades	\$3,595,000	\$2,055,000	\$3,365,000	\$0	\$1,770,000	\$515,000	\$0	\$0	\$5,650,000	\$61,484
45	20.68	Moore's Creek AWWRF Building Upfits and Gravity Thickener Improvements	\$4,555,000	\$595,000	\$1,265,000	\$2,990,000	\$895,000	\$0	\$0	\$0	\$5,150,000	\$17,011
46	21.11	Moore's Creek AWWRF Meter and Valve Replacements	\$775,000	(\$300,000)	\$775,000	(\$300,000)	\$0	\$0	\$0	\$0	\$475,000	\$163,254
47	21.18	Moore's Creek AWWRF 5kV Electrical System Upgrade	\$5,635,000	\$565,000	\$5,830,000	\$370,000	\$0				\$6,200,000	\$1,245,490
48	22.10	Moore's Creek AWWRF Yard Piping Upgrades	\$315,000	\$485,000	\$0	\$30,000	\$0	\$0	\$390,000	\$380,000	\$800,000	\$0
49	22.12	Moore's Creek AWWRF Structural and Concrete Rehabilitation	\$11,300,000	\$0	\$7,095,000	\$0	\$4,205,000	\$0	\$0	\$0	\$11,300,000	\$17,572
50	24.08	Moore's Creek AWWRF MCPS Slide Gates, Valves, Bypass and Septage Receiving Upgrades	\$3,600,000	\$0	\$330,000	\$2,055,000	\$1,215,000	\$0	\$0	\$0	\$3,600,000	\$0

## CIP Financial Summary

(Continued)

Line No.	Proj. No.	Project Description	Five-Year Capital Program			Projected Future Expenses by Year					Recommended CIP	Work-in-Progress (Prev. Expenses 6/30/2023)
			Current CIP Adopted 5/2023	Proposed Changes	Current Capital Budget	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029		
51	25.07	Moore's Creek AWWRF Blower Building Ventilation Improvements	\$0	\$600,000	\$0	\$80,000	\$520,000	\$0	\$0	\$0	\$600,000	\$0
52	21.12	Scottsville WRRF Whole Plant Generator and ATS	\$520,000	\$0	\$495,000	\$25,000	\$0	\$0	\$0	\$0	\$520,000	\$65,940
53	23.24	Scottsville WRRF Lagoon Outfall Rehabilitation	\$25,000	\$275,000	\$0	\$0	\$0	\$0	\$30,000	\$270,000	\$300,000	\$0
54	23.25	Scottsville WRRF Polymer Feed Addition	\$26,000	\$244,000	\$0	\$0	\$0	\$0	\$30,000	\$240,000	\$270,000	\$0
55	20.42	Glenmore WRRF Polymer Feed Addition	\$30,000	\$280,000	\$0	\$0	\$0	\$0	\$40,000	\$270,000	\$310,000	\$0
56	24.14	Glenmore WRRF Upgrade	\$0	\$1,335,000	\$0	\$75,000	\$750,000	\$60,000	\$0	\$450,000	\$1,335,000	\$0
57	20.45	Asset Management	\$752,448	\$0	\$717,448	\$35,000	\$0				\$752,448	\$3,884
58	20.46	Security Enhancements	\$2,980,000	\$0	\$2,695,000	\$285,000	\$0				\$2,980,000	\$1,225,484
59	20.47	IT Infrastructure	\$373,250	\$226,750	\$373,250	\$226,750					\$600,000	
60	23.27	ACM Remediation	\$94,000	\$617,000	\$0	\$0	\$0	\$0	\$96,000	\$615,000	\$711,000	\$0

# CIP Financial Summary

(Continued)

Line No.	Proj. No.	Project Description	Five-Year Capital Program			Projected Future Expenses by Year					Recommended CIP	Work-in-Progress (Prev. Expenses 6/30/2023)
			Current CIP Adopted 5/2023	Proposed Changes	Current Capital Budget	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029		
61	24.06	Climate Change Flood Resilience	\$130,000	\$670,000	\$130,000	\$0	\$0	\$0	\$0	\$670,000	\$800,000	\$0
62	25.10	Radio Upgrades	\$0	\$210,988	\$0	\$210,988	\$0	\$0	\$0	\$0	\$210,988	\$0
63	25.08	IT Equipment Secure Cabinets	\$0	\$200,000	\$0	\$0	\$120,000	\$80,000	\$0	\$0	\$200,000	\$0
64	25.09	eV Charging Infrastructure	\$0	\$135,000	\$0	\$30,000	\$35,000	\$0	\$35,000	\$35,000	\$135,000	\$0
Total			\$282,220,698	\$88,779,738	\$79,011,698	\$38,546,738	\$87,680,000	\$58,890,000	\$59,481,000	\$47,391,000	\$371,000,436	\$14,362,248

