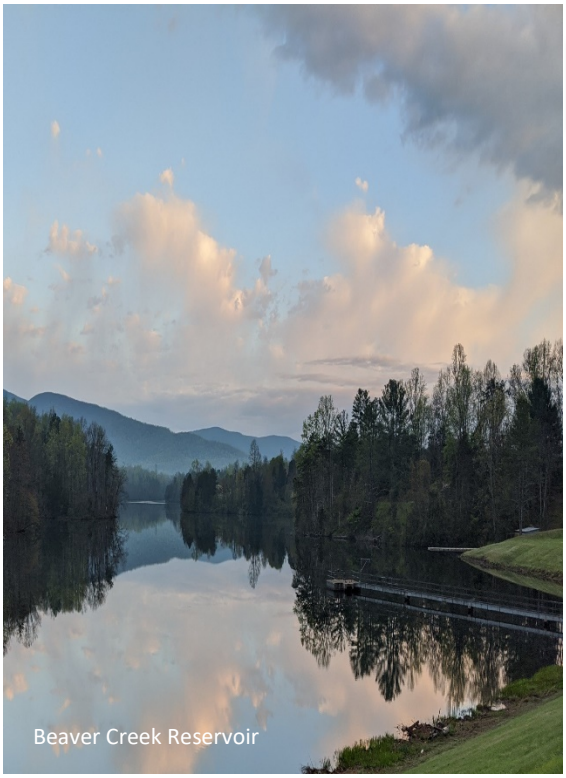
Capital Improvement Plan

Fiscal Years 2023-2027

Adopted May 2022


South Rivanna Water Treatment Plant


Beaver Creek Reservoir

OUR MISSION

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


Moores Creek AWRRF


Observatory Water Treatment Plant


Ragged Mountain Reservoir

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

RIVANNA WATER & SEWER AUTHORITY

Introduction

The Capital Improvement Plan (CIP) for Fiscal Years 2023-2027 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, and as such are being removed from the 2023-2027 CIP. These projects account for approximately $10.7 million or 6% of the FY 2022-2026 CIP. These projects include:

- 7 Sugar Hollow Dam Rubber Crest Gate Replacement
- 17 Crozet Water Treatment Plant Expansion
- 21 Crozet Ground Storage Tank Leak Repair
- 27 Interceptor Sewer and Manhole Repair (Phase 1)
- 42 Moores Creek AWRRF In-Plant Clarifier and Lime Silo Demolition
- 43 Moores Creek AWRRF Generator Fuel Storage Expansion
- 47 Moores Creek AWRRF Lighting Upgrade

The total 5-year 2023-2027 CIP is approximately $205.1 million, with the previous expenditures on active projects totaling approximately $20.9 million, leaving a net proposed 5-year projected expenditure of $184.2 million.

There is one new project added to the CIP this year. The total estimated expenditures for the project equals $1.5 million and includes:

- 35 Moores Creek AWRRF Gravity Thickener Pumping and Chem Feed Improvements

Three projects were removed from the CIP with a cost equal to $4.4 million and include:

- 34 Moores Creek AWRRF Digester Sludge Storage Improvements
- 36 Moores Creek AWRRF Mechanical Thickener Improvement
- 45 Moores Creek AWRRF Facility Renovations

Two projects were added mid-year and several other projects had mid-year budget additions for a total of $1.8 million. The new projects include:

- 6 South Rivanna Reservoir to Ragged Mountain Reservoir Pipeline Intake & Facilities
- 11 Emmet Street Betterment

There were eight projects in the FY 22-26 CIP that, due to budgetary constraints, were moved beyond the current 5-year CIP for a total of $4.2 million and include:

- 11 Avon, Pantops and Observatory Tank Rehabilitation
- 12 Second North Rivanna River Crossing
- 15 South Rivanna Water Treatment Plant Plate Settlers Addition
- 20 Buck's Elbow Tank and Waterball Painting
- 23 Scottsville Tank Rehabilitation
- 24 Scottsville Water Treatment Plant Upgrade
- 31 Albemarle Berkley Pump Station Upgrade
- 32 Interceptor and Sewer Manhole Repair (Phase 2)

There are several projects where the proposed budgets have been modified based on the anticipated project requirements and necessitate funding adjustments. The projects with changes include:

- 3 Ragged Mountain Reservoir to Observatory WTP Raw Water Line ($15.325 million existing / $16.9 million proposed)
- 4 Ragged Mountain Reservoir to Observatory WTP Raw Water Pump Station ($5.85 million existing / $8.84 million proposed)
- 8 Central Water Line ($9.083 million existing / $24 million proposed)
- 9 South Rivanna River Crossing ($3.655 million existing / $5.85 million proposed)
- 10 Airport Road Pump Station and North Rivanna Transmission Main ($7.6 million existing / $10 million proposed)
- 14 North Rivanna WTP Decommissioning ($2.35 million existing / $2.425 million proposed)
- 16 Beaver Creek New Raw Water Pump Station & Intake ($10.8 million existing / $15.65 million proposed)
- 18 Red Hill WTP Upgrades ($0.15 million existing / $0.410 million proposed)
- 19 Upper Schenks Branch Interceptor ($3.985 million existing / $4.725 million proposed)
- 23 Interceptor Sewer and Manhole Repair (Phase 2) ($1.95 million existing / $0.965 million proposed)
- 24 Moores Creek AWRRF Administration Building ($0.225 million existing / $8.5 million proposed)
- 26 Moores Creek AWRRF Shed Roof Rehabilitation ($0.2 million existing / $1.36 million proposed)
- 28 Moores Creek AWRRF Cogeneration Upgrades ($1.865 million existing / $2.145 million proposed)
- 29 Moores Creek AWRRF Operations and Maintenance Building Upgrades ($1.325 million existing / $2.74 million proposed)

- 32 Moores Creek AWRRF 5kV Electrical System Upgrade ($4.6 million existing / $5.05 million proposed)
- 34 Moores Creek AWRRF Digester Repair ($3.62 million existing / $4 million proposed)
- 37 Glenmore WRRF Influent Pump & VFD ($0.12 million existing / $0.37 million proposed)

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 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**FY 2027**	**Recommended CIP**	**Work-in-Progress**
Urban Water (UW)										
Community Water Supply Plan	$25,895,000	$6,170,000	$3,696,000	$3,704,000	$1,065,000	$6,100,000	$8,800,000	$10,200,000	$33,565,000	$1,566,796
Observatory WTP & Ragged Mountain/Sugar Hollow Reservoir System	$23,000,000	$0	$17,550,000	$5,450,000	$0	$0	$0	$0	$23,000,000	$3,316,372
Finished Water Storage/Distribution	$20,338,000	$22,412,000	$9,278,000	$3,957,000	$8,915,000	$6,000,000	$7,300,000	$7,300,000	$42,750,000	$461,409
South & North Fork Rivanna Water System	$23,050,000	$100,000	$18,310,000	$2,800,000	$90,000	$2,300,000	($350,000)	$0	$23,150,000	$10,202,370
Subtotal (UW)	$92,283,000	$28,682,000	$48,834,000	$15,911,000	$10,070,000	$14,400,000	$15,750,000	$17,500,000	$122,465,000	$15,546,947
Non-Urban Water (NUW)										
Crozet Water System	$26,930,000	$4,870,000	$1,343,000	$935,000	$7,135,000	$10,990,000	$11,397,000	$0	$31,800,000	$699,222
Scottsville Water System	$465,000	$260,000	$175,000	$550,000	$0	$0	$0	$0	$725,000	$0
Subtotal (NUW)	$27,395,000	$5,130,000	$1,518,000	$1,485,000	$7,135,000	$10,990,000	$11,397,000	$0	$32,525,000	$699,222
WATER TOTAL	$119,678,000	$33,812,000	$50,352,000	$17,396,000	$17,205,000	$25,390,000	$27,147,000	$17,500,000	$154,990,000	$16,246,169

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 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**FY 2027**	**Recommended CIP**	**Work-in-Progress**
Urban Wastewater (UWW)										
Wastewater Interceptors and Pumping Stations	$12,805,000	($245,000)	$10,590,000	$1,380,000	$590,000	$0	$0	$0	$12,560,000	$2,513,488
Moores Creek AWRRF	$18,325,000	$13,485,000	$5,245,000	$6,460,000	$10,150,000	$7,155,000	$2,800,000	$0	$31,810,000	$414,027
Subtotal (UWW)	$31,130,000	$13,240,000	$15,835,000	$7,840,000	$10,740,000	$7,155,000	$2,800,000	$0	$44,370,000	$2,927,515
Non-Urban Wastewater (NUWW)										
Scottsville WRRF	$200,000	$0	$11,000	$180,000	$9,000	$0	$0	$0	$200,000	$0
Glenmore WRRF	$120,000	$250,000	$370,000	$0	$0	$0	$0	$0	$370,000	$30,676
Subtotal (NUWW)	$320,000	$250,000	$381,000	$180,000	$9,000	$0	$0	$0	$570,000	$30,676
WASTEWATER TOTAL	$31,450,000	$13,490,000	$16,216,000	$8,020,000	$10,749,000	$7,155,000	$2,800,000	$0	$44,940,000	$2,958,191
All Systems Security & Technology	$5,110,000	$80,000	$4,221,000	$401,000	$568,000	$0	$0	$0	$5,190,000	$1,656,189
TOTAL	$156,238,000	$47,382,000	$70,789,000	$25,817,000	$28,522,000	$32,545,000	$29,947,000	$17,500,000	$205,120,000	$20,860,549

PROJECT DETAILS

Completed Projects

During fiscal year 2022, several capital improvement projects were completed, were advanced to the final phases of close-out, or were determined to be no longer necessary. As such they will be removed from consideration in future planning documents. 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 $10.7 million.

7. Sugar Hollow Dam Rubber Crest Gate Replacement: In 1998 the Sugar Hollow Dam underwent a significant upgrade to improve structural stability and spillway capacity following the 1995 flood and landslide. The original metal spillway gates were replaced with a manufactured five-foot-high inflatable rubber dam that is bolted to the existing concrete structure. This rubber dam allows for the normal storage of water in the reservoir with the ability to be lowered during extreme storm events for a controlled release of water from the reservoir. The rubber dam has an approximate service life of twenty years and was therefore due for replacement. In addition to replacement of the rubber crest gate, the project included funding for clearing of vegetation and debris from the south abutment of the dam, improved fencing and water access for RWSA staff, and minor repairs, including replacement of the intake trash racks and cleaning of the foundation drains and drainage gallery.

