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RWSA BOARD OF DIRECTORS
Minutes of Regular Meeting
December 13, 2022

A regular meeting of the Rivanna Water and Sewer Authority (RWSA) Board of Directors was held on Tuesday, December 13, 2022 at 2:15 p.m. in the 2nd floor conference room, Administration Building, 695 Moores Creek Lane, Charlottesville, Virginia.

Board Members Present: Mike Gaffney, Michael Rogers, Brian Pinkston, Ann Mallek, Lauren Hildebrand, Gary O'Connell, and Lance Stewart, attending as alternate for Jeff Richardson.

Board Members Absent: Jeff Richardson.

Rivanna Staff Present: Bill Mawyer, Lonnie Wood, Jennifer Whitaker, Deborah Anama, Victoria Fort, David Tungate.

Attorney(s) Present: Carrie Stanton.

1. *CALL TO ORDER*
Mr. Gaffney convened the December 13, 2022 regular meeting of the Board of Directors of the Rivanna Water and Sewer Authority at 2:15 p.m.

2. *AGENDA APPROVAL*
There were no comments on, changes to, or questions regarding the agenda.

Ms. Mallek moved to approve the agenda. Mr. O'Connell seconded the motion, which carried unanimously (6-0). (Mr. Richardson was absent)

3. *MINUTES OF PREVIOUS BOARD MEETING*
a. Minutes of Regular Board Meeting on November 15, 2022

There were no comments on, changes to, or questions regarding the minutes of the meeting held on November 15, 2022.

Ms. Mallek moved to approve the minutes from the meeting held on November 15, 2022. Mr. Pinkston seconded the motion, which passed unanimously (6-0). (Mr. Richardson was absent)

4. *RECOGNITIONS*
There were none.

5. *EXECUTIVE DIRECTOR'S REPORT*
Mr. Mawyer recognized that three of the Authority's water operators had passed state licensing exams and upgraded their licenses. He stated that Bridgett Deakin had worked with the Authority for two years, and she started work unlicensed. He stated that Ms. Deakin had progressed to Class 2 Water Operator. He stated that Daniel Hunter started working for the Authority one year

ago as an unlicensed operator, and he was now a Class 3 Wastewater Operator. He stated that Keith Covington recently joined the Authority from Baton Rouge, Louisiana, and he immediately passed the state exam to become a Class 2 Water Operator.

Mr. Mawyer stated that Ms. Jennifer Whitaker, Director of Engineering and Maintenance, recently provided a presentation to a UVA Civil Engineering class on careers working in the public sector as an engineer.

Mr. Mawyer stated that Mr. David Tungate, Director of Operations, was recently selected by the Virginia Association of Municipal Wastewater Agencies Committee to work with the state on wastewater operator licensing requirements. He stated that it was in response to the industry's workforce difficulties related to getting wastewater operators licensed. He stated that Mr. Tungate would work with a state-level group to get more operators into the market.

Mr. Mawyer stated that last month, the Board was informed that a major renovation would commence at the Observatory WTP on December 5, and that renovation had begun. He stated that they had ceased producing drinking water at the plant before December 1. He stated that the plant would be shut down through early March. He stated that for the duration of the plant shutdown, all of the drinking water for the urban area would be produced at the South Rivanna and the North Rivanna WTPs.

Mr. O'Connell asked if there were issues regarding the shutdown.

Mr. Mawyer stated that there were none so far. He explained that early on in the planning process, they realized that the contractor wanted to work at night. He stated that the treatment plant was adjacent to dormitories, and the construction was to coincide with exam and reading days. He stated that they consulted with UVA representatives, and they requested that construction not occur at night. He stated that they directed the contractor to not work at night from December 6 through December 16. He stated that exams would be over after December 16, and night construction could resume.

Mr. Mawyer explained that they planned to move piping and old materials out of the plant at night to free up space for the "new work" crew to come in during the day. He stated that they had to modify the plan slightly. He stated that otherwise, operations were going well.

Mr. Mawyer mentioned the South Rivanna to Ragged Mountain water pipeline project. He noted that there were still easements to acquire from UVA, the UVA Foundation, and one private property owner. He stated that a week ago, they had a meeting with the private property owner, and they came to a verbal agreement on the location and cost of the easement. He stated that it was the only remaining private easement for the 8 miles of piping. He stated that they were working with counsel to get the documents finalized and signed.

Mr. Mawyer stated that work continued on the Ragged Mountain to Observatory pipeline project. He stated that the work included efforts to gain easements from the UVA Foundation and UVA. He stated that they were coordinating with the County and Mr. Stewart on the Upper Schenks Branch Sewer Pipe project. He stated they were waiting to see whether the County

would allow an easement on County property to build the sewer.

Mr. Mawyer stated that they continued to work on the engineering and field investigations for the central waterline.

Mr. Pinkston asked Mr. Mawyer to describe the Schenks Branch sewer pipe project.

Mr. Mawyer responded that it was a long-standing project that began before he worked for the Authority. He stated that the sewer pipeline from the McIntire Recycling Center toward Preston Avenue had to be replaced because it was undersized. He stated that it connected to the City's sewer system around Preston Avenue. He explained that the Authority owned part of the pipe up to the County Office Building, and the City had a project to upgrade the connecting sewer system. He stated that they were working together with the City to replace the pipe.

Ms. Hildebrand responded that the City would take the project further under Preston Avenue to around McDonald's. She stated that the entire sewer line needed to be upgraded to 14th Street or 15th Street.

