



**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 2<sup>nd</sup> 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

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

94  
95 Mr. Mawyer stated that they continued to work on the engineering and field investigations for  
96 the central waterline.

97  
98 Mr. Pinkston asked Mr. Mawyer to describe the Schenks Branch sewer pipe project.

99  
100 Mr. Mawyer responded that it was a long-standing project that began before he worked for the  
101 Authority. He stated that the sewer pipeline from the McIntire Recycling Center toward Preston  
102 Avenue had to be replaced because it was undersized. He stated that it connected to the City's  
103 sewer system around Preston Avenue. He explained that the Authority owned part of the pipe up  
104 to the County Office Building, and the City had a project to upgrade the connecting sewer  
105 system. He stated that they were working together with the City to replace the pipe.

106  
107 Ms. Hildebrand responded that the City would take the project further under Preston Avenue to  
108 around McDonald's. She stated that the entire sewer line needed to be upgraded to 14th Street or  
109 15th Street.

110  
111 Mr. Mawyer stated that the project would replace the sewer pipe from the McDonald's at Preston  
112 Avenue to the McIntire Recycling Center. He stated that a new pipe had been constructed many  
113 years ago from the Rt. 250 Bypass bridge in the McIntire Road area to the McIntire Recycling  
114 Center. He stated that it was a sewer line replacement project, and the alternatives were to put the  
115 pipe in McIntire Road and shut the road down for months or lay pipe through the ball field and  
116 frontage to the County Office Building.

117  
118 Ms. Mallek asked if they would revisit the arguments and processes from the beginning of the  
119 project proposal. She stated that they had already addressed the middle of the ball field and the  
120 tree.

121  
122 Mr. Mawyer stated Mr. Stewart had all of the information, and he believed that Mr. Stewart and  
123 Mr. Richardson were working on it.

124  
125 Ms. Mallek stated she believed the pipe would be located near the road the entire way.

126  
127 Mr. Mawyer stated that it was adjacent to the road. He stated that it was close to the road, but it  
128 was not in the street. He stated that it was along the County frontage and into the ball field. He  
129 stated that it would bore under the big tree.

130  
131 Ms. Mallek stated that it would not happen. She stated that the tree was a Virginia Heritage Tree,  
132 and they could not go into the root ball of the tree.

133  
134 Mr. Mawyer stated that they were previously under a consent order from the state to replace the  
135 pipe because the sewer overflowed. He stated that the consent order had been removed a few  
136 years ago.

137  
138 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*

185  
186 *c. Staff Report on Ongoing Projects*

187  
188 *d. Staff Report on Wholesale Metering*

189  
190 *e. Approval of Updated Flexible Benefits Plan*

191  
192 Mr. Pinkston asked if the Authority managed the Flexible Benefits Plan itself or if the work was  
193 outsourced.

194  
195 Mr. Lonnie Wood explained that any employer that had tax-free deductions withheld from a  
196 paycheck, such as a Flexible Benefits Plan, had to have an approved plan. He stated that they  
197 already had one, but it was being updated to reflect minor changes. He stated that it was a  
198 document that stated certain deductions could be made from employee paychecks pre-tax.

199  
200 Mr. Pinkston clarified that the document was internal to the organization.

201  
202 Mr. Wood stated that it was a document applicable to the Authorities that the Flexible Benefit  
203 Administrator would use.

204  
205 **Mr. Rogers moved to approve the Consent Agenda. Mr. O'Connell seconded the motion,**  
206 **which passed unanimously (6:0). (Mr. Richardson was absent)**

207  
208 **9. OTHER BUSINESS**

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

211  
212 Mr. McLearen stated that he would present the results of the audit procedure and a review of the  
213 key financial findings in the document. He stated that there were required communications  
214 between an auditor and a government body. He stated that the first was information related to  
215 responsibilities under the audit. He explained that the auditor tested documents and controls and  
216 opined on financial statements.