17. Crozet Water Treatment Plant Expansion: The Crozet water treatment system was permitted and rated to supply up to 1.0 MGD of water to the ACSA distribution system. Over the past several years, average day usage of water has increased steadily, with maximum day demand approaching plant capacity. This project expanded the plant capacity infrastructure to 2 MGD and increased the interim pumping capacity from the raw water pump station and through the GAC facility to meet peak day demands prior to completion of the new raw water pump station and reservoir withdrawal permit.

21. Crozet Ground Storage Tank Leak Repair: The 500,000-gallon Crozet Ground Storage Tank serves as the wet well for the finished water pumps at the Crozet Water Treatment Plant and is one of two finished water storage tanks in the Crozet Service Area. In late 2017, a small leak at the base of the tank was discovered, and a subsequent inspection by a remotely operated vehicle (ROV) in February of 2018 confirmed that the leak was likely in the floor of the tank near the tank drain pipe. The tank was inspected, cleaned, and repaired using an NSF-approved epoxy designed to stop leaks, negating the need for further repairs to the tank at this time and allowing the work to be performed without draining the tank. Staff will continue monitoring the tank and will schedule subsequent inspections at regular intervals to ensure that the newly installed repairs remain in good condition.

27. Interceptor Sewer and Manhole Repair (Phase 1): This project was used to conduct assessments of various interceptors as well as rehabilitation of interceptors that do not have a separate CIP project. Projects completed under Phase 1 include the completion of rehabilitation efforts along the upper Morey Creek Interceptor, as well as high-priority manhole and pipeline rehabilitation on the Powell Creek and Woodbrook Interceptors. Rehabilitation of the Moores Creek, Moores Creek Relief, and Upper Rivanna Interceptors, as well as completion of rehabilitation efforts

along the Morey Creek, Powell Creek, and Crozet Interceptors, will take place during subsequent phases. A condition assessment of all RWSA interceptors (except for the Upper Rivanna Interceptor) has been completed which has helped staff complete the repair work under Phase 1 and plan for repairs under Phase 2. Periodic assessment of all sewer pipe reflects industry best practices and the maintenance expectations of federal and state regulators.

42. Moores Creek AWRRF In-Plant Clarifier and Lime Silo Demolition: The two in-plant clarifiers were constructed in the late 1950's and were taken out of service as a result of the Odor Control Project at the plant. Various components have significantly deteriorated over time and no additional uses for these tanks have been identified. Due to their out-of-service status, they remained empty and a safety concern for plant staff and visitors. Additionally, there was an abandoned lime silo located adjacent to the Solids Handling Building. Lime was previously used with plate and frame presses before centrifuges were installed for sludge dewatering purposes. This project included complete demolition of the in-plant clarifiers by removing all existing components, backfilling the area and returning the area to open space as well as removal and disposal of the lime silo from the plant.

43. Moores Creek AWRRF Generator Fuel Storage Expansion: The Moores Creek AWRRF south side electrical facilities have a single large system back-up power generator that was installed between 2009-2012 during the ENR plant upgrade. The generator has a belly tank that allows for approximately 22 hours of operation. This project installed an ancillary fuel tank that will allow for approximately three days of operation.

47. Moores Creek AWRRF Lighting Upgrade: The lighting at the 80-acre MCAWRRF consists of over 300 fixtures installed at various times over the life of the facility's presence. In 2019, Albemarle County investigated the existing and historic lighting at the facility and determined that upgrades were required to bring Moores Creek AWRRF into zoning compliance. RWSA and Albemarle County staff worked together to determine the best way to address the issue. RWSA was able to construct a large-scale replacement of non-compliant fixtures as well as address industrial lighting standards for safety at the entire facility. The Moores Creek AWRRF is now in compliance with the County Lighting Ordinance.

Completed Projects

			Five-Year Capital Program			
Line No.	**Proj. No.**	**Project Description**	**Adopted Budget 5/2021**	**Previous Expenditures (6/30/2021)**	**Final Projected Costs/Close Out**	**Savings**
7	20.07	Sugar Hollow Dam Rubber Crest Gate Replacement	$1,900,000	$1,382,264	$1,900,000	$0
17	20.22	Crozet Water Treatment Plant Expansion	$500,000	$58,587	$500,000	$0
21	21.03	Crozet Ground Storage Tank Leak Repair	$115,000	$0	$105,000	$10,000
27	20.26	Interceptor Sewer and Manhole Repair (Phase 1)	$1,088,330	$659,970	$1,088,330	$0
42	21.05	Moores Creek AWRRF Inplant Clarifier and Lime Silo Demolition	$790,000	$48,139	$790,000	$0
43	21.09	Moores Creek AWRRF Generator Fuel Storage Expansion	$250,000	$15,445	$250,000	$0
47	21.21	Moores Creek AWRF Lighting Upgrade	$1,900,000	$106,275	$575,000	$1,325,000
		TOTAL	$6,543,330	$2,270,680	$5,208,330	$1,335,000

CIP 22-26 Total	**CIP 23-27 Completed or Removed**	**CIP 23-27 Remaining**	**CIP 23-27 New Funding**	**CIP 23-27 New Total**
$171,938,330	$19,258,330	$152,680,000	$52,440,000	$205,120,000

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 as necessary.

Project Descriptions:

1. South Rivanna Reservoir to Ragged Mountain Reservoir Water Line Right-of-Way: The approved 50-year Community Water Supply Plan includes the future construction of a new raw water pipeline from the South Rivanna River 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 includes a detailed routing study to account for recent and proposed development and road projects in Albemarle County and the University of Virginia. Preliminary design, preparation of easement documents, and acquisition of water line easements along the approved route is also be completed as part of this project.

2. South Rivanna Reservoir Dredging: The South Rivanna Reservoir stores raw water for treatment at the South Rivanna Water Treatment Plant and in the future, is proposed to provide water for transfer to the enlarged Ragged Mountain Reservoir. River flow into the reservoir is from a drainage area, almost entirely within Albemarle County, of approximately 259 square miles. Soil erosion from natural events, from land use in the agricultural area, from land disturbances in the developed areas, and from re-suspension of flood plain deposits created during the 19th century (stream bank erosion), are likely the causes of sediment becoming trapped within the reservoir. The initial design of the reservoir anticipated the accumulation of these sediments, and a significant portion of the total storage volume was designated for this purpose. Currently the sediment stored does not exceed the available sediment storage capacity.

The January 2012 Ragged Mountain Dam Project Agreement outlines that "the City and ACSA agree to direct, and RWSA agrees, to perform such dredging projects at the South Fork Rivanna Reservoir as may be specified jointly by the City and ACSA pursuant to the Water Cost Allocation Agreement." The Cost Allocation Agreement stipulates that target maintenance dredging shall be performed, and that the dredging be market driven, cost effective, and opportunistic and shall not exceed $3.5M. In 2012 and 2013, RWSA, via the Public-Private Education Facilities and Infrastructure Act (PPEA) process, solicited proposals to provide maintenance dredging. In July 2013, the one qualified PPEA proposer withdrew its proposal, citing difficulties in obtaining necessary land agreements.

Future Board decisions on the project contracting approach will dictate the next steps. This project remains in the CIP as the fulfillment of a contractual obligation from the January 2012 Ragged Mountain Dam Cost Allocation Agreement. The project has been moved to FY 2028.

3. 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 3.5 miles, including the connection of the proposed RMR to OBWTP raw water pump station with the Southern terminus of the Birdwood raw water line completed in 2019.

4. Ragged Mountain Reservoir to Observatory 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 OBWTP. The pump station will be designed to pump up to 10 million gallons per day (MGD) to the expanded OBWTP and will be integrated with the planned South Rivanna Reservoir (SRR) 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 to the South Rivanna WTP. The pump station property will be purchased as part of the SRR to RMR raw water main preliminary design and right of way acquisition project.

5. South Rivanna Reservoir to Ragged Mountain Reservoir WL – Birdwood to Old Garth: RWSA is expediting construction of a portion of the future South Rivanna to Ragged Mountain 36-inch raw water main from the northern end of the Birdwood Raw Water Line to the UVA Foundation Westover Property at Old Garth Road. This project will enable pipeline work to proceed ahead of planned redevelopment of the two adjacent Ivy Road Parcels to prevent subsequent disruption to the properties and decrease future construction and site restoration costs. This work includes approximately 1,200 linear feet of 36-inch raw water main, plus two trenchless crossings at Ivy Road and CSX Railroad/Old Garth Road. As of September 2021 this section of pipeline is in design with construction beginning in the summer of 2022.

6. South Rivanna Reservoir to Ragged Mountain Pipeline, Intake and Facilities: The South Rivanna Reservoir (SRR) 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 SRR to RMR Pipeline, Intake, and Facilities Project is intended to allow for continued analysis on the need and magnitude of pretreatment required in order to remove excess nutrients and convey water between the two reservoirs. Initially, this will include analysis of existing water quality data from the two reservoirs and a detailed nutrient model which will help staff better understand the fate of any nutrients transferred between the reservoirs. Later stages of the analysis may include a pilot study, in which various pretreatment technologies are tested and examined, should it be found that pretreatment is required.

Community Water Supply Plan

			Five-Year Capital Program			Projected Future Expenses by Year						
Line No.		**Project Description**	**Current CIP Adopted 5/2021**	**Proposed Changes**	**Current Capital Budget**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**FY 2027**	**Recommended CIP**	**Work-in-Progress (Prev. Expenses 6/30/2021)**
1	20.01	South Rivanna Reservoir to Ragged Mountain Reservoir Water Line Right-of-Way	$2,740,000		$2,740,000						$2,740,000	$1,566,796
2	20.02	South Rivanna Reservoir Dredging									$0	
3	20.03	Ragged Mountain Reservoir to Observatory Water Treatment Plant Raw Water Line	$15,325,000	$1,575,000	$375,000	$325,000	$700,000	$4,000,000	$5,800,000	$5,700,000	$16,900,000	
4	20.04	Ragged Mountain Reservoir to Observatory Water Treatment Plant Raw Water Pump Station	$5,850,000	$2,990,000	$215,000	$160,000	$365,000	$2,100,000	$3,000,000	$3,000,000	$8,840,000	
5	22.01	South Rivanna Reservoir to Ragged Mountain Reservoir - Birdwood to Old Garth	$1,980,000		$166,000	$1,814,000					$1,980,000	
6	20.48	South Rivanna Reservoir to Ragged Mountain Pipeline, Intake & Facilities		$3,105,000	$200,000	$1,405,000				$1,500,000	$3,105,000	
		TOTAL	$25,895,000	$7,670,000	$3,696,000	$3,704,000	$1,065,000	$6,100,000	$8,800,000	$8,700,000	$33,565,000	$1,566,796

Observatory WTP and Ragged Mountain/Sugar Hollow Reservoir System

The Observatory Water Treatment Plant (OBWTP) and Ragged Mountain/Sugar Hollow Reservoir System 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.