## Water System Summary

	Summary			Projected Future Expenses by Year						
Urban Water System	Current CIP	Changes	Current Capital Budget	FY25	FY26	FY27	FY28	FY29	Recommended CIP	Work-in -Progress
<b>PROJECT COSTS</b>										
Community Water Supply Plan	\$ 85,365,000	\$ 42,410,000	\$ 10,855,000	\$ 10,955,000	\$ 28,215,000	\$ 28,250,000	\$ 24,860,000	\$ 24,640,000	\$ 127,775,000	\$ 1,079,491
Urban Water Treatment and Reservoir	4,025,000	5,095,000	4,445,000	945,000	3,930,000	325,000	600,000	2,775,000	13,020,000	76,110
Finished Water Storage/Distribution - Urban System	73,050,000	9,546,000	22,515,000	9,670,000	14,130,000	12,800,000	14,715,000	8,766,000	82,596,000	8,252,084
<b>Total Projects Urban Water Systems</b>	<b>\$ 162,440,000</b>	<b>\$ 57,051,000</b>	<b>\$ 37,815,000</b>	<b>\$ 21,570,000</b>	<b>\$ 46,275,000</b>	<b>\$ 41,375,000</b>	<b>\$ 40,175,000</b>	<b>\$ 36,181,000</b>	<b>\$ 223,391,000</b>	<b>\$ 9,407,685</b>
<b>FUNDING SOURCES URBAN SYSTEM - TO DATE</b>										
Work-in-Progress			\$ 9,407,700	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 9,407,700	
Debt Proceeds - 2018 & 2021Bond			4,216,100	-	-	-	-	-	4,216,100	
Capital Funds Available			-	-	-	-	-	-	-	
<b>SUBTOTAL</b>			<b>13,623,800</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>13,623,800</b>	
<b>FUNDING SOURCES URBAN SYSTEM - NEEDS</b>										
Future Cash reserve transfer to Capital Fund				\$ 1,000,000	\$ 1,000,000	\$ 1,000,000	\$ 500,000	\$ 500,000	\$ 4,000,000	
Grants				\$ 500,000	\$ 1,000,000	\$ 1,500,000	\$ 1,000,000		4,000,000	
New Debt Needed			20,291,200	20,070,000	44,275,000	38,875,000	38,675,000	35,681,000	197,867,200	
<b>SUBTOTAL</b>			<b>20,291,200</b>	<b>21,570,000</b>	<b>46,275,000</b>	<b>41,375,000</b>	<b>40,175,000</b>	<b>36,181,000</b>	<b>205,867,200</b>	
<b>TOTAL URBAN WATER FUNDING</b>			<b>\$ 33,915,000</b>	<b>\$ 21,570,000</b>	<b>\$ 46,275,000</b>	<b>\$ 41,375,000</b>	<b>\$ 40,175,000</b>	<b>\$ 36,181,000</b>	<b>\$ 219,491,000</b>	
									\$219,491,000	
<b>Estimated Bond Issues</b>					<b>\$84,636,200</b>		<b>\$113,231,000</b>		<b>\$197,867,200</b>	
	Summary			Projected Future Expenses by Year						
Non-Urban Water System	Current CIP	Proposed Changes	Current Capital Budget	FY25	FY26	FY27	FY28	FY29	Recommended CIP	Work-in -Progress
<b>PROJECT COSTS</b>										
Crozet Water System	\$ 51,310,000	\$ 7,490,000	\$ 9,575,000	\$ 85,000	\$ 14,865,000	\$ 14,185,000	\$ 16,895,000	\$ 3,195,000	\$ 58,800,000	\$ 1,578,890
Scottsville Water System	1,420,000	1,680,000	511,000	299,000	-	-	695,000	1,595,000	3,100,000	42,486
<b>Total Rural Water Systems</b>	<b>\$ 52,730,000</b>	<b>\$ 9,170,000</b>	<b>\$ 10,086,000</b>	<b>\$ 384,000</b>	<b>\$ 14,865,000</b>	<b>\$ 14,185,000</b>	<b>\$ 17,590,000</b>	<b>\$ 4,790,000</b>	<b>\$ 61,900,000</b>	<b>\$ 1,621,376</b>
<b>Non-URBAN FUNDING SOURCES</b>										
Work in Progress			\$ 1,621,400	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,621,400	
Grants				46,890	6,451,410	7,086,770	7,332,430		20,917,500	
Capital Funds Available			-						-	
Debt Proceeds - 2018 & 2021Bond			-	-	-	-	-	-	-	
Future Cash reserve transfer to Capital Fund			-	450,000	250,000	100,000	-	-	800,000	
New Debt Needed			8,464,600	(112,890)	8,163,590	6,998,230	10,257,570	4,790,000	38,561,100	
<b>TOTAL NON-URBAN WATER FUNDING</b>			<b>\$ 10,086,000</b>	<b>\$ 384,000</b>	<b>\$ 14,865,000</b>	<b>\$ 14,185,000</b>	<b>\$ 17,590,000</b>	<b>\$ 4,790,000</b>	<b>\$ 61,900,000</b>	
<b>Estimated Bond Issues</b>				<b>\$16,515,300</b>			<b>22,045,800</b>		<b>\$38,561,100</b>	