217  
218 Mr. McLearen stated that management played a key role in the audit process. He stated that they  
219 maintained fiscal controls throughout the fiscal year to ensure the accuracy of financial reports.  
220 He mentioned the implementation of accounting standards. He stated that FY22 brought about  
221 the implementation of GASB Statement No. 87, a monumental reporting standard for most  
222 governmental agencies related to leases. He noted that the Authority had to implement the  
223 reporting, and Mr. Wood and his staff had implemented it.

224  
225 Mr. Mawyer clarified that the Authority leased the Observatory WTP property, and that was the  
226 primary addition to the financial statement.

227  
228 Mr. McLearen stated that was right. He stated that historically, leases that were not considered a  
229 capital lease, meaning there was no transfer of ownership, were not recorded in the financial  
230 statements. He stated that it was considered a known disclosure of a true operating cost. He

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

234  
235 Mr. McLearen stated that they were required to communicate any difficulties encountered during  
236 the audit. He stated those difficulties could include the inability to access necessary records to  
237 complete the audit process. He reported that there were no difficulties encountered during the  
238 audit process.

239  
240 Mr. McLearen stated that they were required to communicate accounting estimates. He stated  
241 that most financial statements included accounting estimates. He stated that the two most  
242 significant accounting estimates in the report were estimates related to capital assets and how  
243 long they were expected to last, and estimates related to net pension liabilities. He stated that the  
244 estimates were determined by the actuary performing the computations.

245  
246 Mr. McLearen stated they were required to communicate corrected and uncorrected  
247 misstatements. He stated that financial statements contained audit adjustments, and they were  
248 required to disclose any uncorrected misstatements. He reported that there were no uncorrected  
249 misstatements, and the audit adjustments were included in the report.

250  
251 Mr. McLearen stated that they were required to disclose any disagreements with management in  
252 applying principles. He stated that there were no disagreements in applying the principles in  
253 FY22.

254  
255 Mr. McLearen stated that there were two reports contained in the Board's packet. He stated that  
256 there were three core financial statements in the report. He stated that exhibit one was similar to  
257 a balance sheet that was a statement of net positions. He stated that the net position was  
258 approximately \$164.8M for FY22.

259  
260 Mr. McLearen stated that the second exhibit was the statement of revenues, expenses, and  
261 changes in the Authorities' net position. He stated that it was similar to a profit and loss  
262 statement, and it reported the increase or decrease in the net position. He stated that the Authority  
263 reported an increase of approximately \$4.68M for FY22.

264  
265 Mr. McLearen stated that the third financial statement was the statement of cashflow. He stated  
266 that the ending cash balance was included, and the statement reported solely the cash position of  
267 the Authority. He stated that it was approximately \$75.7M at the end of FY22. He stated that the  
268 second report was similar to the internal control opinion, and it was the Independent Auditor's  
269 Report and Internal Controls over Financial Reporting.

270  
271 Mr. McLearen stated that it was a document where the audit would disclose any significant  
272 deficiencies or material weaknesses disclosed during the audit process over the financial  
273 reporting and internal control processes that were in place. He reported that there were no  
274 significant deficiencies or material weaknesses discovered during the audit process over the  
275 internal controls for FY22.

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

278  
279 Mr. Mawyer clarified that the Authority had a ground lease for the Observatory WTP. He stated  
280 that they owned the building.

281  
282 Ms. Mallek asked if it would be 50 years from when the improvements happened.

283  
284 Mr. Mawyer explained that it was 49 years from 2021, and then they had the option for a second  
285 49 years. He stated that they had a 99-year lease previously, but that expired in 2021. He stated  
286 that they negotiated a new lease with UVA for the ground.

287  
288 Mr. Gaffney clarified that it was at both parties' option to renew the lease.

289  
290 Mr. Mawyer stated that was correct, and either party could opt out.