Mr. Mawyer stated that the project would replace the sewer pipe from the McDonald's at Preston Avenue to the McIntire Recycling Center. He stated that a new pipe had been constructed many years ago from the Rt. 250 Bypass bridge in the McIntire Road area to the McIntire Recycling Center. He stated that it was a sewer line replacement project, and the alternatives were to put the pipe in McIntire Road and shut the road down for months or lay pipe through the ball field and frontage to the County Office Building.

Ms. Mallek asked if they would revisit the arguments and processes from the beginning of the project proposal. She stated that they had already addressed the middle of the ball field and the tree.

Mr. Mawyer stated Mr. Stewart had all of the information, and he believed that Mr. Stewart and Mr. Richardson were working on it.

Ms. Mallek stated she believed the pipe would be located near the road the entire way.

Mr. Mawyer stated that it was adjacent to the road. He stated that it was close to the road, but it was not in the street. He stated that it was along the County frontage and into the ball field. He stated that it would bore under the big tree.

Ms. Mallek stated that it would not happen. She stated that the tree was a Virginia Heritage Tree, and they could not go into the root ball of the tree.

Mr. Mawyer stated that they were previously under a consent order from the state to replace the pipe because the sewer overflowed. He stated that the consent order had been removed a few years ago.

Mr. Mawyer stated that progress had been made, and the County and the City had discussions to

put the project on hold until certain positions were filled.

Mr. Gaffney explained that it was taken off of the consent order because there were no overflows in that section of pipe—those happened further down in the sections that had already been replaced.

Ms. Hildebrand responded that new overflows could happen in the City's section of the pipe.

Mr. Mawyer stated that they worked with the City and the ACSA on the "Imagine a Day Without Water" art contest. He stated that the contest was available to K-12 students in the City and the County. He noted that the contest was held every year. He displayed the winning submissions for that year. He stated the art pieces were displayed throughout the building and the water treatment plants.

Mr. Mawyer stated that Mr. O'Connell had invited him to participate in the Best Practices Review Panel for the ACSA. He stated that the panel opportunity allowed him to learn more about the ACSA. He noted that the panel provided a few suggestions for business process changes.

Mr. O'Connell stated the panel provided a good discussion.

Mr. Mawyer stated that Mr. Cole Hendricks recently died. He stated that Mr. Hendricks was a former City manager and a longtime Board member of the Authority. He stated that Mr. Hendricks was instrumental in the creation of the Authority in 1972 and the Rivanna Solid Waste Authority in 1994. He stated that they appreciated Mr. Hendricks' contribution to the Authorities.

Mr. Pinkston asked for more information about Sugar Hollow.

Mr. Mawyer stated that Sugar Hollow was a reservoir on City-owned property, but the Authority owned the water and the water facilities. He stated that there was a resident in the adjacent neighborhood who expressed concerns to the City about vandalism, littering, fires, traffic, and other issues at the reservoir. He stated that the County and the City were in the process of working out a plan to alleviate those concerns.

6. *ITEMS FROM THE PUBLIC*

For matters not listed on the agenda for public hearing

There were none.

7. *RESPONSES TO PUBLIC COMMENTS*

There were no comments from the public, therefore, there were no responses.

8. *CONSENT AGENDA*

a. Staff Report on Finance

b. Staff Report on Operations

c. *Staff Report on Ongoing Projects*

d. *Staff Report on Wholesale Metering*

e. *Approval of Updated Flexible Benefits Plan*

Mr. Pinkston asked if the Authority managed the Flexible Benefits Plan itself or if the work was outsourced.

Mr. Lonnie Wood explained that any employer that had tax-free deductions withheld from a paycheck, such as a Flexible Benefits Plan, had to have an approved plan. He stated that they already had one, but it was being updated to reflect minor changes. He stated that it was a document that stated certain deductions could be made from employee paychecks pre-tax.

Mr. Pinkston clarified that the document was internal to the organization.

Mr. Wood stated that it was a document applicable to the Authorities that the Flexible Benefit Administrator would use.

Mr. Rogers moved to approve the Consent Agenda. Mr. O'Connell seconded the motion, which passed unanimously (6:0). (Mr. Richardson was absent)

9. *OTHER BUSINESS*

a. *Presentation and Vote on Acceptance: FY22 Audit Report*
Mathew McLearen, Robinson Farmer Cox Associates

Mr. McLearen stated that he would present the results of the audit procedure and a review of the key financial findings in the document. He stated that there were required communications between an auditor and a government body. He stated that the first was information related to responsibilities under the audit. He explained that the auditor tested documents and controls and opined on financial statements.

Mr. McLearen stated that management played a key role in the audit process. He stated that they maintained fiscal controls throughout the fiscal year to ensure the accuracy of financial reports. He mentioned the implementation of accounting standards. He stated that FY22 brought about the implementation of GASB Statement No. 87, a monumental reporting standard for most governmental agencies related to leases. He noted that the Authority had to implement the reporting, and Mr. Wood and his staff had implemented it.

Mr. Mawyer clarified that the Authority leased the Observatory WTP property, and that was the primary addition to the financial statement.

Mr. McLearen stated that was right. He stated that historically, leases that were not considered a capital lease, meaning there was no transfer of ownership, were not recorded in the financial statements. He stated that it was considered a known disclosure of a true operating cost. He

stated that the new standard required that the lease be recorded similarly to if it transferred ownership. He stated that during the period of the lease, there was a lease obligation recorded as a liability, and if the Authority leased a property, it was recorded as an asset.