## All Systems Summary

	Summary			Projected Future Expenses by Year						
Shared Projects - All Rate Centers	Current CIP	Changes	Current Capital Budget	FY25	FY26	FY27	FY28	FY29	Recommended CIP	Work-in - Progress
<b>PROJECT COSTS</b>										
Authority Wide Projects	\$ 4,329,698	\$ 2,059,738	\$ 3,915,698	\$ 787,738	\$ 155,000	\$ 80,000	\$ 131,000	\$ 1,320,000	\$ 6,389,436	\$ 1,229,368
<b>Total Projects Urban Water Systems</b>	<b>\$ 4,329,698</b>	<b>\$ 2,059,738</b>	<b>\$ 3,915,698</b>	<b>\$ 787,738</b>	<b>\$ 155,000</b>	<b>\$ 80,000</b>	<b>\$ 131,000</b>	<b>\$ 1,320,000</b>	<b>\$ 6,389,436</b>	<b>\$ 1,229,368</b>
<b>FUNDING SOURCES</b>										
Work in Progress			\$ 1,229,400						\$ 1,229,400	
Possible Future Reserves			\$ 1,000,000	\$ 500,000	\$0			\$500,000	\$ 2,000,000	
New Debt Needed			\$ 1,686,298	\$ 287,738	\$ 155,000	\$ 80,000	\$ 131,000	\$ 820,000	\$ 3,160,036	
									-	
<b>TOTAL URBAN WATER FUNDING</b>			<b>\$ 3,915,698</b>	<b>\$ 787,738</b>	<b>\$ 155,000</b>	<b>\$ 80,000</b>	<b>\$ 131,000</b>	<b>\$ 1,320,000</b>	<b>\$ 6,389,436</b>	
<b>Estimated Bond Issues</b>					<b>\$3,160,036</b>					

Summary Information

	2025 - 2029 Adopted CIP	2024 - 2028 Adopted CIP	Change \$
<b><u>Project Cost</u></b>			
Urban Water Projects	\$ 223,391,000	\$ 209,590,000	\$ 13,801,000
Urban Wastewater Projects	76,585,000	58,220,000	18,365,000
Non-Urban Projects & Shared	71,024,400	58,315,000	12,709,400
<b>Total Project Cost Estimates</b>	<b>\$ 371,000,400</b>	<b>\$ 326,125,000</b>	<b>\$ 44,875,400</b>
<b><u>Funding in place</u></b>			
Work-in-Progress (paid for)	\$ 14,362,040	\$ 35,570,900	(21,208,860)
Debt Proceeds Available	9,353,800	25,472,300	(16,118,500)
Cash-Capital Available	1,300,000	2,000,000	(700,000)
	\$ 25,015,840	\$ 63,043,200	\$ (38,027,360)
<b><u>Financing Needs</u></b>			
Possible Future Reserves	\$ 12,800,000	\$ 10,435,000	2,365,000
Grants	24,917,500	20,560,000	4,357,500
New Debt	308,267,060	232,086,800	76,180,260
	\$ 345,984,560	\$ 263,081,800	\$ 82,902,760
<b>Total Funding</b>	<b>\$ 371,000,400</b>	<b>\$ 326,125,000</b>	<b>\$ 44,875,400</b>
Percentage of funding in place	6.7%	19.3%	
Ratio of debt to expense	89.5%	89.9%	
Ratio of grant to expense	6.7%	6.3%	
Ratio of cash to expense	3.8%	3.8%	