291  
292 **Ms. Mallek moved to accept the FY22 Audit Report. Mr. Rogers seconded the motion,**  
293 **which passed unanimously (6:0). (Mr. Richardson was absent)**

294  
295 *b. Presentation: Review of the Community's Water Supply Plan*  
296 *Bill Mawyer, Executive Director*

297  
298 Mr. Mawyer stated that Authority's mission was to provide adequate amounts of quality drinking  
299 water to the customers of the City and the ACSA. He stated that he would discuss the topic more  
300 during the CIP budget discussions in February.

301  
302 Mr. Mawyer stated that the Ragged Mountain Reservoir was the largest reservoir in the  
303 Authority's system. He stated that during 2002, there was a major drought in the area, and it was  
304 a drought of record. He stated that the drought extended from Virginia to Georgia, and the  
305 affected states had the driest July and Augusts on record. He stated that the state was under a  
306 state of emergency from a declaration from the governor.

307  
308 Mr. Mawyer explained that the Community Water Supply Plan was an outcome from the 2002  
309 drought. He stated that the plan was not contained within one single document—it was an  
310 accumulation of documents. He stated that the primary document was the Ragged Mountain  
311 Dam Agreement.

312  
313 Mr. Mawyer stated that the drought of 2002 made the community realize it needed a greater  
314 water supply. He stated that they considered several alternatives, and one was to run a pipe to the  
315 James River near Scottsville. He stated that they made a decision to source water locally and to  
316 primarily source the water from the Rivanna River. He stated that the Community Water Supply  
317 Plan was approved in 2012 by City Council, and it was supported by the Albemarle Board and  
318 the ACSA.

319  
320 Mr. Mawyer stated that the plan was to build a larger dam and reservoir at the Ragged Mountain  
321 Reservoir. He stated that the facility had two dams—the first was built in 1885, and the second  
322 was built in 1908. He stated that the existing dam was structurally deficient in many ways. He



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

324  
325 Mr. Mawyer stated that the pipe that filled Ragged Mountain Reservoir from Sugar Hollow was  
326 about 100 years old and needed to be replaced. He stated that the strategy of those in charge in  
327 2012 was to build a new pipe and dam. He stated that the pipe from Sugar Hollow would be  
328 closed upon completion of the new pipe from the South Rivanna Reservoir.

329  
330 Mr. Mawyer stated that they currently had to pipe water to the Ragged Mountain Reservoir. He  
331 stated that there was a tiny watershed which served the Ragged Mountain Reservoir, and it did  
332 not fill itself by natural stream flows and rain. He stated that the South Rivanna Reservoir  
333 received a significant amount of water flow and rainfall, so the community plan was to fill the  
334 new Ragged Mountain Reservoir from the South Rivanna Reservoir. He stated that the new pipe  
335 was planned to be constructed from the South Rivanna Reservoir to the Ragged Mountain  
336 Reservoir.

337  
338 Mr. Mawyer stated that the watershed for Ragged Mountain Reservoir was two square miles, and  
339 the watershed for the South Fork Rivanna Reservoir was 259 square miles. He stated that much  
340 more water passed through the South Rivanna Reservoir than the Ragged Mountain Reservoir,  
341 and conversely, the new Ragged Mountain Reservoir would hold 1.4B gallons whereas the South  
342 Fork Rivanna Reservoir held about 900M gallons.

343  
344 Mr. Pinkston asked when Sugar Hollow was built.

345  
346 Ms. Whitaker responded that the Sugar Hollow Dam was built in 1920, and the present dam was  
347 built in 1948. She stated that the rubber bladder was added on top of the dam in 1999.

348  
349 Mr. Pinkston clarified that the dam always held water for South Rivanna.

350  
351 Ms. Whitaker explained that the water naturally flowed from Sugar Hollow to South Rivanna,  
352 but it was piped to Ragged Mountain, even in the 1920s.

353  
354 Mr. Mawyer stated that the plan developed in 2012 was to stop flow through the older pipe from  
355 Sugar Hollow Reservoir and to start flow from the South Rivanna Reservoir to keep the Ragged  
356 Mountain Reservoir full. He stated that a new dam would be constructed at Ragged Mountain.

357  
358 Mr. O'Connell asked how much capacity the additional 12 feet of water would add to the  
359 municipal capacity.

