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MEMORANDUM

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

FROM: JENNIFER WHITAKER, CHIEF ENGINEER

**REVIEWED BY: BILL MAWYER, EXECUTIVE DIRECTOR
RICHARD GULLICK, DIRECTOR OF OPERATIONS**

SUBJECT: STATUS REPORT: ONGOING PROJECTS

DATE: NOVEMBER 15, 2016

The following projects are underway; current project status is in **bold** type. This report includes the following sections on Capital Projects and large maintenance projects.

1. Schenks Branch Interceptor
2. Rivanna Pump Station Improvements
3. Drinking Water Activated Carbon
4. Sanitary Sewer Interceptor Rehabilitation
5. Wholesale Water Metering
6. Reservoir Management Plan
7. Moores Creek AWRRF Odor Control Phase 2
8. Crozet Ground Storage, Crozet Waterball, and Stillhouse Tank Improvements
9. South Rivanna Hydropower Plant Rehabilitation
10. Route 29 Water Main Betterment
11. Board of Directors' Strategic Plan
12. Crozet Finished Water Pump Station
13. South Rivanna WTP Raw Water Pump Station Leaf Screen Replacement
14. Crozet Flow Equalization Basin
15. Urgent and Emergency Repairs

1. Schenks Branch Interceptor

The Schenks Branch Sanitary Sewer interceptor is a pipeline operated by RWSA that serves the City of Charlottesville from the intersection of McIntire Road/Preston Avenue along McIntire Road, across Rt. 250, through McIntire Park, and across Melbourne Road with a connection and discharge to the Meadow Creek Interceptor near the radio tower site along Rio Road. The 21-inch

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

The remaining sections, which are considered the Upper Schenks Branch Interceptor, were split into 2 phases. The first phase is to be located within City owned Schenks Greenway adjacent to McIntire Road and the second phase is to be located on County property (baseball field and County Office Building) adjacent to McIntire Road. Both phases are included in a DEQ Consent Order. As a result of discussions between RWSA and DEQ, DEQ approved a milestone schedule for completing the Phase 1 section by March 31, 2017 and set in “abeyance” a schedule for completing work on Phase 2 as a result of complications associated with the execution of the necessary easements.

Phase 1

In accordance with the approved Consent Order schedule, a revised CTC was submitted to DEQ for the Phase 1 work on Schenks Greenway on January 28, 2015 and the CTC was granted by DEQ on February 3, 2015. Bids for Phase 1 of the project were opened on April 14, 2015 and three bids were received. At the April 2015 meeting, the Board of Directors authorized the award of the construction contract for Phase 1 to Digs, Inc. The Notice of Award was issued to Digs, Inc. on May 7, 2015, with a Notice to Proceed date of July 6, 2015.

Four manholes and 1,003 linear feet of sewer pipe have been installed as of November 1, 2016. The presence of rock, unsuitable material, and contaminated soil within the excavation, adverse weather conditions, and general difficulties with deep sewer installation has slowed progress. In order to optimize production within the narrow construction corridor and wet conditions, the Contractor has modified their pipe installation methods. As part of an effort to further expedite their progress, the Contractor has modified the current construction limits to allow them to open up a second construction entrance which also opened up a portion of the Greenway to public use.

Additional project funding to settle contractor claims for rock removal and contaminated soil was approved at the October 2016 Board of Directors meeting. Based on the current conditions and progress, the Contractor anticipates a spring 2017 project completion date. Sewer pipe and manhole installation work will continue over the next few months to be followed by completion of the Greenway, including extending the new walking path and installation of landscaped areas. Change Orders 1-7 have been issued adding 184 days to the contract schedule and \$219,077.85 to the contract value.

Phase 2

Preliminary construction drawings and specifications have been developed. **No new agreements concerning right-of-way have been reported to RWSA regarding Phase 2.** No bidding or construction can take place until one of the following two options occur: (1) County grants RWSA a suitable easement on County property; or (2) City grants RWSA permission and a street cut permit to install the sewer directly under McIntire Road.