Mr. McLearen stated that they were required to communicate any difficulties encountered during the audit. He stated those difficulties could include the inability to access necessary records to complete the audit process. He reported that there were no difficulties encountered during the audit process.

Mr. McLearen stated that they were required to communicate accounting estimates. He stated that most financial statements included accounting estimates. He stated that the two most significant accounting estimates in the report were estimates related to capital assets and how long they were expected to last, and estimates related to net pension liabilities. He stated that the estimates were determined by the actuary performing the computations.

Mr. McLearen stated they were required to communicate corrected and uncorrected misstatements. He stated that financial statements contained audit adjustments, and they were required to disclose any uncorrected misstatements. He reported that there were no uncorrected misstatements, and the audit adjustments were included in the report.

Mr. McLearen stated that they were required to disclose any disagreements with management in applying principles. He stated that there were no disagreements in applying the principles in FY22.

Mr. McLearen stated that there were two reports contained in the Board's packet. He stated that there were three core financial statements in the report. He stated that exhibit one was similar to a balance sheet that was a statement of net positions. He stated that the net position was approximately $164.8M for FY22.

Mr. McLearen stated that the second exhibit was the statement of revenues, expenses, and changes in the Authorities' net position. He stated that it was similar to a profit and loss statement, and it reported the increase or decrease in the net position. He stated that the Authority reported an increase of approximately $4.68M for FY22.

Mr. McLearen stated that the third financial statement was the statement of cashflow. He stated that the ending cash balance was included, and the statement reported solely the cash position of the Authority. He stated that it was approximately $75.7M at the end of FY22. He stated that the second report was similar to the internal control opinion, and it was the Independent Auditor's Report and Internal Controls over Financial Reporting.

Mr. McLearen stated that it was a document where the audit would disclose any significant deficiencies or material weaknesses disclosed during the audit process over the financial reporting and internal control processes that were in place. He reported that there were no significant deficiencies or material weaknesses discovered during the audit process over the internal controls for FY22.

Ms. Mallek noted the work staff did to prepare for the audit.

Mr. Mawyer clarified that the Authority had a ground lease for the Observatory WTP. He stated that they owned the building.

Ms. Mallek asked if it would be 50 years from when the improvements happened.

Mr. Mawyer explained that it was 49 years from 2021, and then they had the option for a second 49 years. He stated that they had a 99-year lease previously, but that expired in 2021. He stated that they negotiated a new lease with UVA for the ground.

Mr. Gaffney clarified that it was at both parties' option to renew the lease.

Mr. Mawyer stated that was correct, and either party could opt out.

Ms. Mallek moved to accept the FY22 Audit Report. Mr. Rogers seconded the motion, which passed unanimously (6:0). (Mr. Richardson was absent)

b. Presentation: Review of the Community's Water Supply Plan
Bill Mawyer, Executive Director

Mr. Mawyer stated that Authority's mission was to provide adequate amounts of quality drinking water to the customers of the City and the ACSA. He stated that he would discuss the topic more during the CIP budget discussions in February.

Mr. Mawyer stated that the Ragged Mountain Reservoir was the largest reservoir in the Authority's system. He stated that during 2002, there was a major drought in the area, and it was a drought of record. He stated that the drought extended from Virginia to Georgia, and the affected states had the driest July and Augusts on record. He stated that the state was under a state of emergency from a declaration from the governor.

Mr. Mawyer explained that the Community Water Supply Plan was an outcome from the 2002 drought. He stated that the plan was not contained within one single document—it was an accumulation of documents. He stated that the primary document was the Ragged Mountain Dam Agreement.

Mr. Mawyer stated that the drought of 2002 made the community realize it needed a greater water supply. He stated that they considered several alternatives, and one was to run a pipe to the James River near Scottsville. He stated that they made a decision to source water locally and to primarily source the water from the Rivanna River. He stated that the Community Water Supply Plan was approved in 2012 by City Council, and it was supported by the Albemarle Board and the ACSA.

Mr. Mawyer stated that the plan was to build a larger dam and reservoir at the Ragged Mountain Reservoir. He stated that the facility had two dams—the first was built in 1885, and the second was built in 1908. He stated that the existing dam was structurally deficient in many ways. He

stated that the reservoir was smaller and impounded about 500M gallons of water.

Mr. Mawyer stated that the pipe that filled Ragged Mountain Reservoir from Sugar Hollow was about 100 years old and needed to be replaced. He stated that the strategy of those in charge in 2012 was to build a new pipe and dam. He stated that the pipe from Sugar Hollow would be closed upon completion of the new pipe from the South Rivanna Reservoir.

Mr. Mawyer stated that they currently had to pipe water to the Ragged Mountain Reservoir. He stated that there was a tiny watershed which served the Ragged Mountain Reservoir, and it did not fill itself by natural stream flows and rain. He stated that the South Rivanna Reservoir received a significant amount of water flow and rainfall, so the community plan was to fill the new Ragged Mountain Reservoir from the South Rivanna Reservoir. He stated that the new pipe was planned to be constructed from the South Rivanna Reservoir to the Ragged Mountain Reservoir.

Mr. Mawyer stated that the watershed for Ragged Mountain Reservoir was two square miles, and the watershed for the South Fork Rivanna Reservoir was 259 square miles. He stated that much more water passed through the South Rivanna Reservoir than the Ragged Mountain Reservoir, and conversely, the new Ragged Mountain Reservoir would hold 1.4B gallons whereas the South Fork Rivanna Reservoir held about 900M gallons.

Mr. Pinkston asked when Sugar Hollow was built.