360  
361 Mr. Mawyer responded that it would add 700M gallons. He stated that the total reservoir  
362 capacity would be over four times the original built capacity. He stated that it was originally  
363 500M gallons, and it would now be 2.1B gallons. He stated that the reservoir currently had 1.4B  
364 gallons. He stated that the Authority was required to perform, every 10 years, a bathymetric  
365 study. He explained that a bathymetric study was an assessment of the urban reservoirs to  
366 measure how much water was in them and determine the usable quantity. He noted that sediment  
367 could and would, over time, decrease a reservoir's volume. He stated that large storms  
368 sometimes helped to wash sediment out of the reservoir. He stated that they worked with the



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

370  
371 Mr. Gaffney asked what the current estimated cost was for the additional 12 feet of water to be  
372 added to the reservoir.

373  
374 Mr. Mawyer responded that the 12-foot increase was \$5M to perform the grading and adjust the  
375 intake tower to provide water from the South Fork Rivanna Reservoir. He stated that there was  
376 an \$82M cost to build the pipe.

377  
378 Mr. Mawyer stated that around 2006, the Authority applied to the regulatory agencies, the Army  
379 Corps of Engineers, and the Virginia DEQ for a permit to build a new dam and pipeline at  
380 Ragged Mountain Reservoir. He stated that the permit was granted by the agencies in 2008. He  
381 stated that the dam would be built with an additional 12 vertical feet, and the additional height  
382 would add 700M gallons of additional capacity.

383  
384 Mr. Mawyer stated that the Army Corps of Engineer permits expired nearly five years ago, but  
385 had been renewed. He stated that the DEQ permit would expire in February 2023. He stated that  
386 they had applied for a new permit from DEQ, and they had received administrative approval to  
387 continue to operate and withdraw water. He stated that they had a permit until the new  
388 application was processed by DEQ.

389  
390 Ms. Whitaker stated that the typical permit approval period from DEQ was 15 years.

391  
392 Mr. Mawyer stated that the Community Water Supply Plan was really the Ragged Mountain  
393 Dam project agreement. He stated that the agreement was approved by the City, the ACSA, and  
394 the Authority in 2012. He stated that the plan included a new dam for Ragged Mountain, and it  
395 determined the ACSA would pay 85% and the City would pay 15%. He stated that the dam was  
396 completed in 2014 and filled in 2015.

397  
398 Mr. Mawyer stated that the second component of the agreement was a pump station and the  
399 pipeline from the South Fork Rivanna Reservoir to the Ragged Mountain Reservoir. The  
400 agreement stated that the ACSA would pay 80% of the cost, and the City would pay 20% of the  
401 cost. He stated that the project was currently in the CIP to be built from 2027 through 2033. He  
402 stated that they had to modify the intake tower and perform grading around the reservoir. He  
403 stated that the agreement stated the work to add 700 MG to the reservoir could be done 10 years  
404 before the community demand equaled 85% of the safe yield—estimated to be around 2035.

405  
406 Mr. Mawyer stated that the agreement required them to perform a bathymetric study and a safe  
407 yield study every 10 years. He noted that one was completed in 2020, and the next would be in  
408 2030.

409  
410 Mr. Pinkston asked if they would have to wait until the mid-2030s to add the additional 12 feet  
411 of water to the reservoir.

412  
413 Mr. Mawyer stated that was what the Ragged Mountain Agreement required. He stated that it  
414 would be around 2035 before they could complete the work to increase the water level, in

415 accordance with their calculations.

416  
417 Mr. Gaffney stated the Agreement could be amended.

418  
419 Mr. Mawyer stated that when he joined the Authority in 2016, the timeline for building the  
420 pipeline from South Fork Rivanna Reservoir to the Ragged Mountain Reservoir was not defined  
421 in the CIP. He stated that he and staff proposed four different completion schedules for the  
422 pipeline to the Board in 2018. He stated that the early schedule, Schedule A, would go from 2022  
423 through 2030; the near-term Schedule B would go from 2027 through 2035; Schedule C would  
424 be from 2032 through 2040; and the long-term Schedule D would be from 2042 through 2050.