2. Rivanna Pump Station Improvements

In 2006 and 2007 a system-wide flow monitoring program was completed for RWSA as part of the on-going Comprehensive Sanitary Sewer Study. The future firm wet weather pumping capacity of the influent pump station from the Rivanna Interceptor to the Moores Creek AWWRF was established in consultation with the City and ACSA with a peak wet weather flow rate equivalent to 53 million gallons per day (mgd). Hazen and Sawyer performed an evaluation of conceptual alternatives for the needed expansion of pumping capacity. At the December 2011 meeting, the Board selected Concept E (pump station at Moores Creek AWWRF and tunnel) and authorized the start of design. RWSA submitted the project schedule for the design and construction of Concept E to DEQ prior to the December 31, 2011 deadline.

The project was advertised for bids on September 12, 2013 and the bid opening was held on November 6, 2013. Six bids were received ranging from \$18,869,000 to \$28,838,202. The lowest bid was deemed non-responsive due to failure to submit a bid security with the sealed bid by the time bids were due. A recommendation for bid award to Adams Robinson Enterprises, Inc. (ARCO) for \$23,327,000 and construction administration/construction inspection engineering support from Hazen and Sawyer for \$2,615,840 was approved by the Board at the December 2013 Meeting. Adams Robinson mobilized on their Notice to Proceed date of March 3, 2014.

Work to date at the Moores Creek site has included utilities relocation and demolition of structures; rock blasting for the tunnel entrance shaft and future pump station, and the installation of the excavation support system and rock anchors. Installation and backfill grouting of the new 60-inch interceptor pipe inside the tunnel is complete. **As of November 1, 2016 construction of the pump station roof was nearly complete. Contractor will begin testing equipment, pumps, generator, HVAC, and switchgear over the next few months. Staff from the Engineer, RWSA and ARCO were able to finalize negotiations for the resolution of multiple claims over the past month and issued related change orders. A community meeting will be scheduled in the next few months to provide information on the second mobilization to the existing Rivanna Pump Station site for the work related to placing the new tunnel into service and decommissioning the existing pump station and 36" forcemain.**

There have been a total of eleven (11) change orders executed which increase the total amount of the contract by \$825,320.75 and are within the Board-authorized contingency of 10%.

3. Drinking Water Activated Carbon and WTP Improvements

In 2006, the US EPA promulgated a new rule called the Stage 2 Disinfectant and Disinfection Byproducts (D/DBP) Rule, which limits the maximum levels of certain disinfection byproducts in water distribution systems. RWSA hired Hazen and Sawyer to evaluate alternatives to reduce disinfection byproducts and ensure compliance with the Stage 2 D/DBP Rule. After extensive investigation, it was determined that RWSA could not assure continuous compliance with the Stage 2 D/DBP Rule by optimizing current water treatment operations and that capital improvements were needed. The initial compliance deadline for the Stage 2 D/DBP Rule was October 2012 for the Urban Water System (South Rivanna, North Rivanna and Observatory WTPs) and October 2014 for the Scottsville and Crozet WTPs.

A two-year extension for compliance with the locational running annual average requirement of the EPA Stage 2 rules was approved for the Crozet Water Treatment Plant by the Virginia Department of Health in October 2014. Similar extensions were previously approved for the three plants in the Urban Water system. Due to the size of the Scottsville water distribution system, there is only one Stage 2 sampling site, accordingly the Scottsville system is not eligible for a time extension.

Bids were opened for the Granular Activated Carbon (GAC) project (all five water treatment plants) on February 10, 2015. Four bids packages were received with base bid prices ranging from \$21,962,775 to \$26,415,000. The apparent lower bidder was English Construction. Subsequent to bid opening, English Construction requested and the Authority granted a bid withdrawal. The next lowest bidder, Ulliman Schutte, had a base bid of \$22,763,000. Because the remaining bids exceed the project budget, the Virginia Public Procurement Act allows for direct negotiations with the lowest bidder. Throughout February and March, RWSA staff negotiated cost savings with Ulliman Schutte (USC), in an effort to bring the construction costs to within the project budget. The ACSA Board of Directors also met during this time period and approved the additional funding required to construct GAC facilities at both the Crozet and Scottsville WTPs.

At the March RWSA meeting, the Board approved a construction award to USC in the amount of \$22,014,250 and a Construction Management work authorization in the amount of \$1,686,700 to Hazen and Sawyer. In addition, the Board approved changes to the 2015-2019 Capital Improvement Plan as follows: (1) Combined the Crozet GAC and Crozet Water Treatment Plant Improvements projects and increased the budget by \$550,800 for a total new total project budget of \$3,190,000; (2) Increased the budget for Scottsville GAC by \$382,100 for a new total project budget of \$1,600,000, and (3) Combined the Urban Water GAC, South Fork Rivanna Water Treatment Plant Improvements, and the North Fork Water Treatment Plant Improvements projects into a single account with a combined total project budget of \$24,000,494.