Summary Information

Detail by Major Systems	<u>Total CIP</u>	<u>Urban Water Projects</u>	<u>Urban Wastewater Projects</u>	<u>Shared Projects</u>	<u>Water Non-Urban Projects</u>	<u>Wastewater Non-Urban Projects</u>
<b><u>Project Cost</u></b>						
Urban Water Projects	\$ 223,391,000	\$ 223,391,000	\$ -		\$ -	\$ -
Urban Wastewater Projects	76,585,000	-	76,585,000		-	-
Non-Urban Projects & Shared	71,024,400	-	-	6,389,400	61,900,000	2,735,000
<b>Total Project Cost Estimates</b>	<b>\$ 371,000,400</b>	<b>\$ 223,391,000</b>	<b>\$ 76,585,000</b>	<b>\$ 6,389,400</b>	<b>\$ 61,900,000</b>	<b>\$ 2,735,000</b>
<b><u>Funding in place</u></b>						
Work-in-Progress (paid for)	\$ 14,362,040	\$ 9,407,500	\$ 2,037,800	\$ 1,229,400	\$ 1,621,400	\$ 65,940
Debt Proceeds available	9,353,800	8,116,000	1,237,800	-	-	-
Cash-Capital Available	1,300,000	-	1,300,000	-	-	-
Subtotal	\$ 25,015,840	\$ 17,523,500	\$ 4,575,600	\$ 1,229,400	\$ 1,621,400	\$ 65,940
<b><u>Financing Needs</u></b>						
Possible Future Reserves	\$ 12,800,000	4,000,000	6,000,000	2,000,000	800,000	-
Grants	24,917,500	4,000,000	-	-	20,917,500	
New Debt	308,267,060	197,867,500	66,009,400	3,160,000	38,561,100	2,669,060
Subtotal	\$ 345,984,560	\$ 205,867,500	\$ 72,009,400	\$ 5,160,000	\$ 60,278,600	\$ 2,669,060
<b>Total Funding</b>	<b>\$ 371,000,400</b>	<b>\$ 223,391,000</b>	<b>\$ 76,585,000</b>	<b>\$ 6,389,400</b>	<b>\$ 61,900,000</b>	<b>\$ 2,735,000</b>
Percentage of funding in place	6.7%	7.8%	6.0%	19.2%	2.6%	2.4%
Ratio of debt to expense	89.5%	92.2%	87.8%	49.5%	62.3%	97.6%
Ratio of cash to expense	3.8%	1.8%	9.5%	31.3%	1.3%	0.0%

Summary Information

	<u>Urban Water</u>	<u>Urban Wastewater</u>	<u>Non-Urban</u>	<u>Shared</u>	<u>Total</u>	<u>Current Adopted</u>
Adopted CIP 2024 - 2028	\$ 209,590,000	\$ 58,220,000	\$ 57,714,000	\$ 601,000	\$ 326,125,000	
Completed or closed projects	(47,150,000)	-	-	(654,302)	(47,804,302)	
Adopted - Adjusted	162,440,000	58,220,000	57,714,000	(53,302)	278,320,698	
<u>Changes:</u>						
Rollover for FY 2029 (roughly)	36,631,000	3,870,000	6,020,000	128,500	46,649,500	
Adjustments on existing projects or new projects	24,320,000	14,495,000	901,000	6,314,238	46,030,238	
<b>Total Changes</b>	<b>60,951,000</b>	<b>18,365,000</b>	<b>6,921,000</b>	<b>6,442,738</b>	<b>92,679,738</b>	
Total Adopted CIP 2025 - 2029	\$ 223,391,000	\$ 76,585,000	\$ 64,635,000	\$ 6,389,436	\$ 371,000,436	326,125,000
Years 6 - 10 (FY 2030-34)					\$ 104,093,000	218,641,755
Years 11 - 15 (FY 2035-39)					\$ 107,318,000	165,880,000
<b>TOTAL 15 YEAR CIP</b>					<b>\$ 582,411,436</b>	<b>\$ 710,646,755</b>
						(47,804,302) Completed
						\$ 662,842,453 Net CIP