425  
426 Mr. Mawyer stated that the Board, the City, and the ACSA supported Schedule B, which was to  
427 complete the pipeline from 2027 through 2035. He stated that the debt curve allowed for  
428 additional debt capacity around 2032, and that was a significant factor in deciding to implement  
429 Schedule B. He stated that the major funds would be spent in the later part of the eight years  
430 because of construction.

431  
432 Mr. Mawyer stated that in 2018, the City, the ACSA, and the Authority approved Schedule B for  
433 the project. He stated that the ACSA recommended that as soon as the pipeline was constructed,  
434 they add 12 feet to the normal water level in the Ragged Mountain Reservoir.

435  
436 Mr. O'Connell stated that it was based upon the completion of the pipeline.

437  
438 Mr. Mawyer stated that was correct. He stated that they would complete the pipe and move  
439 forward with the grading to eventually raise the water level.

440  
441 Mr. Gaffney asked if that was approved with the project schedule approval.

442  
443 Mr. O'Connell responded that it had been built into the CIP.

444  
445 Mr. Gaffney clarified that it was not approved with that agreement.

446  
447 Mr. O'Connell responded that the original agreement had a formula to determine when the water  
448 level would be increased.

449  
450 Mr. Mawyer stated that the pipe construction project was initially considered to take eight years,  
451 but now they believed it would take six years. He stated that they shortened the timeline by two  
452 years.

453  
454 Mr. Mawyer stated that the presentation had been given to the Board almost five years ago. He  
455 stated that there were higher temperatures, changing weather patterns, and drought conditions  
456 across the country. He stated that part of their mission was to be prepared to provide an adequate  
457 water supply to all of the customers.

458  
459 Mr. Mawyer stated that the South Rivanna and the Observatory WTP renovations should be  
460 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

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

511  
512 Mr. Mawyer stated that the Board was not requested to take any action. He stated that the draft  
513 CIP would be presented in February, and they would discuss accelerating the Ragged Mountain  
514 to Rivanna pipeline by three years. He stated that they would assess the cost of the accelerated  
515 schedule, and they would bring the information to the Board in February. He stated that the City  
516 Council, the ACSA, and the Board may need to support the change.

517  
518 Mr. Pinkston noted the rising costs of construction.

519  
520 Mr. Mawyer stated that the longer they waited, the more the project would cost.

521  
522 Mr. Pinkston noted that the main concern was stabilizing the debt curve.

523  
524 Mr. Mawyer stated that it was a big impact to the City's and the ACSA's customers because they  
525 paid the debt service for the funds borrowed by the Authority to pay for the project.

526  
527 Mr. O'Connell noted that Observatory WTP could take advantage of the increased capacity at  
528 Ragged Mountain. He noted that the central water line was important to the whole plan.

529  
530 Mr. Mawyer stated that the central water line was a distribution pipeline. He noted that water  
531 supply was a three-legged stool—they had to have enough storage capacity, enough treatment  
532 capacity, and enough distribution capacity. He stated that the central waterline would help them  
533 distribute water through the City and the urban areas of the County.

534  
535 Mr. Mawyer stated that the Observatory WTP was upgraded from 7.7M gallons to 10M gallons,  
536 an increase of 2.3M gallons. He explained that Observatory WTP was built in the 1950s, and it  
537 was able to originally produce 4M to 5M gallons per day. He stated that in practice, the  
538 community used about 10M gallons per day in the urban area. He stated that if South Rivanna  
539 WTP was to become unusable, or the South Rivanna Reservoir was unavailable, then they could  
540 supply the entire urban community from the Observatory WTP once the central water line was  
541 built.

542  
543 Mr. Mawyer stated that connecting the reservoirs with the pipe and improving the treatment  
544 capacity gave them much more capacity and flexibility to withstand environmental or manmade  
545 issues.