Project Descriptions:

7. Observatory Water Treatment Plant Improvements: The Observatory Water Treatment Plant was originally constructed in the mid-1950s, and since very little has been replaced or upgraded at the facility, much of the original equipment remains. As a result, that equipment is inefficient, prone to unexpected failure, and does not have readily accessible replacement parts. Based on a Needs Assessment Study, the plant will undergo 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 in need of replacement, filter control valves and piping will be replaced, and electrical and SCADA control systems upgraded. A portion of this project was 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 based on a feasibility analysis performed during the Preliminary Engineering phase of the project. It was determined that the capacity upgrades could be performed economically and would provide needed reliability and redundancy in the Urban System. As part of this capacity increase, it was also determined that the plant's GAC treatment capacity should increase as well. As a result, this project also includes efforts required for the addition of four GAC contactors.

   It should be noted that the Observatory Water Treatment Plant is sited on land leased to RWSA by the University of Virginia. A new 49-year lease was signed which commenced on July 1, 2020.

Observatory Water Treatment Plant and Ragged Mountain/Sugar Hollow Reservoir System

			Five-Year Capital Program			Projected Future Expenses by Year						
Line No.		**Project Description**	**Current CIP Adopted 5/2021**	**Proposed Changes**	**Current Capital Budget**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**FY 2027**	**Recommended CIP**	**Work-in-Progress (Prev. Expenses 6/30/2021)**
7	20.06	Observatory Water Treatment Plant Improvements	$23,000,000		$17,550,000	$5,450,000					$23,000,000	$3,316,372
		TOTAL	$23,000,000	$0	$17,550,000	$5,450,000	$0	$0	$0	$0	$23,000,000	$3,316,372

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:

8. 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" and 30" 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.

9. South Fork Rivanna River Crossing: RWSA has previously identified through master planning that a 24-inch water main will be needed from the South Rivanna Water Treatment Plant (SRWTP) to Hollymead Town Center to meet future water demands. Two segments of this water main were constructed as part of the VDOT Rt. 29 Solutions projects, including approximately 10,000 LF of 24-inch water main along Rt. 29 and 600 LF of 24-inch water main along the new Berkmar Drive Extension, behind the Kohl's department store. To complete the connection between the SRWTP and the new 24-inch water main in Rt. 29, there is a need to construct a new river crossing at the South Fork Rivanna River. Acquisition of right-of-way will be required at the river crossing and along Rio Mills Road.

10. 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 will be required on the Kohl's Property at Hollymead Town Center. This project will begin construction in 2022.

11. 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, the US-250/Emmet Street Interchange, and Hydraulic Road.

Finished Water Storage/Transmission – Urban System

			Five-Year Capital Program			Projected Future Expenses by Year						
Line No.		**Project Description**	**Current CIP Adopted 5/2021**	**Proposed Changes**	**Current Capital Budget**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**FY 2027**	**Recommended CIP**	**Work-in-Progress (Prev. Expenses 6/30/2021)**
8	20.10	Central Water Line	$9,083,000	$14,917,000	$1,838,000	$1,462,000	$1,100,000	$5,000,000	$7,300,000	$7,300,000	$24,000,000	$191,666
9	20.12	South Fork Rivanna River Crossing	$3,655,000	$2,195,000	$790,000	$310,000	$3,750,000	$1,000,000			$5,850,000	$30,896
10	20.13	Airport Rd. Pump Station and North Rivanna Transmission Main	$7,600,000	$2,400,000	$5,650,000	$1,230,000	$3,120,000				$10,000,000	$238,847
11	23.06	Emmet Street Betterment		$2,900,000	$1,000,000	$955,000	$945,000				$2,900,000	
		TOTAL	$20,338,000	$22,412,000	$9,278,000	$3,957,000	$8,915,000	$6,000,000	$7,300,000	$7,300,000	$42,750,000	$461,409

South and North Rivanna Water Systems

The South Rivanna Water System 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). 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 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:

12. South Rivanna Water Treatment Plant Improvements: The South Rivanna Water Treatment Plant recently 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 a single project within this Capital Plan. The project components include, but are not limited to, the following: 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 sub terrain 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. Currently this facility operates at 80-90% of capacity and the identified upgrades will improve reliability and resiliency, particularly at higher flow rates.

13. South Rivanna Hydropower Plant Decommissioning: The South Fork Hydropower Plant is a small hydroelectric generating facility constructed in 1987. The plant had historically operated intermittently, as river flows allow. 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 and re-establishment of the penstock as a reservoir drain will follow.

14. 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.

South and North Rivanna Water Systems

			Five-Year Capital Program			Projected Future Expenses by Year						
Line No.		**Project Description**	**Current CIP Adopted 5/2021**	**Proposed Changes**	**Current Capital Budget**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**FY 2027**	**Recommended CIP**	**Work-in-Progress (Prev. Expenses 6/30/2021)**
12	20.16	South Rivanna Water Treatment Plant Improvements	$20,000,000		$17,200,000	$2,800,000					$20,000,000	$9,967,058
13	20.15	South Rivanna Hydropower Plant Decommissioning	$725,000		$725,000						$725,000	$178,685
14	20.18	North Rivanna Water Treatment Plant Decomissioning	$2,325,000	$100,000	$385,000		$90,000	$2,300,000	($350,000)		$2,425,000	$56,627
		TOTAL	$23,050,000	$100,000	$18,310,000	$2,800,000	$90,000	$2,300,000	($350,000)	$0	$23,150,000	$10,202,370

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 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 (1.0 mgd rated capacity, soon to be 2 mgd) 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:

15. 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 2022, 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 is being pursued to cover up to 65% of the design and construction costs.

16. 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 that will serve to enhance water quality within the reservoir.

Crozet Water System

			Five-Year Capital Program			Projected Future Expenses by Year						
Line No.		**Project Description**	**Current CIP Adopted 5/2021**	**Proposed Changes**	**Current Capital Budget**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**FY 2027**	**Recommended CIP**	**Work-in-Progress (Prev. Expenses 6/30/2021)**
15	20.19	Beaver Creek Dam Alteration	$16,150,000		$845,000	$380,000	$3,210,000	$5,680,000	$6,035,000		$16,150,000	$459,714
16	20.20 21.15	Beaver Creek New Raw Water Pump Station & Intake	$10,780,000	$4,870,000	$498,000	$555,000	$3,925,000	$5,310,000	$5,362,000		$15,650,000	$239,508
		TOTAL	$26,930,000	$4,870,000	$1,343,000	$935,000	$7,135,000	$10,990,000	$11,397,000	$0	$31,800,000	$699,222

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).

Project Description:

17. Scottsville Water Treatment Plant Lagoon Liner Replacement: The Scottsville Water Treatment Plant has two waste lagoons that receive filter backwash water, filter-to-waste water and flow from the sedimentation basin sludge collectors. These basins also receive drainage flows from the flocculator and sedimentation basins. The lagoons were initially lined in 2007, but that liner has now reached the end of its useful life and is showing sections of wear and degradation. In order to maintain the integrity of the lagoons, new HDPE liners will be installed.

18. Red Hill Water Treatment Plant – Upgrades: 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.

Scottsville Water System

			Five-Year Capital Program			Projected Future Expenses by Year						
Line No.		**Project Description**	**Current CIP Adopted 5/2021**	**Proposed Changes**	**Current Capital Budget**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**FY 2027**	**Recommended CIP**	**Work-in-Progress (Prev. Expenses 6/30/2021)**
17	21.04	Scottsville Water Treatment Plant Lagoon Liner Replacement	$315,000		$140,000	$175,000					$315,000	
18	22.07	Red Hill Water Treatment Plant - Upgrades	$150,000	$260,000	$35,000	$375,000					$410,000	
		TOTAL	$465,000	$260,000	$175,000	$550,000	$0	$0	$0	$0	$725,000	$0

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:

19. 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.

20. Crozet Interceptor: The Crozet Interceptor is located in western Albemarle County and serves the Crozet and Ivy areas. Flow metering indicated that the interceptor experienced substantial inflow and infiltration and requires rehabilitation. In order to minimize future infrastructure improvements, ACSA and RWSA have agreed to rehabilitate this interceptor and the sewers that flow to the interceptor. The initial phase of rehabilitation to repair the highest priority defects in manholes and pipelines contributing to the inflow and infiltration in the interceptor upstream of Crozet Pump Station No. 4 has been completed. The current budget accounts for evaluation of the downstream portion of the interceptor, as well as outstanding rehabilitation items on upstream portions of the interceptor. While wet weather flows have moderately improved based on the initial phase of work, the ACSA and RWSA continue to investigate and remediate deficiencies along the entire interceptor. Rehabilitation efforts downstream of Crozet Pump Station No. 4 will take place in Phase 2 of the Interceptor Sewer and Manhole Repair Project.

21. Crozet Flow Equalization Tank: Rehabilitation work in the RWSA and ACSA sewer systems is on-going to meet the Inflow and Infiltration (I/I) reduction goals in the Crozet Interceptor. This is based on the flow metering and modeling results of the Comprehensive Sanitary Sewer Model & Study conducted in 2006 and as part of the Crozet Interceptor CIP project. The results of the 2006 study were updated in 2016 to evaluate I/I reduction goals and future capital project needs. The need to proceed with construction of a flow equalization tank in the Crozet area was confirmed as a result of this study update. Based on those results, a preliminary engineering evaluation and siting analysis of a flow equalization tank upstream of Crozet Pump Station No. 4 was completed to ensure that the facility could be designed,

permitted, constructed and ready for operation to meet projected two-year storm flow targets. The completion of construction is anticipated to be in late 2022.

22. 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 includes 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 includes 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.

23. 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 continuation of rehabilitation on the Powell Creek Interceptor, as well as rehabilitation along the lower Morey Creek, Moores Creek, Moores Creek Relief, and Upper Rivanna Interceptors. Similar to Phase 1, a sewer rehabilitation contract will be developed under this project in order to procure a dedicated contractor for any evaluation and rehabilitation work specified. 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. Phase 2 will also include inspections of siphons and force mains, which require specialty equipment in order to inspect due to the vastly different flow conditions present in these types of sewers.