Ms. Whitaker responded that the Sugar Hollow Dam was built in 1920, and the present dam was built in 1948. She stated that the rubber bladder was added on top of the dam in 1999.

Mr. Pinkston clarified that the dam always held water for South Rivanna.

Ms. Whitaker explained that the water naturally flowed from Sugar Hollow to South Rivanna, but it was piped to Ragged Mountain, even in the 1920s.

Mr. Mawyer stated that the plan developed in 2012 was to stop flow through the older pipe from Sugar Hollow Reservoir and to start flow from the South Rivanna Reservoir to keep the Ragged Mountain Reservoir full. He stated that a new dam would be constructed at Ragged Mountain.

Mr. O'Connell asked how much capacity the additional 12 feet of water would add to the municipal capacity.

Mr. Mawyer responded that it would add 700M gallons. He stated that the total reservoir capacity would be over four times the original built capacity. He stated that it was originally 500M gallons, and it would now be 2.1B gallons. He stated that the reservoir currently had 1.4B gallons. He stated that the Authority was required to perform, every 10 years, a bathymetric study. He explained that a bathymetric study was an assessment of the urban reservoirs to measure how much water was in them and determine the usable quantity. He noted that sediment could and would, over time, decrease a reservoir's volume. He stated that large storms sometimes helped to wash sediment out of the reservoir. He stated that they worked with the

County, City and UVA planning departments to project growth and demand for water.

Mr. Gaffney asked what the current estimated cost was for the additional 12 feet of water to be added to the reservoir.

Mr. Mawyer responded that the 12-foot increase was $5M to perform the grading and adjust the intake tower to provide water from the South Fork Rivanna Reservoir. He stated that there was an $82M cost to build the pipe.

Mr. Mawyer stated that around 2006, the Authority applied to the regulatory agencies, the Army Corps of Engineers, and the Virginia DEQ for a permit to build a new dam and pipeline at Ragged Mountain Reservoir. He stated that the permit was granted by the agencies in 2008. He stated that the dam would be built with an additional 12 vertical feet, and the additional height would add 700M gallons of additional capacity.

Mr. Mawyer stated that the Army Corps of Engineer permits expired nearly five years ago, but had been renewed. He stated that the DEQ permit would expire in February 2023. He stated that they had applied for a new permit from DEQ, and they had received administrative approval to continue to operate and withdraw water. He stated that they had a permit until the new application was processed by DEQ.

Ms. Whitaker stated that the typical permit approval period from DEQ was 15 years.

Mr. Mawyer stated that the Community Water Supply Plan was really the Ragged Mountain Dam project agreement. He stated that the agreement was approved by the City, the ACSA, and the Authority in 2012. He stated that the plan included a new dam for Ragged Mountain, and it determined the ACSA would pay 85% and the City would pay 15%. He stated that the dam was completed in 2014 and filled in 2015.

Mr. Mawyer stated that the second component of the agreement was a pump station and the pipeline from the South Fork Rivanna Reservoir to the Ragged Mountain Reservoir. The agreement stated that the ACSA would pay 80% of the cost, and the City would pay 20% of the cost. He stated that the project was currently in the CIP to be built from 2027 through 2033. He stated that they had to modify the intake tower and perform grading around the reservoir. He stated that the agreement stated the work to add 700 MG to the reservoir could be done 10 years before the community demand equaled 85% of the safe yield—estimated to be around 2035.

Mr. Mawyer stated that the agreement required them to perform a bathymetric study and a safe yield study every 10 years. He noted that one was completed in 2020, and the next would be in 2030.

Mr. Pinkston asked if they would have to wait until the mid-2030s to add the additional 12 feet of water to the reservoir.

Mr. Mawyer stated that was what the Ragged Mountain Agreement required. He stated that it would be around 2035 before they could complete the work to increase the water level, in

accordance with their calculations.

Mr. Gaffney stated the Agreement could be amended.

Mr. Mawyer stated that when he joined the Authority in 2016, the timeline for building the pipeline from South Fork Rivanna Reservoir to the Ragged Mountain Reservoir was not defined in the CIP. He stated that he and staff proposed four different completion schedules for the pipeline to the Board in 2018. He stated that the early schedule, Schedule A, would go from 2022 through 2030; the near-term Schedule B would go from 2027 through 2035; Schedule C would be from 2032 through 2040; and the long-term Schedule D would be from 2042 through 2050.

Mr. Mawyer stated that the Board, the City, and the ACSA supported Schedule B, which was to complete the pipeline from 2027 through 2035. He stated that the debt curve allowed for additional debt capacity around 2032, and that was a significant factor in deciding to implement Schedule B. He stated that the major funds would be spent in the later part of the eight years because of construction.

Mr. Mawyer stated that in 2018, the City, the ACSA, and the Authority approved Schedule B for the project. He stated that the ACSA recommended that as soon as the pipeline was constructed, they add 12 feet to the normal water level in the Ragged Mountain Reservoir.

Mr. O'Connell stated that it was based upon the completion of the pipeline.

Mr. Mawyer stated that was correct. He stated that they would complete the pipe and move forward with the grading to eventually raise the water level.

Mr. Gaffney asked if that was approved with the project schedule approval.

Mr. O'Connell responded that it had been built into the CIP.

Mr. Gaffney clarified that it was not approved with that agreement.

Mr. O'Connell responded that the original agreement had a formula to determine when the water level would be increased.

Mr. Mawyer stated that the pipe construction project was initially considered to take eight years, but now they believed it would take six years. He stated that they shortened the timeline by two years.