# Summary Information

Adopted

		FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034
<b><u>City of Charlottesville Charges</u></b>													
<b><u>Urban Water</u></b>													
Operating Rate	Per 1000 gal.	\$ 2.653	\$ 2.949	\$ 3.363	\$ 3.699	\$ 4.069	\$ 4.476	\$ 4.924	\$ 5.219	\$ 5.532	\$ 5.864	\$ 6.216	\$ 6.589
	% Change	13.1%	11.2%	14.0%	10.0%	10.0%	10.0%	10.0%	6.0%	6.0%	6.0%	6.0%	6.0%
Debt Service Charge	Per month	249,497	307,200	376,226	448,561	508,606	576,011	643,652					
		1.3%	23.1%	22.5%	19.2%	13.4%	13.3%	11.7%					
Revenue Requirements:				16.38%									
Operating Rate Revenue	Annual	\$ 4,417,300	\$ 4,810,300	\$ 5,598,400	\$ 6,158,240	\$ 6,774,064	\$ 7,451,470	\$ 8,196,617	\$ 8,688,414	\$ 9,209,719	\$ 9,762,303	\$ 10,348,041	\$ 10,968,923
Debt Service Revenues	Annual	2,994,000	3,686,400	4,514,700	5,382,736	6,103,269	6,912,128	7,723,818	-	-	-	-	-
Total		<b>\$ 7,411,300</b>	<b>\$ 8,496,700</b>	<b>\$ 10,113,100</b>	<b>\$ 11,540,976</b>	<b>\$ 12,877,333</b>	<b>\$ 14,363,598</b>	<b>\$ 15,920,435</b>	<b>\$ 8,688,414</b>	<b>\$ 9,209,719</b>	<b>\$ 9,762,303</b>	<b>\$ 10,348,041</b>	<b>\$ 10,968,923</b>
	\$ Change		\$ 1,085,400	\$ 1,616,400	\$ 1,427,876	\$ 1,336,357	\$ 1,486,265	\$ 1,556,837	\$ 491,797	\$ 521,305	\$ 552,583	\$ 585,738	\$ 620,882
	% Change		14.6%	19.0%	14.1%	11.6%	11.5%	10.8%					
<b><u>Urban Wastewater</u></b>													
Operating Rate	Per 1000 gal.	2.664	2.922	3.247	3.572	3.929	4.322	4.754	5.039	5.341	5.662	6.002	6.362
	% Change	5.8%	9.7%	11.1%	10.0%	10.0%	10.0%	10.0%	6.0%	6.0%	6.0%	6.0%	6.0%
Debt Service Charge	Per month	384,637	394,890	415,446	436,712	455,092	473,672	494,962					
		2.3%	2.7%	5.2%	5.1%	4.2%	4.1%	4.5%					
Revenue Requirements:				13.51%									
Operating Rate Revenue	Annual	\$ 4,245,800	\$ 4,557,800	\$ 5,173,500	\$ 5,690,850	\$ 6,259,935	\$ 6,885,929	\$ 7,574,521	\$ 8,028,993	\$ 8,510,732	\$ 9,021,376	\$ 9,562,659	\$ 10,136,418
Debt Service Revenues	Annual	4,615,644	4,738,800	4,985,500	5,240,540	5,461,100	5,684,060	5,939,540	-	-	-	-	-
Total		<b>\$ 8,861,444</b>	<b>\$ 9,296,600</b>	<b>\$ 10,159,000</b>	<b>\$ 10,931,390</b>	<b>\$ 11,721,035</b>	<b>\$ 12,569,989</b>	<b>\$ 13,514,061</b>	<b>\$ 8,028,993</b>	<b>\$ 8,510,732</b>	<b>\$ 9,021,376</b>	<b>\$ 9,562,659</b>	<b>\$ 10,136,418</b>
	\$ Change		\$ 435,156	\$ 862,400	\$ 772,390	\$ 789,645	\$ 848,954	\$ 944,073	\$ 454,471	\$ 481,740	\$ 510,644	\$ 541,283	\$ 573,760
	% Change		4.9%	9.3%	7.6%	7.2%	7.2%	7.5%					
<b><u>Total all Rate Centers</u></b>													
Operating Rate Revenue		\$ 8,663,100	\$ 9,368,100	\$ 10,771,900	\$ 11,849,090	\$ 13,033,999	\$ 14,337,399	\$ 15,771,139	\$ 16,717,407	\$ 17,720,452	\$ 18,783,679	\$ 19,910,699	\$ 21,105,341
Debt Service Revenues		7,609,644	8,425,200	9,500,200	10,623,276	11,564,369	12,596,188	13,663,358	13,663,358	13,663,358	13,663,358	13,663,358	13,663,358
Total City All Revenues		<b>\$ 16,272,744</b>	<b>\$ 17,793,300</b>	<b>\$ 20,272,100</b>	<b>\$ 22,472,366</b>	<b>\$ 24,598,368</b>	<b>\$ 26,933,587</b>	<b>\$ 29,434,497</b>	<b>\$ 30,380,765</b>	<b>\$ 31,383,810</b>	<b>\$ 32,447,037</b>	<b>\$ 33,574,057</b>	<b>\$ 34,768,699</b>
	\$ Change		\$ 1,520,556	\$ 2,478,800	\$ 2,200,266	\$ 2,126,002	\$ 2,335,219	\$ 2,500,910	\$ 946,268	\$ 1,003,044	\$ 1,063,227	\$ 1,127,021	\$ 1,194,642
	% Change		9.3%	13.9%	10.9%	9.5%	9.5%	9.3%					
<b><u>10-Year CIP Debt Service</u></b>													
Total Estimated Charge		<b>\$ 16,272,744</b>	<b>\$ 17,793,300</b>	<b>\$ 20,272,100</b>	<b>\$ 22,574,132</b>	<b>\$ 24,878,797</b>	<b>\$ 27,518,556</b>	<b>\$ 30,445,274</b>	<b>\$ 1,179,251</b>	<b>\$ 867,688</b>	<b>\$ 525,705</b>	<b>\$ 688,347</b>	<b>\$ 1,094,969</b>
	% Change		\$ 0	13.9%	11.4%	10.2%	10.6%	10.6%	3.7%	2.2%	2.2%	3.9%	4.7%
<b><u>Additional Annual Revenues</u></b>													
				\$ 2,478,800	\$ 2,302,032	\$ 2,304,665	\$ 2,639,759	\$ 2,926,718	\$ 1,114,742	\$ 691,481	\$ 721,244	\$ 1,289,663	\$ 1,601,264
				13.9%	11.4%	10.2%	10.6%	10.6%	3.7%	2.2%	2.2%	3.9%	4.7%