Urban Wastewater Interceptors/Pumping Stations

			Five-Year Capital Program			Projected Future Expenses by Year						
Line No.		**Project Description**	**Current CIP Adopted 5/2021**	**Proposed Changes**	**Current Capital Budget**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**FY 2027**	**Recommended CIP**	**Work-in-Progress (Prev. Expenses 6/30/2021)**
19	20.25	Upper Schenks Branch Interceptor	$3,985,000	$740,000	$3,985,000	$740,000					$4,725,000	$50,787
20	20.27 21.10	Crozet Interceptor	$880,000		$880,000						$880,000	$255,190
21	20.28	Crozet Flow Equalization Tank	$5,400,000		$5,400,000						$5,400,000	$2,165,244
22	20.30	Crozet Pump Station 1, 2, 3 Rehabilitation	$590,000		$325,000	$210,000	$55,000				$590,000	$42,267
23	21.07	Interceptor Sewer and Manhole Repair (Phase 2)	$1,950,000	($985,000)		$430,000	$535,000				$965,000	
		TOTAL	$12,805,000	($245,000)	$10,590,000	$1,380,000	$590,000	$0	$0	$0	$12,560,000	$2,513,488

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 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:

24. 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 early 1980's and houses offices, IT server space, meeting space and a full-service laboratory. The second building is a series of four trailers installed in 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; 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 in the lower parking lot adjacent to the existing building.

25. Moores Creek AWRRF Aluminum Slide Gate Replacement: Several large aluminum slide gates are located at the influent side of the Moores Creek Pump Station. These gates allow staff to stop or divert flow to perform maintenance activities. After repeated attempts to access and repair the gates, it is now necessary to replace and modify the gate arrangement. The replacement includes new gates for greater flexibility and resiliency as well as significant flow bypass pumping. Likewise, there are several gates at the Ultraviolet disinfection facility that leak water, causing a reduced capacity of the facility. Replacement of these gates will restore the process to full capacity. Two additional gates in the holding pond pump station from the original 1977 Moores Creek facility construction are broken and non-operational and will be replaced as part of this work. In addition, motor operated valves at the headworks will improve wet weather operations related to the new grit facility. The work will be completed via two multiple construction contracts.

26. Moores Creek AWRRF Compost Shed Roof Rehabilitation: In the early 1980's a large metal-framed shed roof was constructed to house the biosolids composting operations. Subsequent to stopping composting at Moores Creek AWRRF, the shed serves as a covered equipment maintenance yard, solids handling facility and material storage lock-up. The shed roof is exhibiting signs of rafter deterioration and ongoing drainage issues. This project will evaluate and perform remediation needs at this facility.

27. Moores Creek AWRRF Gas Sphere Rehabilitation: The gas sphere was constructed in 1980 and is used to house pressurized methane gas as part of the boiler and cogeneration system at the Moores Creek Advanced Water Resource Recovery Facility (MCAWRRF). An inspection of the sphere determined that the coating system was nearing the end of its serviceable life and

the tank would require some additional minor repairs and safety improvements. The project will include an updated inspection to confirm the necessary improvements, recoating the exterior of the tank, repairs to the grout around the concrete ring wall, installation of a safety climb on the exterior of the tank and other minor repairs.

28. Moores Creek AWRRF Cogeneration Upgrades: The MCAWRRF has an existing cogeneration facility that was constructed in 2011. The purpose of the facility was to provide a beneficial use of the methane gas produced by the digester process at the plant, and in doing so provide both digester heating and 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. This project includes costs of installation of a new cogeneration facility as described in the Cogeneration System Analysis.

29. Moores Creek AWRRF Operations and Maintenance Building Space: The Moores Creek Maintenance and Operations Department facilities are over 40 years old and undersized to serve the current staffing and functional needs. The Moores Creek Master Plan recommended increases in space requirements and identified potential locations for the larger Maintenance and Operations spaces. However, major relocation of buildings is not warranted until future process upgrades are needed, approximately 15-20 years from now. Preliminarily, this project will increase and update personnel spaces such as offices, lunchrooms, labs, and locker rooms in the Maintenance, Blower, and Sludge Pumping Buildings. Additionally, the project will construct a new oil and grease storage facility that will meet all current best practices for safety and fire suppression. Lastly, the project will address the need for additional parts storage.

30. Moores Creek AWRRF Structural Modifications: 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 are ten nitrogen recycle (NRCY) pumps. Due to the corrosive atmosphere, these submersed pumps require being pulled and rebuilt frequently. To remove the pumps, staff must currently hire a long boom crane. This project will provide the permanent means to pull, move, and load the pumps during maintenance activities.

    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 several 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 install a catwalk from the upper mezzanine level to each valve to provide a safer, walkable access to each valve.

31. Moores Creek AWRRF 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 Moores 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 Moores 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 involves 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 meters is necessary for process and operational efficiency.

32. Moores Creek AWRRF 5kV Electrical System Upgrade: Discussions during the Moores Creek Facilities Master Plan process, identified that several areas of the MCAWRRF, including the Blower Building, Sludge Pumping Building, Grit Removal Building, Moores Creek Pumping Station, and the Administration Building are connected to the original 5kV electrical 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. All work is being coordinated with the Moores Creek Facilities Master Plan.

33. Moores Creek AWRRF Miscellaneous Concrete Repair: The two Holding Ponds and the two Equalization Basins were built with the 1977 Moores Creek Upgrades and are critical to the plant infrastructure to contain wet weather flows. The 40-year old concrete is showing signs of degradation. Following inspections in Fall 2020, Hazen recommended implementation of concrete repairs to extend the life of the concrete basins. Work will include crack repair, spalling repair, joint repair, and coating of miscellaneous metals and valves.

34. Moores Creek AWRRF Digester Replacement/Repair: 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. Furthermore, through the Moores Creek master planning process, Hazen has identified future plant improvements which will need to

be installed in this area. 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.

35. Moores Creek AWRRF Gravity Thickener Pumping and Chemical Feed Improvements: Sludge generated through treatment processes at the MCAWRRF is thickened at the Gravity Thickener and then pumped to the digestion process on the other side of the treatment plant. The existing pumps in the Sludge Pumping Building are capable of conveying the thickened sludge, but not at the preferred water content which then impacts the efficiency of the digestion process. In order to facilitate the thickening of the sludge in the Gravity Thickener, polymer is also added to improve solids capture. This project will evaluate and identified better performing sludge pumps, provide for a more permanent polymer storage and feed system and prepare underutilized space in the Sludge Pumping Building to be repurposed for Operations office space.

Moores Creek Advanced Water Resource Recovery Facility

			Five-Year Capital Program			Projected Future Expenses by Year						
Line No.		**Project Description**	**Current CIP Adopted 5/2021**	**Proposed Changes**	**Current Capital Budget**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**FY 2027**	**Recommended CIP**	**Work-in-Progress (Prev. Expenses 6/30/2021)**
24	20.34	Moores Creek AWRRF Engineering and Administration Building	$225,000	$8,275,000		$225,000	$875,000	$4,600,000	$2,800,000		$8,500,000	
25	20.36	Moores Creek AWRRF Aluminum Slide Gate Replacements	$1,350,000		$1,305,000	$45,000					$1,350,000	$284,337
26	20.39	Moores Creek AWRRF Compost Shed Roof Rehabiliation	$200,000	$1,160,000	$200,000	$540,000	$620,000				$1,360,000	
27	20.40	Moores Creek AWRRF Gas Sphere Rehabilitation	$840,000			$90,000	$750,000				$840,000	
28	20.67	Moores Creek AWRRF Cogeneration Upgrades	$1,865,000	$280,000	$1,865,000	$280,000					$2,145,000	
29	20.68	Moores Creek AWRRF Operations and Maintenance Building	$1,325,000	$1,415,000	$275,000	$40,000	$1,700,000	$725,000			$2,740,000	
30	20.69 21.06	Moores Creek AWRRF Structural Modifications	$900,000			$110,000	$790,000				$900,000	
31	21.11 21.17	Moores Creek AWWRF Meter and Valve Replacements	$750,000	$25,000	$750,000	$25,000					$775,000	$7,549
32	21.18	Moores Creek AWRRF 5kV Electrical System Upgrade	$4,600,000	$450,000	$600,000	$2,830,000	$1,620,000				$5,050,000	$122,141
33	22.11	Moores Creek AWRRF Miscellaneous Concrete Repair	$2,650,000		$250,000	$1,650,000	$750,000				$2,650,000	

Moores Creek Advanced Water Resource Recovery Facility (Continued)

			Five-Year Capital Program			Projected Future Expenses by Year						
Line No.		**Project Description**	**Current CIP Adopted 5/2021**	**Proposed Changes**	**Current Capital Budget**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**FY 2027**	**Recommended CIP**	**Work-in-Progress (Prev. Expenses 6/30/2021)**
34	22.12	Moores Creek AWRRF Digester Replacement/Repair	$3,620,000	$380,000		$500,000	$2,340,000	$1,160,000			$4,000,000	
35	23.22	Moores Creek AWRRF Gravity Thickener Pumping and Chemical Feed Improvements		$1,500,000		$125,000	$705,000	$670,000			$1,500,000	
		TOTAL	$18,325,000	$13,485,000	$5,245,000	$6,460,000	$10,150,000	$7,155,000	$2,800,000	$0	$31,810,000	$414,027

Scottsville Wastewater System

The Scottsville Wastewater System includes the influent pumping station, the water resource recovery facility 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:

36. 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. This project will provide back-up power for the entire plant and will offer greater treatment flexibility and monitoring capability for the operations staff, particularly when the plant is unmanned and monitored remotely.

Scottsville Water Resource Recovery Facility

			Five-Year Capital Program			Projected Future Expenses by Year						
Line No.		**Project Description**	**Current CIP Adopted 5/2021**	**Proposed Changes**	**Current Capital Budget**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**FY 2027**	**Recommended CIP**	**Work-in-Progress (Prev. Expenses 6/30/2021)**
36	21.12	Scottsville WRRF Whole Plant Generator and ATS	$200,000		$11,000	$180,000	$9,000				$200,000	
		TOTAL	$200,000	$0	$11,000	$180,000	$9,000	$0	$0	$0	$200,000	$0

Glenmore Wastewater System

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

Project Descriptions:

37. Glenmore WRRF Influent Pump and VFD Addition: The Glenmore WRRF is owned by ACSA and operated by the RWSA. The facility is an extended aeration treatment facility for domestic wastewater. A 2014 capacity evaluation confirmed that the facility was designed for growth in the Glenmore neighborhood and surrounding jurisdictional areas and could accommodate expansion. The Glenmore neighborhood has reached the point where a third pump is now necessary.