Mr. Mawyer stated that the presentation had been given to the Board almost five years ago. He stated that there were higher temperatures, changing weather patterns, and drought conditions across the country. He stated that part of their mission was to be prepared to provide an adequate water supply to all of the customers.

Mr. Mawyer stated that the South Rivanna and the Observatory WTP renovations should be completed in the next calendar year. He stated the cost was about $43M. He stated that there is a

project to replace and build a new pipe from the Ragged Mountain Reservoir to the Observatory WTP. He stated that it included a pump station at the midpoint which would be a central pump station to pump water from Ragged Mountain to the Observatory WTP and to the South Rivanna WTP. He stated the pump station would increase the flexibility of the system, and connect the reservoirs and water treatment plants.

Mr. Mawyer stated that if they were in a drought stage, and the South Rivanna reservoir was really low, they would rely substantially on the Ragged Mountain Reservoir as the largest reservoir. He stated that water would be able to be pumped to both the South Rivanna and Observatory WTPs after the new pipeline was completed.

Mr. Mawyer stated there was an important Central Water Line project to distribute water throughout the Urban Area.

Mr. Mawyer stated that the total cost for the local water supply plan was about $215M. He stated that $79M would be allocated to the City, and about $136M would be allocated to the ACSA because of the funding formulas in the Ragged Mountain agreement.

Mr. Mawyer summarized that there was a drought in 2002, and the plan to increase the local water supply was completed 10 years later. He stated that the new Ragged Mountain Dam was completed in 2014. He stated that they had to get new permits in 2023, and the timeline was to finish the pipeline and the reservoir expansion around 2033. He stated that it will have been a 31-year process from the drought to the completion of the infrastructure to increase our water supply capacity and be best prepared for future droughts.

Mr. Mawyer mentioned the drought occurring in 2022 in California, Arizona, and Mississippi. He mentioned that in Virginia, staff discussed the "La Niña Winter." He explained that the state had three winters in a row where temperatures had been higher than normal and rainfall had been lower than normal. He stated that the same was predicted for the coming winter. He stated that a drought could be imminent. He mentioned that the drought of record lasted for 18 months—from June 2001 through November 2002.

Mr. Mawyer stated that there was concern because of the changing weather patterns. He stated that rainfall intensity would be greater, but periods of drought would be longer because of the global rising temperatures. He stated that they expected the same amount of rainfall, but it would rain intensely. He stated that the solution was to store the rain in the reservoirs, so they needed to build enough capacity to get the community through another extended drought period.

Mr. Mawyer stated that they looked to the strategic plan for guidance, and in the 2023 plan, they included the word, "evolving." He stated that they developed a plan and a schedule for the completion of the pipe in 2018. He stated that circumstances may have changed, and they may need to reconsider the schedule.

Mr. Mawyer stated that the community had a drought of record in 2002, and it completed a plan in 2012. He stated that they had all made significant investments in water supply and treatment facilities since 2012. He stated that there had been about $85M of improvements for the dam and

treatment plant renovations. He stated that part of the Rivanna to Ragged Mountain pipeline had been built near the Birdwood property. He stated that they had to finish the pipeline project to fully maximize and optimize the use of the infrastructure at the Ragged Mountain Reservoir. He stated that 12 additional feet of water could be added.

Mr. Mawyer stated that the Board was not requested to take any action. He stated that the draft CIP would be presented in February, and they would discuss accelerating the Ragged Mountain to Rivanna pipeline by three years. He stated that they would assess the cost of the accelerated schedule, and they would bring the information to the Board in February. He stated that the City Council, the ACSA, and the Board may need to support the change.

Mr. Pinkston noted the rising costs of construction.

Mr. Mawyer stated that the longer they waited, the more the project would cost.

Mr. Pinkston noted that the main concern was stabilizing the debt curve.

Mr. Mawyer stated that it was a big impact to the City's and the ACSA's customers because they paid the debt service for the funds borrowed by the Authority to pay for the project.

Mr. O'Connell noted that Observatory WTP could take advantage of the increased capacity at Ragged Mountain. He noted that the central water line was important to the whole plan.

Mr. Mawyer stated that the central water line was a distribution pipeline. He noted that water supply was a three-legged stool—they had to have enough storage capacity, enough treatment capacity, and enough distribution capacity. He stated that the central waterline would help them distribute water through the City and the urban areas of the County.

Mr. Mawyer stated that the Observatory WTP was upgraded from 7.7M gallons to 10M gallons, an increase of 2.3M gallons. He explained that Observatory WTP was built in the 1950s, and it was able to originally produce 4M to 5M gallons per day. He stated that in practice, the community used about 10M gallons per day in the urban area. He stated that if South Rivanna WTP was to become unusable, or the South Rivanna Reservoir was unavailable, then they could supply the entire urban community from the Observatory WTP once the central water line was built.

Mr. Mawyer stated that connecting the reservoirs with the pipe and improving the treatment capacity gave them much more capacity and flexibility to withstand environmental or manmade issues.

Mr. O'Connell stated that the WTP projects and central waterline were not originally part of the water plan.

Ms. Mallek asked if it would be possible for staff to provide an estimate of potential cost savings by accelerating the construction of the pipeline before February. She noted that VDOT had drastically increased the price of highway and bridge projects.

Mr. Mawyer stated that they would estimate it.

Ms. Mallek stated that there had been a lot of discussion about using the County's local water supply because of upstream pollution and sewer overflow systems in the James River. She stated that thousands of staff hours had been spent on the project. She noted that the southern part of the City had been without water for some time, and that was part of the inspiration for the central waterline. She noted that they had affordable water compared to other localities.