A Notice of Award was sent to USC on March 26th; final construction contracts were signed on April 28th, and a Notice to Proceed was also issued on April 28th. The pre-construction meeting was held on May 18th. The anticipated construction completion date is within 30 months of Notice to Proceed, near the end of 2017.

The goal of the project is to implement GAC treatment facilities at all five RWSA water treatment plants, but a number of additional plant upgrades have also been included to improve efficiency of plant operations. The plant improvements include:

- South Rivanna WTP : Construction of additional clearwell storage; installation of a chlorine contact tank; replacement of the lime feed system; upgrades to the filter underdrains and backwash system; replacement of the filter media; sound attenuation and ventilation improvements for the high service pump station; installation of a variable frequency drive and soft start motor for pumps at the raw water pump station; installation of new raw water and finished water flow meters, and several improvements to the residuals management facilities.
- Observatory WTP Construction of a new chlorine contact tank; upgrades to chemical feed systems, and installation of a finished water flow meter.
- North Rivanna WTP: Installation of new filter control valves; new pump control valves; new filter sludge removal equipment; new electrical system upgrades throughout the plant; new finished water flow meter, and the installation of a surge relief mechanism.

- Crozet WTP: Upgrade of the chlorine feed system to a modern hypochlorite feed system; install a finished water meter with appurtenances, and replacement of the existing fluoride and corrosion inhibitor chemical feed systems. The new chemical feed systems will be housed in additional rooms in the future GAC contactor building. This new location will allow for shorter chemical feed lines.

South Rivanna WTP – As of November 1, 2016, work has continued on the reinforced concrete placement for structure foundations and tanks. The GAC building foundation is 85% complete, and the Chlorine Contact Tank (CCT) and Equalization Basin are approximately 95% complete. The concrete foundation slab and concrete side walls for the permanent liquid lime feed tanks are complete. Reinforced concrete foundation slabs for the lime feed chemical building and the filter air scour blowers are complete. A portion of the blower equipment has been installed. Large diameter ductile iron pipe installation between the existing filter building and the new chlorine contact tank and GAC facility is complete, including the connection to the filtered water pipe gallery. Installation of the new GAC building electrical service line is complete but still needs to be placed into service. The new wash water recycle line is about 50% complete, and piping realignment in the sludge pumping station will be starting soon. Rehabilitation of filter No. 3 started on October 24, and should take about 4-6 weeks to complete.

Observatory WTP - The foundation excavation for the intermediate pump station, new GAC building, and chlorine contact tank is complete. The extra costs for rubble removal within the old filter building footprint will be included in an upcoming change order. The reinforced concrete foundation for the GAC building is complete and two GAC contactors have been placed, including piping to and from the contactors. The structural steel erection for the GAC has started. Various large diameter ductile iron pipes have been installed, as well as the vertical turbine pump chambers for the intermediate pump station. Various electrical conduit and wiring have been installed at the site. The flocculator No. 2 work is progressing, including completion of the floc paddle mechanical installations. Interior wall work is almost complete in the existing chemical feed room. A new partition in this room will create an electrical room, which will contain the new flocculator paddle VFD motors and controls.

North Rivanna WTP – The intermediate pump station and GAC building concrete foundation work is approximately 80% complete. The new finished water pipe connection to the existing clearwell is complete. A new electrical service line was placed into service on November 3 by Rappahannock Electrical Cooperative.

Crozet WTP – New clearwell expansion tanks have been installed on the discharge side of the WTP effluent pipe, and were placed into service in the last week of May. These tanks will provide expanded clearwell capacity which will provide beneficial operation upgrades for both the temporary and permanent scenarios. The GAC building and intermediate pump station concrete foundation work is ongoing and approximately 80% complete. Some of the proposed new storm sewer system has been installed, as well as new waterline piping.

Scottsville WTP – The GAC building and intermediate pump station concrete foundation work is approximately 80% complete. The stormwater sand filter structure installation is complete. During excavation of the sand filter system, it was discovered that the original clearwell overflow drain pipe (approximately 50 years old) was impacted by the new

construction, and will require relocation. Further investigation revealed that the finished water line connection from the WTP was leaking at the wall penetration and needed to be repaired. This relocation and repair work was not anticipated, but was deemed to be necessary for plant operations. Change Order No. 8 will be issued to complete these essential upgrades.