Glenmore Water Resource Recovery Facility

			Five-Year Capital Program			Projected Future Expenses by Year						
Line No.		**Project Description**	**Current CIP Adopted 5/2021**	**Proposed Changes**	**Current Capital Budget**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**FY 2027**	**Recommended CIP**	**Work-in-Progress (Prev. Expenses 6/30/2021)**
37	20.42	Glenmore WRRF Influent Pump and VFD Addition	$120,000	$250,000	$370,000						$370,000	$30,676
		TOTAL	$120,000	$250,000	$370,000	$0	$0	$0	$0	$0	$370,000	$30,676

All Systems

Project Descriptions:

38. Radio Upgrades: The regional 800 MHz Public Safety Communication System, in which the Rivanna Water and Sewer Authority participates to provide internal and emergency radio communication, is nearing the end of its service life. Because of technology changes (software and hardware) the Charlottesville-UVA-Albemarle County Emergency Communications Center (ECC) will need to upgrade or replace the system to keep it useable. This project plans 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 is being apportioned a part of the project cost proportionately based on the number of radios. In addition to this assessment from the ECC, the Authority will replace its fleet of portable radios.

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

40. 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 will be 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 order to implement an access control system at Authority-owned facilities, staff has procured an Implementer that will finalize system design/requirements, procure all necessary equipment, and install the chosen system. Implementation of the access control system has been completed at the Moores Creek Advanced Water Resource Recovery Facility (MCAWRRF),

Crozet Water Treatment Plant (CZWTP), and Scottsville Water Treatment Plant (SVWTP), and implementation work is underway at several other RWSA water and wastewater facilities.

41. IT Master Plan – Software: The IT Master Plan assessed and identified needed upgrades in the network and busines processes at the Authority. Work is currently underway to reconfigure the Network infrastructure and to install and implement major software initiatives. This project will continue to address those Authority wide needs.

All Systems

			Five-Year Capital Program			Projected Future Expenses by Year						
Line No.		**Project Description**	**Current CIP Adopted 5/2021**	**Proposed Changes**	**Current Capital Budget**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**FY 2027**	**Recommended CIP**	**Work-in-Progress (Prev. Expenses 6/30/2021)**
38	20.44	Radio Upgrades	$600,000		$600,000						$600,000	$280,607
39	20.45	Asset Management	$1,180,000		$915,000	$97,000	$168,000				$1,180,000	$441,104
40	20.46	Security Enhancements	$2,730,000	$80,000	$2,106,000	$304,000	$400,000				$2,810,000	$727,020
41	20.47	IT Master Plan - Software	$600,000		$600,000						$600,000	$207,458
		TOTAL	$5,110,000	$80,000	$4,221,000	$401,000	$568,000	$0	$0	$0	$5,190,000	$1,656,189

APPENDICES

CIP Financial Summary

Water System Summary

Wastewater System Summary

All Systems Summary

CIP Financial Summary

			Five-Year Capital Program			Projected Future Expenses by Year						
Line No.	Proj. No.	Project Description	Current CIP Adopted 5/2021	Proposed Changes	Current Capital Budget	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Recommended CIP	Work-in-Progress (Prev. Expenses 6/30/2021)
1	20.01	South Rivanna Reservoir to Ragged Mountain Reservoir Water Line Right-of-Way	$2,740,000	$0	$2,740,000	$0					$2,740,000	$1,566,796
2	20.02	South Rivanna Reservoir Dredging	$0	$0	$0	$0					$0	
3	20.03	Ragged Mountain Reservoir to Observatory Water Treatment Plant Raw Water Line	$15,325,000	$1,575,000	$375,000	$325,000	$700,000	$4,000,000	$5,800,000	$5,700,000	$16,900,000	
4	20.04	Ragged Mountain Reservoir to Observatory Water Treatment Plant Raw Water Pump Station	$5,850,000	$2,990,000	$215,000	$160,000	$365,000	$2,100,000	$3,000,000	$3,000,000	$8,840,000	
5	22.01	South Rivanna Reservoir to Ragged Mountain Reservoir - Birdwood to Old Garth	$1,980,000	$0	$166,000	$1,814,000					$1,980,000	
6	20.48	South Rivanna Reservoir to Ragged Mountain Pipeline, Intake & Facilities	$0	$3,105,000	$200,000	$1,405,000				$1,500,000	$3,105,000	
7	20.06	Observatory Water Treatment Plant Improvements	$23,000,000	$0	$17,550,000	$5,450,000					$23,000,000	$3,316,372
8	20.10	Central Water Line	$9,083,000	$14,917,000	$1,838,000	$1,462,000	$1,100,000	$5,000,000	$7,300,000	$7,300,000	$24,000,000	$191,666
9	20.12	South Fork Rivanna River Crossing	$3,655,000	$2,195,000	$790,000	$310,000	$3,750,000	$1,000,000			$5,850,000	$30,896
10	20.13	Airport Rd. Pump Station and North Rivanna Transmission Main	$7,600,000	$2,400,000	$5,650,000	$1,230,000	$3,120,000				$10,000,000	$238,847
11	23.06	Emmet Street Betterment	$0	$2,900,000	$1,000,000	$955,000	$945,000				$2,900,000	

CIP Financial Summary
(Continued)

			Five-Year Capital Program			Projected Future Expenses by Year						
Line No.		**Project Description**	**Current CIP Adopted 5/2021**	**Proposed Changes**	**Current Capital Budget**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**FY 2027**	**Recommended CIP**	**Work-in-Progress (Prev. Expenses 6/30/2021)**
12	20.16	South Rivanna Water Treatment Plant Improvements	$20,000,000	$0	$17,200,000	$2,800,000					$20,000,000	$9,967,058
13	20.15	South Rivanna Hydropower Plant Decommissioning	$725,000	$0	$725,000	$0					$725,000	$178,685
14	20.18	North Rivanna Water Treatment Plant Upgrade	$2,325,000	$100,000	$385,000	$0	$90,000	$2,300,000	($350,000)		$2,425,000	$56,627
15	20.19	Beaver Creek Dam Alteration	$16,150,000	$0	$845,000	$380,000	$3,210,000	$5,680,000	$6,035,000		$16,150,000	$459,714
16	20.20 21.15	Beaver Creek New Raw Water Pump Station & Intake	$10,780,000	$4,870,000	$498,000	$555,000	$3,925,000	$5,310,000	$5,362,000		$15,650,000	$239,508
17	21.04	Scottsville Water Treatment Plant Lagoon Liner Replacement	$315,000	$0	$140,000	$175,000					$315,000	
18	22.07	Red Hill Water Treatment Plant - Upgrades	$150,000	$260,000	$35,000	$375,000					$410,000	
19	20.25	Upper Schenks Branch Interceptor	$3,985,000	$740,000	$3,985,000	$740,000					$4,725,000	$50,787
20	20.27 21.10	Crozet Interceptor	$880,000	$0	$880,000	$0					$880,000	$255,190
21	20.28	Crozet Flow Equalization Tank	$5,400,000	$0	$5,400,000	$0					$5,400,000	$2,165,244
22	20.30	Crozet Pump Station 1, 2, 3 Rehabilitation	$590,000	$0	$325,000	$210,000	$55,000	$0			$590,000	$42,267

CIP Financial Summary
(Continued)

			Five-Year Capital Program			Projected Future Expenses by Year						
Line No.		**Project Description**	**Current CIP Adopted 5/2021**	**Proposed Changes**	**Current Capital Budget**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**FY 2027**	**Recommended CIP**	**Work-in-Progress (Prev. Expenses 6/30/2021)**
23	21.07	Interceptor Sewer and Manhole Repair - Phs 2	$1,950,000	($985,000)	$0	$430,000	$535,000				$965,000	
24	20.34	Moores Creek AWRRF Engineering and Administration Building	$225,000	$8,275,000	$0	$225,000	$875,000	$4,600,000	$2,800,000		$8,500,000	
25	20.36	Moores Creek AWRRF Aluminum Slide Gate Replacements	$1,350,000	$0	$1,305,000	$45,000					$1,350,000	$284,337
26	20.39	Moores Creek AWRRF Compost Shed Roof Rehabiliation	$200,000	$1,160,000	$200,000	$540,000	$620,000				$1,360,000	
27	20.40	Moores Creek AWRRF Gas Sphere Rehabilitation	$840,000	$0	$0	$90,000	$750,000				$840,000	
28	20.67	Moores Creek AWRRF Cogeneration Upgrades	$1,865,000	$280,000	$1,865,000	$280,000					$2,145,000	
29	20.68	Moores Creek AWRRF Operations and Maintenance Building	$1,325,000	$1,415,000	$275,000	$40,000	$1,700,000	$725,000			$2,740,000	
30	20.69 21.06	Moores Creek AWWRF Structural Modifications	$900,000	$0	$0	$110,000	$790,000				$900,000	
31	21.11 21.17	Moores Creek AWWRF Meter and Valve Replacements	$750,000	$25,000	$750,000	$25,000					$775,000	$7,549
32	21.18	Moores Creek AWWRF 5kV Electrical System Upgrade	$4,600,000	$450,000	$600,000	$2,830,000	$1,620,000				$5,050,000	$122,141
33	22.11	Moores Creek AWRRF Miscellaneous Concrete Repair	$2,650,000	$0	$250,000	$1,650,000	$750,000				$2,650,000	

CIP Financial Summary
(Continued)

			Five-Year Capital Program			Projected Future Expenses by Year						
Line No.		**Project Description**	**Current CIP Adopted 5/2021**	**Proposed Changes**	**Current Capital Budget**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**FY 2027**	**Recommended CIP**	**Work-in-Progress (Prev. Expenses 6/30/2021)**
34	22.12	Moores Creek AWRRF Digester Replacement/Repair	$3,620,000	$380,000	$0	$500,000	$2,340,000	$1,160,000			$4,000,000	
35	23.12	Moores Creek AWRRF Gravity Thickener Pumping and Chemical Feed	$0	$1,500,000	$0	$125,000	$705,000	$670,000			$1,500,000	
36	21.12	Scottsville WRRF Whole Plant Generator and ATS	$200,000	$0	$11,000	$180,000	$9,000				$200,000	
37	20.42	Glenmore WRRF Influent Pump & VFD Addition	$120,000	$250,000	$370,000	$0					$370,000	$30,676
38	20.44	Radio Upgrades	$600,000	$0	$600,000	$0					$600,000	$280,607
39	20.45	Asset Management	$1,180,000	$0	$915,000	$97,000	$168,000				$1,180,000	$441,104
40	20.46	Security Enhancements	$2,730,000	$80,000	$2,106,000	$304,000	$400,000				$2,810,000	$727,020
41	20.47	IT Master Plan - Software	$600,000	$0	$600,000	$0					$600,000	$207,458
		Total	$156,238,000	$48,882,000	$70,789,000	$25,817,000	$28,522,000	$32,545,000	$29,947,000	$17,500,000	$205,120,000	$20,860,549