Summary Information

		FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034
<b>ACSA Charges</b>													
<b>Urban Water</b>													
Operating Rate	Per 1000 gal.	2.653	2.949	3.363	3.699	4.069	4.476	4.924	5.219	5.532	5.864	6.216	6.589
	% Change	0.0%	11.2%	14.0%	10.0%	10.0%	10.0%	10.0%	6.0%	6.0%	6.0%	6.0%	6.0%
Debt Service Charge	Per month	\$ 442,355	\$ 542,282	673,264	810,644	935,905	1,068,138	1,201,275					
		8.1%	22.6%	24.2%	20.4%	15.5%	14.1%	12.5%					
Revenue Requirements:				11.82%	10.00%	10.00%	10.00%	10.00%					
Operating Rate Revenue	Annual	\$ 4,597,600	\$ 5,211,100	\$ 5,826,900	\$ 6,409,590	\$ 7,050,549	\$ 7,755,604	\$ 8,531,164	\$ 9,043,034	\$ 9,585,616	\$ 10,160,753	\$ 10,770,398	\$ 11,416,622
Debt Service Revenues	Annual	5,308,200	6,507,400	8,079,200	9,727,722	11,230,860	12,817,652	14,415,304	-	-	-	-	-
Total		<b>\$ 9,905,800</b>	<b>\$ 11,718,500</b>	<b>\$ 13,906,100</b>	<b>\$ 16,137,312</b>	<b>\$ 18,281,409</b>	<b>\$ 20,573,256</b>	<b>\$ 22,946,468</b>	<b>\$ 9,043,034</b>	<b>\$ 9,585,616</b>	<b>\$ 10,160,753</b>	<b>\$ 10,770,398</b>	<b>\$ 11,416,622</b>
	\$ Change		\$ 1,812,700	\$ 2,187,600	\$ 2,231,212	\$ 2,144,097	\$ 2,291,847	\$ 2,373,212	\$ 511,870	\$ 542,582	\$ 575,137	\$ 609,645	\$ 646,224
	% Change		\$ 0	18.7%	16.0%	13.3%	12.5%	11.5%					
<b>Urban Wastewater</b>													
Operating Rate	Per 1000 gal.	2.664	2.922	3.247	3.572	3.929	4.322	4.754	5.039	5.341	5.662	6.002	6.362
	% Change	5.8%	9.7%	11.1%	10.0%	10.0%	10.0%	10.0%	6.0%	6.0%	6.0%	6.0%	6.0%
Debt Service Charge	Per month	\$ 355,205	\$ 383,403	412,149	458,802	497,712	536,622	575,532					
		5.1%	0.0%	7.5%	11.3%	8.5%	7.8%	7.3%					
Revenue Requirements:				9.04%	10.00%	10.00%	10.00%	10.00%					
Operating Rate Revenue	Annual	\$ 4,787,800	\$ 5,350,500	\$ 5,834,000	\$ 6,417,400	\$ 7,059,140	\$ 7,765,054	\$ 8,541,559	\$ 9,054,053	\$ 9,597,296	\$ 10,173,134	\$ 10,783,522	\$ 11,430,533
Debt Service Revenues	Annual	4,262,460	4,600,800	4,945,800	5,505,625	5,972,545	6,439,465	6,906,385	-	-	-	-	-
Total		<b>\$ 9,050,260</b>	<b>\$ 9,951,300</b>	<b>\$ 10,779,800</b>	<b>\$ 11,923,025</b>	<b>\$ 13,031,685</b>	<b>\$ 14,204,519</b>	<b>\$ 15,447,944</b>	<b>\$ 9,054,053</b>	<b>\$ 9,597,296</b>	<b>\$ 10,173,134</b>	<b>\$ 10,783,522</b>	<b>\$ 11,430,533</b>
	\$ Change		\$ 901,040	\$ 828,500	\$ 1,143,225	\$ 1,108,660	\$ 1,172,834	\$ 1,243,425	\$ 512,494	\$ 543,243	\$ 575,838	\$ 610,388	\$ 647,011
	% Change		10.0%	8.3%	10.6%	9.3%	9.0%	8.8%					
<b>Non-Urban Rate Centers</b>													