To date there have been a total of eight (8) change orders executed for this project. Change order No. 3 included rehabilitation of the existing Observatory WTP flocculators, and will be funded from a separate CIP project. The remaining change orders for the GAC construction contract will increase the total contract amount by \$337,504 and are within the Board-authorized contingency of 5.76%.

4. Sanitary Sewer Interceptor Rehabilitation

Results from the sewer flow monitoring and modeling under the Comprehensive Sanitary Sewer Study provided awareness to specific inflow and infiltration (I&I) concerns in the collection system and resulted in strengthened commitments from the City, ACSA and RWSA to continue I&I abatement programs collaboratively. RWSA hired Frazier Engineering to provide professional engineering services to aid in the rehabilitation and repair of the sewer collection system. Rehabilitation work was completed on the lower Rivanna Interceptor, the Crozet Interceptor upstream of Pump Station No. 4, and all pipelines within the Albemarle-Berkley Interceptor.

Current work authorizations related to the Sanitary Sewer Rehabilitation Contract will be performed by Commonwealth Excavating (Commonwealth), who was awarded the contract through cooperative procurement with the City of Charlottesville's term contract for sewer rehabilitation. Commonwealth has completed investigative activities (pipe videos) on the Maury Hills Branch sewer, the lower Crozet Interceptor, the Moores Creek Interceptor, and the Moores Creek Relief Interceptor. The videos were sent to Frazier Engineering for a detailed review and development of recommendations for any necessary rehabilitation work. Commonwealth also completed all three phases of repairs to the Meadow Creek Interceptor.

Commonwealth has reviewed a Work Authorization to perform investigative activities on the Morey Creek Interceptor with an anticipated start of work this winter. The contract with Commonwealth Excavating has expired. In discussions with Commonwealth, they have agreed to extend the contract for a limited duration to complete the investigative activities noted above. Additional sanitary sewer interceptor rehabilitation work will need to be procured through a new contract. A new contract is anticipated for spring 2017.

5. Wholesale Water Metering

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

The Board authorized staff in August of 2012 to enter into an agreement with Michael Baker Jr., Inc. (Baker) to complete an engineering study on metering plan alternatives. Baker's study

identified several alternatives for a metering plan based on combinations of metering and estimating methodologies. Based on feedback from ACSA, the City, and RWSA, Baker recommended a Jurisdictional Approach which included installation of water meters at 37 locations at the City/County corporate boundary at an estimated cost of \$6.4 million. At its September 2013 meeting, the RWSA Board of Directors requested staff to proceed with the Jurisdictional Coverage Approach. In February 2014 the Board of Directors authorized Baker to complete preliminary and final design for the project and to provide bid-phase services. The final design includes construction of 27 metering systems in underground vaults and required acquisition of twenty (20) permanent water line easements and one (1) permanent access easement.

The three water treatment plant meters were bid in February of 2015 and were constructed in conjunction with the Urban Water GAC upgrades. Bids for the remaining metering sites were opened on October 13, 2015, and the project was awarded to the lowest bidder, Linco, Inc. for \$2,036,281. A Notice to proceed was given in January of 2016. At VDOT's request, several sites had been moved to the front of the project schedule and were required to be night work in order to minimize traffic disruptions. Work on these sites had been put on hold due to recent changes to the Albemarle County Noise Ordinance, which restricted nighttime construction activities. A solution to this problem has been worked out between VDOT and Albemarle County staff and work on these sites has resumed. **Construction of the first six meter sites are completed and two more are underway. In early October, Linco brought in a second crew to speed up progress, and they plan to bring in a third crew before the end of 2016.**

All but two easements required for the project were acquired prior to award of the project to Linco. Both of the outstanding easements are on property owned by the University of Virginia. Since a resolution on these two easements, acceptable to RWSA, could not be reached with the University, the associated two metering sites were removed from the construction contract, requiring relocation of meter location 25 to beyond University property and the reconfiguration of meter location 32, as well as additional survey, subsurface utility investigation, and easement acquisition for meter location 25. The additional design work has been completed and a new easement has been granted. **A change order is pending to incorporate the changes to location 25 into the construction contract.**

There have been a total of four (4) change orders executed which collectively decrease the total amount of the contract by \$173,621.69 and are within the Board-authorized contingency of 10%.