Water System Summary

	Summary			Projected Future Expenses by Year						
Urban Water System	**Current CIP**	**Proposed Changes**	**Current Capital Budget**	**FY23**	**FY24**	**FY25**	**FY26**	**FY27**	**Recommended CIP**	**Work-in -Progress**
PROJECT COSTS										
Community Water Supply Plan	$ 25,895,000	$ 6,170,000	$ 3,696,000	$ 3,704,000	$ 1,065,000	$ 6,100,000	$ 8,800,000	$ 10,200,000	$ 33,565,000	$ 1,566,796
Observatory WTP/Ragged Mtn/Sugar Hollow Systems	24,900,000	-	17,550,000	5,450,000	-	-	-	-	23,000,000	4,698,637
Finished Water Storage/Distribution - Urban System	21,828,000	20,922,000	9,278,000	3,957,000	8,915,000	6,000,000	7,300,000	7,300,000	42,750,000	461,410
South & North Fork Rivanna WTP and Reservoir System	23,250,000	(100,000)	18,310,000	2,800,000	90,000	2,300,000	(350,000)	-	23,150,000	10,202,371
Total Projects Urban Water Systems	**$ 95,873,000**	**$ 26,992,000**	**$ 48,834,000**	**$ 15,911,000**	**$ 10,070,000**	**$ 14,400,000**	**$ 15,750,000**	**$ 17,500,000**	**$ 122,465,000**	**$ 16,929,212**
FUNDING SOURCES URBAN SYSTEM - TO DATE										
Work-in-Progress			$ 16,929,000	$ -	$ -	$ -	$ -	$ -	$ 16,929,000	
Debt Proceeds - 2018 & 2021Bond			31,405,000	8,400,500	-	-	-	-	39,805,500	
Capital Funds Available			500,000	-	-	-	-	-	500,000	
SUBTOTAL			48,834,000	8,400,500	-	-	-	-	57,234,500	
FUNDING SOURCES URBAN SYSTEM - NEEDS										
Future Cash reserve transfer to Capital Fund				$ 1,000,000	$ 1,000,000	$ 500,000	$ 500,000	$ 1,000,000	$ 4,000,000	
New Debt Needed			-	6,510,500	9,070,000	13,900,000	15,250,000	16,500,000	61,230,500	
SUBTOTAL			-	7,510,500	10,070,000	14,400,000	15,750,000	17,500,000	65,230,500	
TOTAL URBAN WATER FUNDING			**$ 48,834,000**	**$ 15,911,000**	**$ 10,070,000**	**$ 14,400,000**	**$ 15,750,000**	**$ 17,500,000**	**$ 122,465,000**	
									$122,465,000	
Estimated Bond Issues					**$30,000,000**		**$31,230,500**		**$61,230,500**	

	Summary			Projected Future Expenses by Year						
Non-Urban Water System	**Current CIP**	**Proposed Changes**	**Current Capital Budget**	**FY23**	**FY24**	**FY25**	**FY26**	**FY27**	**Recommended CIP**	**Work-in -Progress**
PROJECT COSTS										
Crozet Water System	$ 28,275,000	$ 4,140,000	$ 1,343,000	$ 935,000	$ 7,135,000	$ 10,990,000	$ 11,397,000	$ -	$ 31,800,000	$ 757,810
Scottsville Water System	850,000	(125,000)	175,000	550,000	-	-	-	-	725,000	-
Total Rural Water Systems	**$ 29,125,000**	**$ 4,015,000**	**$ 1,518,000**	**$ 1,485,000**	**$ 7,135,000**	**$ 10,990,000**	**$ 11,397,000**	**$ -**	**$ 32,525,000**	**$ 757,810**
Non-URBAN FUNDING SOURCES										
Work in Progress			$ 757,800	$ -	$ -	$ -	$ -	$ -	$ 757,800	
Capital Funds Available			-						-	
Debt Proceeds - 2018 & 2021Bond			465,000	-	-	-	-	-	465,000	
Future Cash reserve transfer to Capital Fund			295,200	450,000	150,000	54,800	-	-	950,000	
New Debt Needed			-	1,035,000	6,985,000	10,935,200	11,397,000	-	30,352,200	
TOTAL NON-URBAN WATER FUNDING			**$ 1,518,000**	**$ 1,485,000**	**$ 7,135,000**	**$ 10,990,000**	**$ 11,397,000**	**$ -**	**$ 32,525,000**	
Estimated Bond Issues				**$ 8,020,000**			**22,332,200**		**$ 30,352,200**	

Wastewater System Summary

	Summary			Projected Future Expenses by Year						
Urban Wastewater System	**Current CIP**	**Proposed Changes**	**Current Capital Budget**	**FY23**	**FY24**	**FY25**	**FY26**	**FY27**	**Recommended CIP**	**Work-in - Progress**
PROJECT COSTS										
Wastewater Interceptor/Pumping Stations	$ 14,345,330	$ (697,000)	$ 10,590,000	$ 1,380,000	$ 590,000	$ -	$ -	$ -	$ 12,560,000	$ 3,173,458
Moores Creek WWTP	25,380,000	12,485,000	5,245,000	6,460,000	10,150,000	7,155,000	2,800,000	-	31,810,000	599,335
Total Urban Wastewater Systems	**$ 39,725,330**	**$ 11,788,000**	**$15,835,000**	**$7,840,000**	**$10,740,000**	**$7,155,000**	**$2,800,000**	**$0**	**$44,370,000**	**$3,772,793**
FUNDING SOURCES URBAN SYSTEM - IN PLACE										
Work-in-Progress			$ 3,772,800	$ -	$ -	$ -	$ -	$ -	$ 3,772,800	
Debt Proceeds - 2018 & 2021Bond			6,084,750	-	-	-	-		6,084,750	
Capital Funds Available			3,500,000	-	-	-	-	-	3,500,000	
SUBTOTAL			13,357,550	-	-	-	-	-	13,357,550	
FUNDING SOURCES URBAN SYSTEM - NEEDS										
Future Cash Reserves			$ -	$ 1,000,000	$ 500,000	$ 500,000	$ 1,000,000	$ -	$ 3,000,000	
New Debt Needed			2,477,450	6,840,000	10,240,000	6,655,000	1,800,000	-	28,012,450	
SUBTOTAL			2,477,450	$7,840,000	10,740,000	7,155,000	2,800,000	-	31,012,450	
TOTAL URBAN WASTEWATER FUNDING			**$ 15,835,000**	**$ 7,840,000**	**$ 10,740,000**	**$ 7,155,000**	**$ 2,800,000**	**$ -**	**$ 44,370,000**	
Estimated Bond Issues					**$ 19,557,500**		**$ 8,455,000**		**$ 28,012,500**	

	Summary			Projected Future Expenses by Year						
Non-Urban Wastewater System	**Current CIP**	**Proposed Changes**	**Current Capital Budget**	**FY23**	**FY24**	**FY25**	**FY26**	**FY27**	**Recommended CIP**	**Work-in - Progress**
PROJECT COSTS										
Glenmore WWTP	$ 120,000	$ 250,000	$ 370,000	$ -	$ -	$ -	$ -	$ -	$ 370,000	$ 30,676
Scottsville WWTP	200,000	-	11,000	180,000	9,000	-	-	-	200,000	-
Total Rural Wastewater Systems	**$320,000**	**$250,000**	**$ 381,000**	**$ 180,000**	**$ 9,000**	**$ -**	**$ -**	**$ -**	**$ 570,000**	**$ 30,676**
FUNDING SOURCES RURAL SYSTEM - NEEDS										
Work in Progress			$ 30,700						30,700	
Debt Proceeds - 2018 & 2021Bond			$ -	$ -					-	
Future Cash Reserve			-	-	-	-			-	
New Debt Needed			350,300	180,000	9,000	-	-	-	539,300	
TOTAL RURAL WASTEWATER FUNDING			**$ 381,000**	**$ 180,000**	**$ 9,000**	**$ -**	**$ -**	**$ -**	**$ 570,000**	
Estimated Bond Issues					**$ 539,300**					

All Systems Summary

	Summary			Projected Future Expenses by Year						
Shared Projects - All Rate Centers	**Current CIP**	**Proposed Changes**	**Current Capital Budget**	**FY23**	**FY24**	**FY25**	**FY26**	**FY27**	**Recommended CIP**	**Work-in - Progress**
PROJECT COSTS										
Asset management/Security/IT Master Plan	$ 5,110,000	$ 80,000	$ 4,221,000	$ 401,000	$ 568,000	$ -	$ -	$ -	$ 5,190,000	$1,656,189
Total Projects Urban Water Systems	**$ 5,110,000**	**$ 80,000**	**$ 4,221,000**	**$ 401,000**	**$ 568,000**	**$ -**	**$ -**	**$ -**	**$ 5,190,000**	**$1,656,189**
FUNDING SOURCES										
Work in Progress			$ 1,656,189						$ 1,656,189	
Possible Future Reserves			$ 1,031,000	$ 401,000	$568,000				$ 2,000,000	
New Debt Needed			$ 1,533,811	$ -	$ -	$ -	$ -	$ -	$ 1,533,811	
									-	
TOTAL URBAN WATER FUNDING			**$ 4,221,000**	**$ 401,000**	**$ 568,000**	**$ -**	**$ -**	**$ -**	**$ 5,190,000**	
Estimated Bond Issues					**$1,533,811**					

Summary Information

	2023 - 2027 *Adopted* CIP	2022 - 2026 Adopted CIP	Change $
Project Cost			
Urban Water Projects	$ 122,465,000	$ 95,873,000	$ 26,592,000
Urban Wastewater Projects	44,370,000	39,725,330	4,644,670
Non-Urban Projects & Shared	38,285,000	34,555,000	3,730,000
Total Project Cost Estimates	**$ 205,120,000**	**$ 170,153,330**	**$ 34,966,670**
Funding in place			
Work-in-Progress (paid for)	$ 23,146,700	$ 6,913,000	16,233,700
Debt Proceeds Available	46,355,250	19,755,100	26,600,150
Cash-Capital Available	4,000,000	4,688,000	(688,000)
	$ 73,501,950	$ 31,356,100	$ 42,145,850
Financing Needs			
Possible Future Reserves	$ 9,950,000	$ 9,700,000	250,000
New Debt	121,668,050	129,097,230	(7,429,180)
	$ 131,618,050	$ 138,797,230	$ (7,179,180)
Total Funding	**$ 205,120,000**	**$ 170,153,330**	**$ 34,966,670**
Percentage of funding in place	35.8%	18.4%	
Ratio of debt to expense	93.2%	91.5%	
Ratio of cash to expense	6.8%	8.5%	