546  
547 Mr. O'Connell stated that the WTP projects and central waterline were not originally part of the  
548 water plan.

549  
550 Ms. Mallek asked if it would be possible for staff to provide an estimate of potential cost savings  
551 by accelerating the construction of the pipeline before February. She noted that VDOT had  
552 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 facilities, 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

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

646  
647 Ms. Fort stated that the South Fork Rivanna Dam was regulated by the Federal Energy  
648 Regulatory Commission (FERC). She stated that FERC regulated the dam because in 1987, a  
649 small hydropower facility was built at the site. She stated that the original dam was built in 1965.  
650 She stated that the hydropower facility was defunct and planned to be decommissioned in 2023,  
651 and at that time, they would surrender the exemption that placed them under federal regulation.  
652 She explained that after they surrendered the exemption, the dam would be regulated by DCR.  
653 She explained that the South Fork Rivanna Dam was a concrete gravity dam that was 700 feet  
654 long and 54 feet tall.

655  
656 Ms. Fort stated that the Ragged Mountain Dam was regulated by DCR and completed in 2014.  
657 She stated that it was an earth-filled dam that was 785 feet long and 125 feet tall. She stated that  
658 it would eventually impound an additional 700M gallons of water once the water level was  
659 raised by 12 feet.

660  
661 Ms. Fort stated that Sugar Hollow Dam was a state-regulated dam. She stated that it was located  
662 in the northwest part of the County in the Whitehall district. She stated that it was built in 1948  
663 following a mudslide during which the dam sustained significant damage. She stated that it was  
664 upgraded, and the crest gates were replaced with an inflatable crest gate. She stated that the crest  
665 gate had been replaced the year before because it had reached the end of its useful life. She stated  
666 that the dam was 480 feet long and 96 feet tall.

667  
668 Ms. Fort stated that the Beaver Creek Dam was located in Crozet, and it was state regulated. She  
669 stated that it was the sole water supply for Crozet, and it was built in 1963 for water supply and  
670 flood control. She stated that it was built in partnership with the Soil Conservation Service which  
671 was now the National Resources Conservation Service (NRCS). She explained that it was a 530-  
672 foot-long, earth-filled dam that was 60 feet tall. She stated that the dam was a popular County  
673 park, so they worked with County Parks and Recreation on the maintenance of the grassy areas  
674 of the dam. She stated that Brown's Gap Turnpike ran along the crest of the dam.

675  
676 Ms. Fort stated that the Beaver Creek Dam was undergoing a planning and environmental  
677 assessment study funded by NRCS. She stated that it would require a spillway upgrade. She  
678 stated that they were completing the study, and it was expected to be done the next year. She  
679 stated that the design phase of the project would follow.

680  
681 Ms. Fort stated that Totier Creek Dam and Lickinghole Creek Dam were low-hazard dams  
682 regulated by the state. She stated that Totier Creek Dam was located in Scottsville, and it was an  
683 earth-filled dam built in 1971. She stated that there was a rock-cut spillway. She stated that the  
684 dam was 277 feet long and 35 feet tall. She stated that it was a County park. She stated that the  
685 Lickinghole Creek Dam was located in Crozet south of Beaver Creek Reservoir. She stated that  
686 it was built in 1995 as a sediment storage basin. She stated that the property was managed and  
687 owned by the Authority. She stated that it was a concrete, gravity-fed dam that was 458 feet long  
688 and 42 feet tall.

689  
690 Ms. Fort stated that dam safety emergencies were low-probability events, but they had the



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

694  
695 Ms. Fort stated that the hazard level classification was created to convey the severity of the  
696 consequences of the dam's failure or misoperation. She stated that it did not reflect the condition  
697 of the dam. She stated that a high-hazard dam meant that if it were to fail, it would cause likely  
698 or probable loss of life and significant economic damage. She stated that if a low-hazard dam  
699 were to fail, they would expect no loss of life and no significant economic impacts.