6. Reservoir Management Plan

In June 2014 staff received proposals for services to develop a Reservoir Management Plan for RWSA, to include all five reservoirs that RWSA manages for water supply (Beaver Creek, Ragged Mountain, South Fork Rivanna, Sugar Hollow, and Totier Creek). A selection committee represented by staff from RWSA, ACSA, and the City reviewed proposals and selected two firms for interviews. DiNatale Water Consultants was awarded this contract in the amount of the \$176,334, and the contract was executed in November 2014. **The Phase 1 report is complete, along with a related public information document and have been distributed to the Board, and are also available for review at www.rivanna.org/reservoir-study.** The second year of water quality monitoring for this project is in progress.

7. Moores Creek AWRRF Odor Control Phase 2

At its September 16, 2013 meeting, members of City Council inquired about the possibility to add another phase of odor control to the current Capital Program in response to citizen complaints. Staff asked Hazen at that time to compile conceptual costs to implement the next phases of odor control from the 2007 master plan, which were estimated over \$10 million dollars. In an effort to better define our next steps for odor control while being cost effective, Hazen performed an operations audit over the winter and two rounds of air and liquid phase sampling at the wastewater treatment facility in summer and fall of 2014. Hazen attended the Board of Directors meeting in December and presented a summary of recommendations and estimated project costs for a project that would significantly control odors from traveling beyond the MCAWRRF fence line.

At the January 27, 2015 Board of Directors Meeting, the Board approved this project with a budget of \$9,330,000 and adopted it with the 2015-2019 CIP. DEQ issued the Certificate to Construct in early November 2015. This project advertised for bid on November 6, 2015 and bids were opened on December 17, 2015. Unfortunately, all of the bids were considerably over the project budget and subsequently were rejected. The design engineers, Hazen and Short Elliot Hendrickson, Inc. evaluated ways to reduce the scope of work without sacrificing the odor control goals. The redesigned project with reduced scope advertised for bid on February 5, 2016 and bids were opened on March 30, 2016. The Board of Directors approved award of the construction contract to MEB General Contractors, Inc. at the April 2016 Board Meeting with an associated Capital budget increase. The contracts have been executed and the pre-construction conference was held on June 8, 2016. The Notice to Proceed date was June 27, 2016. **As of November 1, 2016, MEB has poured the concrete foundation for the new biological odor scrubber and continues to submit shop drawings for major equipment. The demolition subcontractor began demolition of the concrete bottoms of the existing grit chambers and encountered a change in subsurface conditions which requires a significant change in their means and methods for concrete removal and will result in a sizable change order of approximately half of the construction contingency budget. The subcontractor driving helical piles to provide additional structural support for the new second floor of the grit building has also run into several obstructions while drilling piles and we anticipate another change order associated with that work. Subcontractors have begun coating the exposed concrete surfaces in the primary clarifiers with a system which will protect the concrete from degradation from gases once the covers are installed. Mechanical installation work will proceed once demolition and subsurface activities are complete. Project completion is anticipated in January 2018.**

8. Crozet Ground Storage, Crozet Waterball, and Stillhouse Tank Improvements

In April 2012, Tank Industry Consultants, Inc. (TIC) performed inspections of the 500,000-gallon Crozet Ground Storage Tank and the 50,000-gallon Crozet Elevated Water Tank (“Crozet Waterball”). At the Ground Storage Tank, TIC identified bowed and twisted rafters and recommended that structural calculations be performed to determine whether the roof structure was compromised. In addition, TIC recommended repainting the interior of the Ground Storage Tank as well as other minor repairs and improvements at both the Crozet Ground Storage Tank and Crozet Waterball. In April 2013, TIC performed an inspection of the 700,000 gallon Stillhouse Water Storage Tank and provided recommendations, including interior painting of the tank. In 2013, WRA performed structural roof evaluations of the Crozet Ground Storage and Stillhouse Tanks. The evaluations focused on the structural integrity of the rafters. Whitman Requardt & Associates (WRA), RWSA’s engineer for this project, documented the findings and provided

recommendations for rafter strengthening and replacement in reports dated May 2013 and April 2014, respectively. In addition to these recommendations, RWSA plans to install an active mixing system in the Crozet Ground Storage Tank.