Summary Information

Detail by Major Systems	Total *Adopted* CIP	Urban Water Projects	Urban Wastewater Projects	Shared Projects	Water Non-Urban Projects	Wastewater Non-Urban Projects
Project Cost						
Urban Water Projects	$ 122,465,000	$ 122,465,000	$ -		$ -	$ -
Urban Wastewater Projects	44,370,000	-	44,370,000		-	-
Non-Urban Projects & Shared	38,285,000	-	-	5,190,000	32,525,000	570,000
Total Project Cost Estimates	**$ 205,120,000**	**$ 122,465,000**	**$ 44,370,000**	**$ 5,190,000**	**$ 32,525,000**	**$ 570,000**
Funding in place						
Work-in-Progress (paid for)	$ 23,146,700	$ 16,929,200	$ 3,772,800	$ 1,656,200	$ 757,800	$ 30,700
Debt Proceeds available	46,355,250	39,805,550	6,084,700	-	465,000	-
Cash-Capital Available	4,000,000	500,000	3,500,000	-	-	-
Subtotal	$ 73,501,950	$ 57,234,750	$ 13,357,500	$ 1,656,200	$ 1,222,800	$ 30,700
Financing Needs						
Possible Future Reserves	$ 9,950,000	4,000,000	3,000,000	2,000,000	950,000	-
New Debt	121,668,050	61,230,250	28,012,500	1,533,800	30,352,200	539,300
Subtotal	$ 131,618,050	$ 65,230,250	$ 31,012,500	$ 3,533,800	$ 31,302,200	$ 539,300
Total Funding	**$ 205,120,000**	**$ 122,465,000**	**$ 44,370,000**	**$ 5,190,000**	**$ 32,525,000**	**$ 570,000**
Percentage of funding in place	35.8%	46.7%	30.1%	31.9%	3.8%	5.4%
Ratio of debt to expense	93.2%	82.5%	76.8%	29.6%	94.7%	94.6%
Ratio of cash to expense	6.8%	3.7%	14.6%	38.5%	2.9%	0.0%

Summary Information

	Urban Water	Urban Wastewater	Non-Urban	Shared	Total		Current Adopted
Adopted CIP 2022 - 2026	$ 95,873,000	$ 39,725,330	$ 29,445,000	$ 5,110,000	$ 170,153,330		
Changes:							
Completed or closed projects	(1,900,000)	(8,143,330)	(615,000)	-	(10,658,330)		
Rollover from FY 2026 (roughly)	17,500,000	875,000	-	-	18,375,000		
Adjustments on existing projects	10,992,000	10,413,000	4,265,000	80,000	25,750,000	*	
New projects	-	1,500,000	-	-	1,500,000		
New costs	10,992,000	11,913,000	4,265,000	80,000	27,250,000		
Total Changes	**26,592,000**	**4,644,670**	**3,650,000**	**80,000**	**34,966,670**		
Total Adopted CIP 2023 - 2027	$ 122,465,000	$ 44,370,000	$ 33,095,000	$ 5,190,000	$ 205,120,000		170,153,330
Years 6 - 10 (FY 2028-32)					$ 126,217,000		100,359,000
Years 11 - 15 (FY2033-37)					$ 193,110,000		52,867,000
			TOTAL 15 YEAR CIP		**$ 524,447,000**		**$ 323,379,330**

Summary Information

*Budget and Charges were adjusted in October 2021

		FY 2021	FY 2022*	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032
City of Charlottesville Charges													
Urban Water													
Operating Rate	Per 1000 gal.	2.095	2.346	2.653	2.812	2.981	3.160	3.349	3.550	3.763	3.989	4.228	4.482
	% Change		12.0%	13.1%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
Debt Service Charge	Per month	$ 193,580	$ 246,188	271,527	303,004	334,553	358,523	390,038					
			27.2%	10.3%	11.6%	10.4%	7.2%	8.8%					
Revenue Requirements:				10.3%	11.6%	10.4%	7.2%	8.8%					
Operating Rate Revenue	Annual	$ 3,630,500	$ 3,906,000	$ 4,417,300	$ 4,682,338	$ 4,963,278	$ 5,261,075	$ 5,576,739	$ 5,911,344	$ 6,266,024	$ 6,641,986	$ 7,040,505	$ 7,462,935
Debt Service Revenues	Annual	2,323,000	2,954,300	3,258,324	3,636,045	4,014,633	4,302,273	4,680,451	-	-	-	-	-
Total		**$ 5,953,500**	**$ 6,860,300**	**$ 7,675,624**	**$ 8,318,383**	**$ 8,977,911**	**$ 9,563,348**	**$ 10,257,190**	**$ 5,911,344**	**$ 6,266,024**	**$ 6,641,986**	**$ 7,040,505**	**$ 7,462,935**
	$ Change		**$ 906,800**	**$ 815,324**	**$ 642,759**	**$ 659,528**	**$ 585,437**	**$ 693,842**	**$ 334,604**	**$ 354,681**	**$ 375,961**	**$ 398,519**	**$ 422,430**
	% Change		**15.2%**	**11.9%**	**8.4%**	**7.9%**	**6.5%**	**7.3%**					
Urban Wastewater													
Operating Rate	Per 1000 gal.	2.369	2.517	2.664	2.850	3.022	3.203	3.395	3.599	3.815	4.043	4.286	4.543
	% Change		6.2%	5.8%	7.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
Debt Service Charge	Per month	$ 407,588	$ 376,036	384,637	396,872	407,882	418,922	431,842					
			-7.7%	2.3%	3.2%	2.8%	2.7%	3.1%					
Revenue Requirements:													
Operating Rate Revenue	Annual	$ 3,936,500	$ 4,096,900	$ 4,245,800	$ 4,543,006	$ 4,815,586	$ 5,104,522	$ 5,410,793	$ 5,735,440	$ 6,079,567	$ 6,444,341	$ 6,831,001	$ 7,240,861
Debt Service Revenues	Annual	4,891,100	4,512,500	4,615,644	4,762,460	4,894,580	5,027,060	5,182,100	-	-	-	-	-
Total		**$ 8,827,600**	**$ 8,609,400**	**$ 8,861,444**	**$ 9,305,466**	**$ 9,710,166**	**$ 10,131,582**	**$ 10,592,893**	**$ 5,735,440**	**$ 6,079,567**	**$ 6,444,341**	**$ 6,831,001**	**$ 7,240,861**
	$ Change		**$ (218,200)**	**$ 252,044**	**$ 444,022**	**$ 404,700**	**$ 421,415**	**$ 461,311**	**$ 324,648**	**$ 344,126**	**$ 364,774**	**$ 386,660**	**$ 409,860**
	% Change		**-2.5%**	**2.9%**	**5.0%**	**4.3%**	**4.3%**	**4.6%**					
Total all Rate Centers													
Operating Rate Revenue		**$ 7,567,000**	**$ 8,002,900**	**$ 8,663,100**	**$ 9,225,344**	**$ 9,778,865**	**$ 10,365,597**	**$ 10,987,532**	**$ 11,646,784**	**$ 12,345,591**	**$ 13,086,327**	**$ 13,871,506**	**$ 14,703,797**
Debt Service Revenues		**7,214,100**	**7,466,800**	**7,873,968**	**8,398,505**	**8,909,213**	**9,329,333**	**9,862,551**	**9,862,551**	**9,862,551**	**9,862,551**	**9,862,551**	**9,862,551**
Total City All Revenues		**$14,781,100**	**$ 15,469,700**	**$ 16,537,068**	**$ 17,623,849**	**$ 18,688,078**	**$ 19,694,930**	**$ 20,850,083**	**$ 21,509,335**	**$ 22,208,142**	**$ 22,948,878**	**$ 23,734,057**	**$ 24,566,348**
	$ Change		**$ 688,600**	**$ 1,067,368**	**$ 1,086,781**	**$ 1,064,229**	**$ 1,006,852**	**$ 1,155,154**	**$ 659,252**	**$ 698,807**	**$ 740,735**	**$ 785,180**	**$ 832,290**
	% Change		**4.7%**	**6.9%**	**6.6%**	**6.0%**	**5.4%**	**5.9%**					
									559,452	**831,939**	**585,409**	**254,664**	**140,025**
10-Year CIP Debt Service					**86,073**	**300,614**	**655,486**	**1,129,925**	**1,689,377**	**2,521,315**	**3,106,725**	**3,361,389**	**3,501,414**
Total Estimated Charge		**$14,781,100**	**$ 15,469,700**	**$ 16,537,068**	**$ 17,709,922**	**$ 18,988,692**	**$ 20,350,416**	**$ 21,980,008**	**$ 23,198,712**	**$ 24,729,458**	**$ 26,055,603**	**$ 27,095,446**	**$ 28,067,762**
% Change			**4.7%**	**6.9%**	**7.1%**	**7.2%**	**7.2%**	**8.0%**	**5.5%**	**6.6%**	**5.4%**	**4.0%**	**3.6%**
		Additional Annual Revenues		***$ 1,067,368***	***$ 1,172,854***	***$ 1,278,770***	***$ 1,361,724***	***$ 1,629,593***	***$ 1,218,704***	***$ 1,530,746***	***$ 1,326,145***	***$ 1,039,843***	***$ 972,316***
				6.9%	***7.1%***	***7.2%***	***7.2%***	***8.0%***	***5.5%***	***6.6%***	***5.4%***	***4.0%***	***3.6%***