Operating Rate Revenue	Annual	\$ 2,565,900	\$ 2,797,300	3,101,200	3,411,320	3,752,452	4,127,697	4,540,467	4,812,895	5,101,669	5,407,769	5,732,235	6,076,169
	Annual	2,342,600	2,585,800	2,862,100	3,245,900	3,629,700	4,013,500	4,397,300	-	-	-	-	-
Total		<b>\$ 4,908,500</b>	<b>\$ 5,383,100</b>	<b>\$ 5,963,300</b>	<b>\$ 6,657,220</b>	<b>\$ 7,382,152</b>	<b>\$ 8,141,197</b>	<b>\$ 8,937,767</b>	<b>\$ 4,812,895</b>	<b>\$ 5,101,669</b>	<b>\$ 5,407,769</b>	<b>\$ 5,732,235</b>	<b>\$ 6,076,169</b>
			\$ 474,600	\$ 580,200	\$ 693,920	\$ 724,932	\$ 759,045	\$ 796,570	\$ 272,428	\$ 288,774	\$ 306,100	\$ 324,466	\$ 343,934
			9.7%	10.8%	11.6%	10.9%	10.3%	9.8%					
<b>Total all Rate Centers</b>													
Operating Rate Revenue		<b>\$11,951,300</b>	<b>\$ 13,358,900</b>	<b>\$ 14,762,100</b>	<b>\$ 16,238,310</b>	<b>\$ 17,862,141</b>	<b>\$ 19,648,355</b>	<b>\$ 21,613,191</b>	<b>\$ 22,909,982</b>	<b>\$ 24,284,581</b>	<b>\$ 25,741,656</b>	<b>\$ 27,286,155</b>	<b>\$ 28,923,324</b>
Debt Service Revenues		<b>11,913,260</b>	<b>13,694,000</b>	<b>15,887,100</b>	<b>18,479,247</b>	<b>20,833,105</b>	<b>23,270,617</b>	<b>25,718,989</b>	<b>25,718,989</b>	<b>25,718,989</b>	<b>25,718,989</b>	<b>25,718,989</b>	<b>25,718,989</b>
Total ACSA All Revenues		<b>\$23,864,560</b>	<b>\$ 27,052,900</b>	<b>\$ 30,649,200</b>	<b>\$ 34,717,557</b>	<b>\$ 38,695,246</b>	<b>\$ 42,918,972</b>	<b>\$ 47,332,180</b>	<b>\$ 48,628,971</b>	<b>\$ 50,003,570</b>	<b>\$ 51,460,645</b>	<b>\$ 53,005,144</b>	<b>\$ 54,642,313</b>
	\$ Change		\$ 3,188,340	\$ 3,596,300	\$ 4,068,357	\$ 3,977,689	\$ 4,223,726	\$ 4,413,208	\$ 1,296,791	\$ 1,374,599	\$ 1,457,075	\$ 1,544,499	\$ 1,637,169
	% Change		13.4%	13.3%	13.3%	11.5%	10.9%	10.3%					
<b>10-Year CIP Debt Service</b>					347,458	929,234	1,649,343	2,490,682	2,857,773	2,660,491	2,345,940	2,562,393	3,003,685
Total Estimated Charge		<b>\$23,864,560</b>	<b>\$ 27,052,900</b>	<b>\$ 30,649,200</b>	<b>\$ 35,065,015</b>	<b>\$ 39,624,480</b>	<b>\$ 44,568,315</b>	<b>\$ 49,822,862</b>	<b>\$ 51,486,744</b>	<b>\$ 52,664,061</b>	<b>\$ 53,806,585</b>	<b>\$ 55,567,537</b>	<b>\$ 57,645,999</b>
	% Change		\$ 0	13.3%	14.4%	13.0%	12.5%	11.8%	3.3%	2.3%	2.2%	3.3%	3.7%
<b>Additional Annual Revenues</b>				<b>\$ 3,596,300</b>	<b>\$ 4,415,815</b>	<b>\$ 4,559,465</b>	<b>\$ 4,943,835</b>	<b>\$ 5,254,547</b>	<b>\$ 1,663,882</b>	<b>\$ 1,177,317</b>	<b>\$ 1,142,524</b>	<b>\$ 1,760,952</b>	<b>\$ 2,078,461</b>
				13.3%	14.4%	13.0%	12.5%	11.8%	3.3%	2.3%	2.2%	3.3%	3.7%