On February 24, 2015, the Board authorized RWSA to execute a work authorization with WRA for design phase services for improvements to the Crozet Ground Storage, Crozet Waterball, and Stillhouse Tanks. Design was completed and the project was advertised for bid on November 3, 2015. A single bid was received on December 1st, which was over budget. Negotiations with this bidder were unsuccessful in bringing the project within budget, so RWSA advertised the project for a second time on January 4, 2016. Bids for the project were opened on February 4, 2016, and five bids were received. At the February 23, 2016 Meeting, the RWSA Board of Directors approved RWSA's recommendation to award the construction contract to Town Hall Painting Corporation and to sign a work authorization with WRA for construction management services. Staff issued a Notice to Proceed on April 1, 2016. The contractor was issued a Certificate of Substantial Completion for work on the Crozet Waterball and Crozet Ground Storage Tank on September 14, 2016. **The Stillhouse Tank was turned over to the contractor to begin repair work on August 15, 2016 and is expected to be completed prior to its Substantial Completion date of November 10, 2016.**

There have been a total of two (2) change orders executed which increases the total amount of the contract by \$5,588.00 and is within the Board-authorized contingency of 10%.

9. South Rivanna Hydropower Plant Rehabilitation

RWSA constructed a hydropower plant at the South Fork Rivanna Dam in 1987. Power generation at the plant was limited for a number of years due to various mechanical issues and has been completely offline for the past two years. In December 2011, RWSA retained HDR to perform a mechanical and electrical equipment assessment and to provide recommendations for capital expenditures and continued operation. This assessment identified the need to perform a number of mechanical and electrical modifications to improve the operation of the hydropower plant. On June 16, 2013, while the plant was down for testing associated with repairs to the speed reducer and generator, the powerhouse flooded during a heavy rainfall event. A post-flood inspection indicated that the rising water damaged the electrical equipment. In addition to electrical system issues, the turbine blades were "stuck" and inoperable prior to the flood event. Attempts to determine the cause were interrupted by the flood event although a visual inspection of the major mechanical components indicates that they appear to be structurally sound. It was determined that further disassembly and inspection of the turbine shaft and blade linkages would be necessary to identify the exact cause of the binding of the blade operating mechanism.

The first step towards rehabilitation of the hydropower facility is to perform a feasibility study where previous recommendations and interaction with the Federal Energy Regulatory Commission (FERC) are taken into account to determine whether it will be cost effective for RWSA to rehabilitate the facility. If the results indicate that RWSA could expect a positive return on their investment, a thorough inspection of the plant's mechanical equipment and the eventual design of plant improvements may follow. A Request for Proposals seeking professional services to perform the feasibility study was advertised on April 6, 2015 with proposals due on May 7, 2015. Following the interviews, the selection committee determined that Gomez and Sullivan Engineers P.C. was the most meritorious candidate for this project. **In July 2015, the Board of Directors authorized the Executive Director to execute an Engineering Services Agreement and Work**

Authorization with Gomez and Sullivan for this project. A kick-off meeting was held on November 18, 2015 and was followed by a site visit to the hydro plant. Staff received a final report in May 2016. Staff reviewed the regulatory and legal aspects of the alternatives and recommendations provided in the report and presented their recommendation to surrender the exemption to licensure with FERC and decommission the facility. During the meeting on October 25, 2016 the Board of Directors agreed with the recommendation and staff has begun coordinating with legal and engineering consultants to initiate the surrender and decommission process.

10. Route 29 Water Main Betterment Project

The VDOT Route 29 Solutions package includes multiple roadway projects along Route 29 in Charlottesville and Albemarle County. One of these is the Route 29 Widening project, which will widen Route 29 (Seminole Trail) from a four-lane divided highway to a six-lane divided highway from Polo Grounds Road to Town Center Drive at Hollymead Town Center. Improvement of this 1.8 mile-long section will include significant grade changes in some sections to increase sight-distance and improve overall safety.

Due to these proposed grade changes and full depth pavement replacement, VDOT has determined that RWSA's existing 12-inch cast iron water line along Route 29 is in conflict and must be relocated for the entire length of the project. RWSA had previously identified through master planning that a 24-inch water main will be needed from the South Rivanna Water Treatment Plant to Hollymead Town Center in order to meet future water demands. RWSA has requested that VDOT and its Design-Build Contractor relocate the existing 12-inch water main as a 24-inch water main, and according to VDOT policy, VDOT would bear the cost of relocation as a 12-inch line and RWSA would bear the additional cost for the "betterment" from 12-inch to 24-inch.