Mr. Stewart clarified that accelerating the Ragged Mountain Reservoir renovations would require an amendment to the Agreement.

Mr. Mawyer stated yes.

Mr. Stewart asked if the item would be brought forward in the near term.

Mr. Mawyer stated that they were determining the cost estimates, and they would likely provide a recommendation to the Board in February. He stated that there were two items—the Ragged Mountain Agreement which stated that they had to wait until 85% of the community demand for safe yield water was met and the adopted schedule which determined the project would be constructed between 2027 and 2035. He stated that they would need to work within both documents to change the plan.

Ms. Mallek clarified that the DEQ permit impacted each of the other plans. She stated that the water supply plan was fulfilling an order from the DEQ. She asked if they would have to gain additional permission from DEQ.

Ms. Whitaker stated no. She stated that there was local control.

Ms. Mallek asked if they could be provided a summary of the 2020 bathymetric study.

Mr. Mawyer stated that they had found little change in the South Rivanna Reservoir from 10 years prior. He stated that they believed a large storm helped wash out the sediment.

Ms. Mallek asked if sediment washout happened at the dam.

Ms. Whitaker explained that what typically happened at a dam like South Rivanna was that sediment built up against the dam, and that was why the dam had mud gates. She stated that mud gates were low-level gates that were opened during certain times of operation with the intention of trying to keep the material from building up. She stated that they had found that prior to the 2018 storm, they were losing about 15M gallons of storage a year due to sediment. She stated that they believed the large storm in 2018 helped to remove 20 to 30 years of sediment buildup from the reservoir.

Mr. Gaffney stated that they had to consider what the reaction would be in 20 to 30 years. He stated that there was a drought of record in 2002. He stated they had to ask whether they were

ready for another drought of record. He stated that they were probably not as prepared as they should be.

c. *Presentation: Dam Safety Program Overview*
Victoria Fort, P.E., Senior Civil Engineer

Ms. Fort stated she would provide the annual dam safety program overview. She stated that in the state, the regulating body for dam safety was the Department of Conservation and Recreation (DCR). She stated that every dam in the state was subject to the regulations from the DCR with the exception of any dams owned or licensed by the federal government, dams under a certain size, or dams that impounded under a certain volume of water. She stated that any dams operated for mining, agricultural, or canal purposes may be subject to different regulations.

Ms. Fort mentioned the Edenville and Sanford Dam emergency from May 2020 in Michigan. She stated that on May 19, the Edenville Dam failed following heavy rains and flash flood conditions. She stated that the Sanford Dam, which was downstream, was then overtopped. She stated that as a result, over 2,500 properties were destroyed or damaged, and there was an estimated $250M in damages. She stated that during the emergency, over 11,000 residents had to be evacuated which prevented a loss of life.

Ms. Fort mentioned that the College Lake Dam overtopped in Lynchburg, Virginia. She stated that they experienced over six inches of rain in two hours in August 2018. She stated that the rainfall caused the water level in the lake to rise rapidly, and it overtopped the dam. She stated that damage was caused to the road and the embankment, but they were rapidly able to open a valve, de-water it, and avoid a catastrophic dam failure. She stated that over 150 residents were evacuated during the emergency. She stated that they had since determined to remove the dam and restore the stream bed at a cost of $20M. She stated the restoration would begin next year.

Ms. Fort stated that dam emergencies were costly and impactful to the communities. She stated that the dam safety program was a broad program that involved staff time and effort. She stated that it involved a lot of permitting and regulatory compliance, submission of operation certificates, annual inspection reports, studies, and other requirements.

She stated that the dam safety program also involved the development of emergency action plans, training, and exercises at regular intervals. She stated that it involved regular maintenance and vegetation control at all of the faculties, and regular repairs and upgrades. She stated that it included the installation and maintenance of public safety features, including signage, fencing, and cameras. She stated that it also included the completion of studies and reports for compliance with the regulations and the completion of regular inspections and surveys of the facilities. She mentioned around-the-clock monitoring, particularly of the high-hazard dams by the Operations Department.

Ms. Fort stated that included in the high-hazard dams were the South Fork Rivanna Dam, the Ragged Mountain Dam, the Sugar Hollow Dam, and the Beaver Creek Dam. She stated that there were two low-hazard dams—the Totier Creek Dam and the Lickinghole Dam. She stated that there were unpermitted dams, including the North Fork Rivanna low-head dam, the Buck

Mountain pond dam, the Mechums River low-head dam, and the Ivy MUC pond dam.

Ms. Fort stated that the South Fork Rivanna Dam was regulated by the Federal Energy Regulatory Commission (FERC). She stated that FERC regulated the dam because in 1987, a small hydropower facility was built at the site. She stated that the original dam was built in 1965. She stated that the hydropower facility was defunct and planned to be decommissioned in 2023, and at that time, they would surrender the exemption that placed them under federal regulation. She explained that after they surrendered the exemption, the dam would be regulated by DCR. She explained that the South Fork Rivanna Dam was a concrete gravity dam that was 700 feet long and 54 feet tall.

Ms. Fort stated that the Ragged Mountain Dam was regulated by DCR and completed in 2014. She stated that it was an earth-filled dam that was 785 feet long and 125 feet tall. She stated that it would eventually impound an additional 700M gallons of water once the water level was raised by 12 feet.