Summary Information

		FY 2021	FY 2022*	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031
ACSA Charges													
Urban Water													
Operating Rate	Per 1000 gal.	2.095	2.346	2.653	2.812	2.981	3.160	3.349	3.550	3.763	3.989	4.228	4.482
	% Change		12.0%	13.1%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
Debt Service Charge	Per month	$ 321,303	$ 388,956	420,325	463,937	507,716	545,844	587,871					
			21.1%	8.1%	10.4%	9.4%	7.5%	7.7%					
Revenue Requirements:													
Operating Rate Revenue	Annual	$ 3,488,100	$ 4,065,500	$ 4,597,600	$ 4,873,456	$ 5,165,863	$ 5,475,815	$ 5,804,364	$ 6,152,626	$ 6,521,783	$ 6,913,090	$ 7,327,876	$ 7,767,548
Debt Service Revenues	Annual	3,855,600	4,667,500	5,043,900	5,567,249	6,092,591	6,550,129	7,054,449	-	-	-	-	-
Total		**$ 7,343,700**	**$ 8,733,000**	**$ 9,641,500**	**$ 10,440,705**	**$ 11,258,454**	**$ 12,025,944**	**$ 12,858,813**	**$ 6,152,626**	**$ 6,521,783**	**$ 6,913,090**	**$ 7,327,876**	**$ 7,767,548**
	$ Change		**$ 1,389,300**	**$ 908,500**	**$ 799,205**	**$ 817,749**	**$ 767,490**	**$ 832,869**	**$ 348,262**	**$ 369,158**	**$ 391,307**	**$ 414,785**	**$ 439,673**
	% Change		**18.9%**	**10.4%**	**8.3%**	**7.8%**	**6.8%**	**6.9%**					
Urban Wastewater													
Operating Rate	Per 1000 gal.	2.369	2.517	2.664	2.850	3.022	3.203	3.395	3.599	3.815	4.043	4.286	4.543
	% Change		6.2%	5.8%	7.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
Debt Service Charge	Per month	$ 278,174	$ 337,983	355,205	369,387	384,017	398,647	412,857					
			21.5%	5.1%	4.0%	4.0%	3.8%	3.6%					
Revenue Requirements:													
Operating Rate Revenue	Annual	$ 4,097,100	$ 4,438,300	$ 4,787,800	$ 5,122,946	$ 5,430,323	$ 5,756,142	$ 6,101,511	$ 6,467,601	$ 6,855,657	$ 7,266,997	$ 7,703,017	$ 8,165,198
Debt Service Revenues	Annual	3,338,100	4,055,800	4,262,460	4,432,643	4,608,203	4,783,763	4,954,283	-	-	-	-	-
Total		$ 7,435,200	$ 8,494,100	$ 9,050,260	$ 9,555,589	$ 10,038,526	$ 10,539,905	$ 11,055,794	$ 6,467,601	$ 6,855,657	$ 7,266,997	$ 7,703,017	$ 8,165,198
	$ Change		**$ 1,058,900**	**$ 556,160**	**$ 505,329**	**$ 482,937**	**$ 501,379**	**$ 515,889**	**$ 366,091**	**$ 388,056**	**$ 411,339**	**$ 436,020**	**$ 462,181**
	% Change		**14.2%**	**6.5%**	**5.6%**	**5.1%**	**5.0%**	**4.9%**					
Non-Urban Rate Centers													
Operating Rate Revenue	Annual	$ 2,229,100	$ 2,303,900	2,565,900	2,719,854	2,883,045	3,056,028	3,239,390	3,433,753	3,639,778	3,858,165	4,089,655	4,335,034
Debt Service Revenues	Annual	1,453,300	2,004,000	2,342,600	2,656,600	2,970,600	3,284,600	3,598,600	-				
Total		**$ 3,682,400**	**$ 4,307,900**	**$ 4,908,500**	**$ 5,376,454**	**$ 5,853,645**	**$ 6,340,628**	**$ 6,837,990**	**$ 3,433,753**	**$ 3,639,778**	**$ 3,858,165**	**$ 4,089,655**	**$ 4,335,034**
				$ 600,600	**$ 467,954**	**$ 477,191**	**$ 486,983**	**$ 497,362**	**$ 194,363**	**$ 206,025**	**$ 218,387**	**$ 231,490**	**$ 245,379**
				13.9%	**9.5%**	**8.9%**	**8.3%**	**7.8%**					
Total all Rate Centers													
Operating Rate Revenue		**$ 9,814,300**	**$ 10,807,700**	**$ 11,951,300**	**$ 12,716,256**	**$ 13,479,231**	**$ 14,287,985**	**$ 15,145,264**	**$ 16,053,980**	**$ 17,017,219**	**$ 18,038,252**	**$ 19,120,547**	**$ 20,267,780**
Debt Service Revenues		**8,647,000**	**10,727,300**	**11,648,960**	**12,656,492**	**13,671,394**	**14,618,492**	**15,607,332**	**15,607,332**	**15,607,332**	**15,607,332**	**15,607,332**	**15,607,332**
Total ACSA All Revenues		**$18,461,300**	**$ 21,535,000**	**$ 23,600,260**	**$ 25,372,748**	**$ 27,150,625**	**$ 28,906,477**	**$ 30,752,596**	**$ 31,661,312**	**$ 32,624,551**	**$ 33,645,584**	**$ 34,727,879**	**$ 35,875,112**
	$ Change		**$ 3,073,700**	**$ 2,065,260**	**$ 1,772,488**	**$ 1,777,877**	**$ 1,755,852**	**$ 1,846,119**	**$ 908,716**	**$ 963,239**	**$ 1,021,033**	**$ 1,082,295**	**$ 1,147,233**
	% Change		**16.6%**	**9.6%**	**7.5%**	**7.0%**	**6.5%**	**6.4%**					
10-Year CIP Debt Service					**113,223**	**452,140**	**1,105,388**	**2,038,362**	**3,249,812**	**4,898,695**	**6,097,213**	**7,002,334**	**7,735,983**
Total Estimated Charge		**$18,461,300**	**$ 21,535,000**	**$ 23,600,260**	**$ 25,485,971**	**$ 27,602,765**	**$ 30,011,865**	**$ 32,790,958**	**$ 34,911,124**	**$ 37,523,246**	**$ 39,742,797**	**$ 41,730,214**	**$ 43,611,095**
% Change			**16.6%**	**9.6%**	**8.0%**	**8.3%**	**8.7%**	**9.3%**	**6.5%**	**7.5%**	**5.9%**	**5.0%**	**4.5%**
		Additional Annual Revenues		***$ 2,065,260***	***$ 1,885,711***	***$ 2,116,794***	***$ 2,409,100***	***$ 2,779,093***	***$ 2,120,166***	***$ 2,612,122***	***$ 2,219,551***	***$ 1,987,416***	***$ 1,880,881***
				9.6%	***8.0%***	***8.3%***	***8.7%***	***9.3%***	***6.5%***	***7.5%***	***5.9%***	***5.0%***	***4.5%***

Summary Information

	FY 2021	FY 2022*	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031
RWSA												
Operations Revenues												
Urban Water	$ 7,118,600	$ 7,971,500	$ 9,014,900	$ 9,555,794	$ 10,129,142	$ 10,736,890	$ 11,381,104	$ 12,063,970	$ 12,787,808	$ 13,555,076	$ 14,368,381	$ 15,230,484
Urban Wastewater	8,033,600	8,535,200	9,033,600	9,665,952	10,245,909	10,860,664	11,512,303	12,203,042	12,935,224	13,711,338	14,534,018	15,406,059
Other Rate Centers	2,229,100	2,303,900	2,565,900	2,719,854	2,883,045	3,056,028	3,239,390	3,433,753	3,639,778	3,858,165	4,089,655	4,335,034
Total	$17,381,300	$ 18,810,600	$ 20,614,400	$ 21,941,600	$ 23,258,096	$ 24,653,582	$ 26,132,797	$ 27,700,764	$ 29,362,810	$ 31,124,579	$ 32,992,054	$ 34,971,577
Change $		1,429,300	1,803,800	1,327,200	1,316,496	1,395,486	1,479,215	1,567,968	1,662,046	1,761,769	1,867,475	1,979,523
Change %		8.2%	9.6%	6.4%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
Debt Service Charge Revenues												
Urban Water	6,178,600	7,621,800	8,302,224	9,203,294	10,107,224	10,852,402	11,734,900					
Urban Wastewater	8,229,200	8,568,300	8,878,104	9,195,103	9,502,783	9,810,823	10,136,383					
Other Rate Centers	1,453,300	2,004,000	2,342,600	2,656,600	2,970,600	3,284,600	3,598,600					
	$15,861,100	$ 18,194,100	$ 19,522,928	$ 21,054,997	$ 22,580,607	$ 23,947,825	$ 25,469,883	$ 25,469,883	$ 25,469,883	$ 25,469,883	$ 25,469,883	$ 25,469,883
Change $		2,333,000	1,328,828	1,532,069	1,525,610	1,367,218	1,522,058					
Change %		14.7%	7.3%	7.8%	7.2%	6.1%	6.4%					
Total RWSA Customer Revenues	**$33,242,400**	**$ 37,004,700**	**$ 40,137,328**	**$ 42,996,597**	**$ 45,838,703**	**$ 48,601,407**	**$ 51,602,680**	**$ 53,170,647**	**$ 54,832,693**	**$ 56,594,462**	**$ 58,461,937**	**$ 60,441,460**
Change $		**$ 3,762,300**	**$ 3,132,628**	**$ 2,859,269**	**$ 2,842,106**	**$ 2,762,704**	**$ 3,001,273**	**$ 1,567,968**	**$ 1,662,046**	**$ 1,761,769**	**$ 1,867,475**	**$ 1,979,523**
Change %		**11.3%**	**8.5%**	**7.1%**	**6.6%**	**6.0%**	**6.2%**	**3.0%**	**3.1%**	**3.2%**	**3.3%**	**3.4%**
Additional for 10-Year CIP				**199,296**	**752,754**	**1,760,874**	**3,168,287**	**4,939,189**	**7,420,010**	**9,203,938**	**10,363,723**	**11,237,397**
Total Estimated Charge	**$33,242,400**	**$ 37,004,700**	**$ 40,137,328**	**$ 43,195,893**	**$ 46,591,457**	**$ 50,362,281**	**$ 54,770,967**	**$ 58,109,836**	**$ 62,252,704**	**$ 65,798,400**	**$ 68,825,660**	**$ 71,678,857**
% Change		**0.0%**	**8.5%**	**7.6%**	**7.9%**	**8.1%**	**8.8%**	**6.1%**	**7.1%**	**5.7%**	**4.6%**	**4.1%**
			$ 40,137,328	***$ 43,195,893***	***$ 46,591,457***	***$ 50,362,281***	***$ 54,770,967***	***$ 58,109,836***	***$ 62,252,704***	***$ 65,798,400***	***$ 68,825,660***	***$ 71,678,857***
	Additional Annual Revenues		***$ 3,132,628***	***$ 3,058,565***	***$ 3,395,564***	***$ 3,770,824***	***$ 4,408,686***	***$ 3,338,870***	***$ 4,142,867***	***$ 3,545,696***	***$ 3,027,260***	***$ 2,853,197***
			8.5%	***7.6%***	***7.9%***	***8.1%***	***8.8%***	***6.1%***	***7.1%***	***5.7%***	***4.6%***	***4.1%***