Another component of the Route 29 Solutions package is the Berkmar Drive Extension Project, which will extend the existing Berkmar Drive across the South Fork of the Rivanna River and up to the traffic circle at Meeting Street and Town Center Lane within Hollymead Town Center. As part of the utility work for this project, RWSA has requested that VDOT's contractor install approximately 750 LF of additional 24-inch water main along the new road at the north end of the project.

The costs associated with the requested betterment were presented to the Board at its December 15, 2015 meeting. Subsequently, the Board approved the project for inclusion in the 2015-2019 Capital Improvement program at a total capital budget of \$3,075,000 and authorized staff to execute a cost sharing agreement with VDOT's Design-Build Contractor, Lane-Corman, for the construction of the Route 29 Water Main Betterment Project (Route 29 Widening and Berkmar Extended) for a not to exceed cost of \$2,555,000.

In August of 2016, the RWSA Board of Directors authorized RWSA to sign a Work Authorization for Construction Management Services with Dewberry Engineers, Inc. This Work Authorization includes primarily construction inspection services for the duration of the project and is within the budget approved in the 2016-2020 CIP for this project.

Design has been completed and Lane Corman anticipates that construction of the new water main will take place from December 2016 to March 2017.

11. Board of Directors' Strategic Plan

The Board of Directors has requested that a Strategic Plan be developed by the Board for the Rivanna Water and Sewer Authority. In discussions in August 2015 the Executive Director suggested with the terms of office for elected officials on the Board expiring December 31, 2015, and known that at least one elected official representative would change, it would make sense to initiate the Plan after the January 2016 appointments to the Board are completed. These appointments were completed during the week of January 4, 2016.

Staff has reviewed discussion about strategic planning made by the Board of Directors at an October 2013 retreat as well as more recent conversations at the November 2015 meeting and separately with the Executive Director. It is not clear to staff there is a strong consensus on the Board at this time regarding the purpose and extent of this planning effort, but some of the individual comments from Board members include: (1) Board should prepare mission statement and vision and also determine the extent or limitations of staff role (staff suggestions at the October 2013 retreat received a mixed reaction); (2) an expression that having a strategic plan can guide better cooperation between the City and County; (3) a limitation to focus the strategic plan only on RWSA as the mission of RWSA is presently much too uncertain; and (4) include a SWOT analysis.

This project is on hold at this time.

12. Crozet – Finished Water Pump Station

As part of the current FY 2016 CIP, the Crozet Water Treatment Plant is being studied to expand the treatment capacity to secure future demand needs of the Crozet community. Prior to any plant expansion, it has been determined that the finished water pumping facilities are in dire need of replacement. The Finished Water Pump Station (FWPS) is a new design project to fully replace the antiquated existing pump station, and will be constructed ahead of any plant upgrades. The existing pump station is very small and was constructed as part of the original plant construction in the late 1960s. The pumping equipment and controls are out dated, and operational reliability and efficiency have been drastically impaired. Operational reliability is limited, and the pump house has inadequate heating and cooling. The pump house is located in a low, poorly drained area near the ground storage clearwell, and drainage issues exist.

Due to the age and condition of pumps, electrical systems, building systems and controls, it has been determined that a full station replacement is necessary. An Alternatives Analysis Report was completed in June 2016, and the chosen alternative is to construct a new, larger building up hill from the existing clearwell tank. The new pump station building will be of similar construction as what is being proposed for the GAC facility at Crozet WTP.

Work Authorization No. 19 has been fully executed with Short Elliot Hendrickson, Inc. (SEH), and they will be completing a Preliminary Engineering Report (PER), preliminary and final engineering design, permitting, and bidding of this project.

The preliminary engineering report is almost complete and will be submitted to the Virginia Dept. of Health in November. Design plans and specifications are being generated, and two design progress meetings have been held between RWSA staff and the design consultant. Meetings with Albemarle County staff have also been held, in an effort to facilitate the regulatory approvals for the new pump station building. Design plan submittals for

permitting were delivered to the County on October 31. The design is approximately 85% complete at this time, and the current project schedule is to bid the work in winter 2017.