Ms. Fort stated that Sugar Hollow Dam was a state-regulated dam. She stated that it was located in the northwest part of the County in the Whitehall district. She stated that it was built in 1948 following a mudslide during which the dam sustained significant damage. She stated that it was upgraded, and the crest gates were replaced with an inflatable crest gate. She stated that the crest gate had been replaced the year before because it had reached the end of its useful life. She stated that the dam was 480 feet long and 96 feet tall.

Ms. Fort stated that the Beaver Creek Dam was located in Crozet, and it was state regulated. She stated that it was the sole water supply for Crozet, and it was built in 1963 for water supply and flood control. She stated that it was built in partnership with the Soil Conservation Service which was now the National Resources Conservation Service (NRCS). She explained that it was a 530-foot-long, earth-filled dam that was 60 feet tall. She stated that the dam was a popular County park, so they worked with County Parks and Recreation on the maintenance of the grassy areas of the dam. She stated that Brown's Gap Turnpike ran along the crest of the dam.

Ms. Fort stated that the Beaver Creek Dam was undergoing a planning and environmental assessment study funded by NRCS. She stated that it would require a spillway upgrade. She stated that they were completing the study, and it was expected to be done the next year. She stated that the design phase of the project would follow.

Ms. Fort stated that Totier Creek Dam and Lickinghole Creek Dam were low-hazard dams regulated by the state. She stated that Totier Creek Dam was located in Scottsville, and it was an earth-filled dam built in 1971. She stated that there was a rock-cut spillway. She stated that the dam was 277 feet long and 35 feet tall. She stated that it was a County park. She stated that the Lickinghole Creek Dam was located in Crozet south of Beaver Creek Reservoir. She stated that it was built in 1995 as a sediment storage basin. She stated that the property was managed and owned by the Authority. She stated that it was a concrete, gravity-fed dam that was 458 feet long and 42 feet tall.

Ms. Fort stated that dam safety emergencies were low-probability events, but they had the

potential for extremely high impact to the community. She stated that potential causes for dam emergencies included rainfall exceeding the designed level, material failure, vandalism, and public safety emergencies occurring at the dam.

Ms. Fort stated that the hazard level classification was created to convey the severity of the consequences of the dam's failure or misoperation. She stated that it did not reflect the condition of the dam. She stated that a high-hazard dam meant that if it were to fail, it would cause likely or probable loss of life and significant economic damage. She stated that if a low-hazard dam were to fail, they would expect no loss of life and no significant economic impacts.

Ms. Fort stated that the hazard potential dictated the design criteria for the dam and its spillway. She stated that the probable maximum precipitation (PMP) was the theoretical greatest depth of precipitation for a given duration that was physically possible over a particular drainage area at a certain time of the year. She stated that it was the most possible amount of precipitation that could be expected at a location. She stated that there was a different PMP for different dams.

Ms. Fort stated that dams with a high-hazard potential had to be designed to pass the flood that resulted from the PMP. She stated that the resulting flood from the PMP was called the probable maximum flood (PMF). She stated that for the Sugar Hollow Reservoir, a two-year storm would see about 3.5 inches of rain over a 24-hour period, and a 100-year storm would result in 9 inches of rain over 24 hours. She stated that the Sugar Hollow PMP was 34 inches of rain over 24 hours.

Ms. Fort stated that the South Fork Reservoir PMP was 23.7 inches of rain over 24 hours. She stated that Hurricane Camille brought over 27 inches of rain in an overnight period, and that was about 81% of the PMP. She stated that in Madison County in 1995, there was a storm that damaged the Sugar Hollow Dam, and they saw 25 to 30 inches of rain in a 16-hour period.

Ms. Fort stated that internally, they had the Owner's Dam Safety Program. She stated that it was a requirement of FERC that they develop the program, and it was applied to all of the facilities. She stated that the program includes a dam safety policy, internal training requirements and procedures, requirements for safe dam design and quality construction, and requirements for dam maintenance and monitoring.

Ms. Fort stated that they developed emergency action plans or emergency preparedness plans for the low-hazard dams. She stated that they were documents allowing coordination with emergency planning agencies during dam emergencies. She stated that the emergency plan was updated annually and distributed to plan holders. She stated that they annually performed training and drills for the emergency action plan.

Ms. Fort stated that they had signage, alarms, and plans for notification to downstream property owners to help with emergency response. She stated that Emergency Action Plans outlined how the Authority would coordinate with the Virginia Department of Emergency Management, the Emergency Communications Center, local police, fire and rescue, VDOT, media, local government, and other parties.

Ms. Fort stated that the Emergency Action Plans defined emergency responsibilities. She stated that in an emergency, the Authority was responsible for verifying and assessing the emergency conditions of the dam. She stated that they would then notify the participating emergency management agencies, and they would take any corrective actions at the facility. She stated that they would issue condition status reports to the community, and they would be the ones to declare the end of the emergency.

Ms. Fort stated that outside plan-holder agencies, including the Emergency Communication Center, County and City government, and fire and rescue, would receive condition status reports from the Authority and would notify the public. She stated that they would coordinate and conduct the evacuation from any inundation areas if required.

Ms. Fort stated the governments were required to provide mutual aid if requested and able, and they were required to declare an emergency which would provide more resources to respond to the emergency.

Ms. Fort stated that the failure scenarios and notification charts were an important part of the Emergency Action Plans. She stated that they prepared for three dam failure emergency scenarios. She stated that they prepared for if dam failure was imminent or had already occurred. She stated they would conduct immediate evacuations. She stated that the second scenario was if a potential failure scenario was developing. She stated that the most common scenario was for a non-failure emergency which was generally used in the case of heavy rainfall. She stated that each scenario had its own notification chart.