Summary Information

	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029		FY 2030	FY 2031	FY 2032	FY 2033	FY 2034
<b>RWSA</b>													
Operations Revenues													
Urban Water	\$ 9,014,900	\$ 10,021,400	\$ 11,425,300	\$ 12,567,830	\$ 13,824,613	\$ 15,207,074	\$ 16,727,782		\$ 17,731,449	\$ 18,795,336	\$ 19,923,056	\$ 21,118,439	\$ 22,385,545
Urban Wastewater	9,033,600	9,908,300	11,007,500	12,108,250	13,319,075	14,650,983	16,116,081		17,083,046	18,108,028	19,194,510	20,346,181	21,566,951
Other Rate Centers	2,565,900	2,797,300	3,101,200	3,411,320	3,752,452	4,127,697	4,540,467		4,812,895	5,101,669	5,407,769	5,732,235	6,076,169
Total	\$20,614,400	\$22,727,000	\$25,534,000	\$28,087,400	\$30,896,140	\$33,985,754	\$37,384,329		\$39,627,389	\$42,005,033	\$44,525,334	\$47,196,855	\$50,028,666
Change \$		2,112,600	2,807,000	2,553,400	2,808,740	3,089,614	3,398,575		2,243,060	2,377,643	2,520,302	2,671,520	2,831,811
Change %		10.2%	12.4%	10.0%	10.0%	10.0%	10.0%		6.0%	6.0%	6.0%	6.0%	6.0%
Debt Service Charge Revenues													
Urban Water	8,302,200	10,193,800	12,593,900	15,110,458	17,334,129	19,729,780	22,139,122						
Urban Wastewater	8,878,104	9,339,600	9,931,300	10,746,165	11,433,645	12,123,525	12,845,925						
Other Rate Centers	2,342,600	2,585,800	2,862,100	3,245,900	3,629,700	4,013,500	4,397,300						
Total	\$19,522,904	\$22,119,200	\$25,387,300	\$29,102,523	\$32,397,474	\$35,866,805	\$39,382,347		\$39,382,347	\$39,382,347	\$39,382,347	\$39,382,347	\$39,382,347
Change \$		2,596,296	3,268,100	3,715,223	3,294,951	3,469,331	3,515,542						
Change %		13.3%	14.8%	14.6%	11.3%	10.7%	9.8%						
<b>Total RWSA Customer Revenues</b>	<b>\$40,137,304</b>	<b>\$44,846,200</b>	<b>\$50,921,300</b>	<b>\$57,189,923</b>	<b>\$63,293,614</b>	<b>\$69,852,559</b>	<b>\$76,766,676</b>		<b>\$79,009,736</b>	<b>\$81,387,380</b>	<b>\$83,907,681</b>	<b>\$86,579,202</b>	<b>\$89,411,013</b>
Change \$		\$ 4,708,896	\$ 6,075,100	\$ 6,268,623	\$ 6,103,691	\$ 6,558,945	\$ 6,914,117		\$ 2,243,060	\$ 2,377,643	\$ 2,520,302	\$ 2,671,520	\$ 2,831,811
Change %		11.7%	13.5%	12.3%	10.7%	10.4%	9.9%		2.9%	3.0%	3.1%	3.2%	3.3%
<b>Additional for 10-Year CIP</b>													
Total Estimated Charge	\$40,137,304	\$44,846,200	\$50,921,300	\$57,639,147	\$64,503,277	\$72,086,871	\$80,268,135		\$83,046,760	\$84,915,558	\$86,779,327	\$89,829,942	\$93,509,666
% Change		0.0%	13.5%	13.2%	11.9%	11.8%	11.3%		3.5%	2.3%	2.2%	3.5%	4.1%
<b>Additional Annual Revenues</b>													
			\$ 50,921,300	\$ 57,639,147	\$ 64,503,277	\$ 72,086,871	\$ 80,268,135		\$ 83,046,760	\$ 84,915,558	\$ 86,779,327	\$ 89,829,942	\$ 93,509,666
			\$ 6,075,100	\$ 6,717,847	\$ 6,864,130	\$ 7,583,594	\$ 8,181,264		\$ 2,778,625	\$ 1,868,798	\$ 1,863,769	\$ 3,050,615	\$ 3,679,725
			13.5%	13.2%	11.9%	11.8%	11.3%		3.5%	2.3%	2.2%	3.5%	4.1%

## Five Year Summary of Revenue needed

### 5-Year

X:\RESTRICTED\Budget\Water & Sewer\FY 2025 W&S\Debt Service\Adopted\Summary and Rate Analysis CIP 2025-2029 FINAL ADOPTED.xlsx Table 7