13. South Rivanna WTP Raw Water Pump Station Leaf Screen Replacement

The South Rivanna Water Treatment Plant raw water pump station and intake structure were constructed integrally with the dam in 1965. Water flows into the intake structure, through a bar screen, and then through a traveling band screen (leaf screen) into the raw water pump station. The existing leaf screen has been in place since the original construction of the facility. It has required minimal maintenance and been very reliable; however, the presence of fish and debris recently within the raw water pump station has brought into question the integrity of the screen and the surrounding concrete. After more than 50 years of service, the leaf screen has reached the end of its useful life. Short Elliot Hendrickson, Inc. (SEH) performed an evaluation of the existing leaf screen in June 2015 and recommended replacement of the existing leaf screen in-kind as a sole-source procurement, as well as several ancillary improvements. Based on this evaluation of the leaf screen, SEH was selected to perform design and bidding phase services for the leaf screen replacement project.

RWSA executed a work authorization to SEH for this project to include preliminary and final design, development of opinions of probable construction cost, assistance with regulatory department submittals, and development of a bid package and other bidding phase services. Design efforts are complete and the project was advertised for bids on October 3, 2016 with a pre-bid meeting on October 12, 2016. Bids were opened on November 3, 2016, and are discussed in detail in a separate Board report this month.

14. Crozet Flow Equalization Basin

Rehabilitation work in the RWSA and Albemarle County Service Authority (ACSA) sewer systems is on-going to meet inflow and infiltration (I&I) reduction goals in the Crozet Interceptor sewer basin based on the flow metering and modeling results of the Comprehensive Sanitary Sewer Model and Study conducted in 2006. The intent was to reduce I/I in the system to meet the 2020 two-year storm flow targets.

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

While the study indicates that capacity should not be an issue until 2025, a flow equalization basin would also provide a significant benefit to the maintenance of the Crozet Pumping Station system which currently lacks system storage necessary to allow adequate time to perform repairs on the pumps and the associated force mains while the system is down. As a result, it is important to

progress into the siting study for the flow equalization basin to ensure that it can be constructed in time for the 2025 flow targets but also to facilitate less complicated and more thorough maintenance on the system that has not been possible previously.

A Work Authorization with Greeley and Hansen (G&H) to perform a siting study for the flow equalization basin project was issued in October 2016. These services include the sizing of the flow equalization basin and the pumping station based on information from the updated model, a preliminary site selection process based on the sizing requirements identified, and an alternatives analysis performed for each selected site to evaluate the feasibility of locating the facility. The first task involves confirming the existing pump capacities of the four pump stations within the Crozet Interceptor system.

15. Urgent and Emergency Repairs

Staff is currently working on several Urgent and Emergency repairs within the water and wastewater systems as listed below.

Current Repairs:

Project No.	Project Description	Approx. Cost
2015-02	Pantops Water Line - Stream Bank Erosion at Bland Circle (not started yet)	\$50,000-\$100,000
2016-05	Rivanna Interceptor - Pipe Exposure in Creek near Penn Park (not started yet)	\$150,000
2016-06	Moores Creek AWRRF - Clarifier No. 4 Grout Floor Failure	TBD

- Pantops Water line – Stream Bank Erosion at Bland Circle
 RWSA has contacted Falconer construction regarding this repair work and is scheduling a site visit with the contractor to review the conditions and develop a plan for repairing the line. Due to wet conditions in the area, repair work is not anticipated until summer 2017. The temporary support placed around the water line by the Maintenance Department was recently reviewed and is anticipated to adequately protect the line until the formal repairs can be completed. The temporary support will be routinely checked to confirm its condition until the repairs are made.
- Rivanna Interceptor – Pipe Exposure in Creek near Penn Park
 RWSA contacted a consultant for natural stream restoration services associated with this repair and is developing a work authorization. Inspections of the creek crossing have not identified any issues with the concrete encasement of the pipe to date although it is exposed. RWSA anticipates that only stream restoration work will be required to further protect the pipe as opposed to any pipeline improvements.
- Moores Creek AWRRF – Clarifier No. 4 Grout Floor Failure
 A portion of the placed grout floor in the secondary clarifier No. 4, has failed. The broken and loose grout has made the clarifier inoperable. Staff are working to fast-track an evaluation, design, and contractor quote package, with the intent of repairing the clarifier prior to deep freeze weather conditions.