Mr. Mawyer noted that a non-failure emergency notification had been recently issued.

Ms. Fort stated that it had been issued for Sugar Hollow Dam.

Mr. Mawyer stated that he forwarded the notification to Mr. Richardson and Mr. Rogers and the other parties he was supposed to notify.

Ms. Fort stated that the dam breach inundation map was a part of the emergency action plans. She stated that the maps displayed three different scenarios for dam breaches and which structures would be inundated. She stated that it identified major intersections which may be affected. She stated that the map stated how long it would take after a failure for the flood wave to reach a certain location, the height of the water, and the maximum discharge.

Ms. Fort stated that the scenarios displayed included a sunny-day breach and the PMF under a dam failure and non-failure situation.

Ms. Fort stated that she would lastly review dam projects that were either in the planning phase or were completed. She stated that this year, drainage improvements were completed at the Lickinghole Creek Dam and Ragged Mountain Dam. She stated that last year, they replaced the rubber crest gate at the Sugar Hollow Dam, alterations to the Ivy MUC irrigation pond dam to lower the effective height of the dam and spillway so that it would fall below the requirements for state regulation. She stated that a number of repairs were completed as one major project at

South Rivanna Dam, including repairs of the two mud gates, grouting repairs at the raw water pump station, and safety improvements to create safer access to facilities.

Ms. Fort stated that in planning and design, study and inspections were being done on the Buck Mountain Pond Dam, which was the dam acquired upon purchase of the Buck Mountain property and required rehabilitation. She stated that work was being done to determine its hazard classification and the subsequent repairs needed for that location. She stated that they also were performing a planning study for eventual spillway upgrades at the Beaver Creek Dam, which was expected to be completed in early 2023 and would then move into the design phase.

Ms. Fort stated that at the South Fork Rivanna Dam, the hydropower facility was being decommissioned, the work had been approved by FERC, awarded to a contractor, and the work was expected to start in the winter of 2023. She stated that monthly tree and brush clearing was performed at all the dams, seasonal tree removal was performed when needed, installation and maintenance of new public safety measures, and other small repairs.

Ms. Mallek asked if decommissioning was an option for the Buck Mountain Dam.

Ms. Fort stated that it was one of several options available, rehabilitation being another one.

Ms. Mallek stated that the maps of the flood zones were intriguing. She stated that she was most reassured by, out of the improvements made at Ragged Mountain, the safety improvements made for all of the downstream areas that were in danger due to the original 15-foot spillway for such a large reservoir. She asked if there was an audible alarm for those who were so close in proximity along the creek.

Ms. Fort stated that there was no audible alarm located at that facility.

Mr. Mawyer stated that staff would notify him, and he in turn would call the City Manager and the County Executive to activate public safety personnel to evacuate certain areas and those residents.

Ms. Whitaker stated that they had cameras at all of their dam facilities so that operators could see the facility 24/7, and there were water level sensors, so an alarm would be set off if the elevation changed a certain level in a certain amount of time, and operators then knew to respond.

Ms. Fort stated that there was a lot of monitoring at the facilities, particularly at Ragged Mountain, where there were seepage monitors and piezometers, and if those readings changed dramatically, there would be SCADA alarms received. She stated that they recently activated the emergency action plan for Sugar Hollow. She stated that they generally were very conservative, and if rain was coming, they were already watching the data, and when certain thresholds were hit, they tried to be prepared to make notifications as early as possible.

Mr. Rogers stated that they should think about how to ensure their emergency action plans included the possible overflow of these dams. He stated that he would check and make sure that when the notification happened, they had some indication of how much time they had and

evacuation procedures. He stated that they had just approved an emergency manager several weeks ago and were writing an emergency management plan, so this should be included for consideration.

Ms. Fort stated that a state and federal requirement was for tabletop exercises to be conducted with the community at intervals, and they planned to have a large community training exercise event sometime in 2023, but it was early in the planning phases.

Mr. Mawyer stated that this program was not often discussed but related to an issue that could greatly affect the community and came with a huge responsibility. He stated that Ms. Fort and Ms. Whitaker were the limited staff who worked on this program, and they did so excellently, but if it went poorly, it would be very drastic, so they must be practiced on how to deal with dam safety.

Ms. Fort stated that the water operators did their jobs well and efficiently.

Ms. Mallek asked if there was an ability to electronically open the gates. She stated that it was dangerous for people to do so by hand.

Ms. Fort stated that they could remotely operate some of the raw water valves at Sugar Hollow, but did not have remote operation of all the dam gates.

Ms. Whitaker stated that the rubber gate at Sugar Hollow was fully automated, so it was programmed to move appropriately, with staff oversight and a manual release valve. She stated that other facilities that were difficult to get to had some level of automation, sometimes local and sometimes remote automation.

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

Mr. Gaffney asked if they had closed on the property of Buck Mountain.

Mr. Mawyer stated that no, January 10 was the planned closing date. He stated that the attorneys had been processing the paperwork, and things were proceeding as planned.

11. *CLOSED MEETING*

There was no reason for a closed meeting.

12. *ADJOURNMENT*

At 3:50 p.m., Mr. O'Connell moved to adjourn the meeting of the Rivanna Water and Sewer Authority. Mr. Pinkston seconded the motion, which passed unanimously (6-0). (Mr. Richardson was absent)

Respectfully submitted,

Mr. Jeff Richardson
Secretary - Treasurer

RIVANNA WATER & SEWER AUTHORITY SEAL VIRGINIA

December 13, 2022