700  
701 Ms. Fort stated that the hazard potential dictated the design criteria for the dam and its spillway.  
702 She stated that the probable maximum precipitation (PMP) was the theoretical greatest depth of  
703 precipitation for a given duration that was physically possible over a particular drainage area at a  
704 certain time of the year. She stated that it was the most possible amount of precipitation that  
705 could be expected at a location. She stated that there was a different PMP for different dams.

706  
707 Ms. Fort stated that dams with a high-hazard potential had to be designed to pass the flood that  
708 resulted from the PMP. She stated that the resulting flood from the PMP was called the probable  
709 maximum flood (PMF). She stated that for the Sugar Hollow Reservoir, a two-year storm would  
710 see about 3.5 inches of rain over a 24-hour period, and a 100-year storm would result in 9 inches  
711 of rain over 24 hours. She stated that the Sugar Hollow PMP was 34 inches of rain over 24  
712 hours.

713  
714 Ms. Fort stated that the South Fork Reservoir PMP was 23.7 inches of rain over 24 hours. She  
715 stated that Hurricane Camille brought over 27 inches of rain in an overnight period, and that was  
716 about 81% of the PMP. She stated that in Madison County in 1995, there was a storm that  
717 damaged the Sugar Hollow Dam, and they saw 25 to 30 inches of rain in a 16-hour period.

718  
719 Ms. Fort stated that internally, they had the Owner's Dam Safety Program. She stated that it was  
720 a requirement of FERC that they develop the program, and it was applied to all of the facilities.  
721 She stated that the program includes a dam safety policy, internal training requirements and  
722 procedures, requirements for safe dam design and quality construction, and requirements for dam  
723 maintenance and monitoring.

724  
725 Ms. Fort stated that they developed emergency action plans or emergency preparedness plans for  
726 the low-hazard dams. She stated that they were documents allowing coordination with  
727 emergency planning agencies during dam emergencies. She stated that the emergency plan was  
728 updated annually and distributed to plan holders. She stated that they annually performed  
729 training and drills for the emergency action plan.

730  
731 Ms. Fort stated that they had signage, alarms, and plans for notification to downstream property  
732 owners to help with emergency response. She stated that Emergency Action Plans outlined how  
733 the Authority would coordinate with the Virginia Department of Emergency Management, the  
734 Emergency Communications Center, local police, fire and rescue, VDOT, media, local  
735 government, and other parties.

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

743  
744 Ms. Fort stated that outside plan-holder agencies, including the Emergency Communication  
745 Center, County and City government, and fire and rescue, would receive condition status reports  
746 from the Authority and would notify the public. She stated that they would coordinate and  
747 conduct the evacuation from any inundation areas if required.

748  
749 Ms. Fort stated the governments were required to provide mutual aid if requested and able, and  
750 they were required to declare an emergency which would provide more resources to respond to  
751 the emergency.

752  
753 Ms. Fort stated that the failure scenarios and notification charts were an important part of the  
754 Emergency Action Plans. She stated that they prepared for three dam failure emergency  
755 scenarios. She stated that they prepared for if dam failure was imminent or had already occurred.  
756 She stated they would conduct immediate evacuations. She stated that the second scenario was if  
757 a potential failure scenario was developing. She stated that the most common scenario was for a  
758 non-failure emergency which was generally used in the case of heavy rainfall. She stated that  
759 each scenario had its own notification chart.

760  
761 Mr. Mawyer noted that a non-failure emergency notification had been recently issued.

762  
763 Ms. Fort stated that it had been issued for Sugar Hollow Dam.

764  
765 Mr. Mawyer stated that he forwarded the notification to Mr. Richardson and Mr. Rogers and the  
766 other parties he was supposed to notify.

767  
768 Ms. Fort stated that the dam breach inundation map was a part of the emergency action plans.  
769 She stated that the maps displayed three different scenarios for dam breaches and which  
770 structures would be inundated. She stated that it identified major intersections which may be  
771 affected. She stated that the map stated how long it would take after a failure for the flood wave  
772 to reach a certain location, the height of the water, and the maximum discharge.

773  
774 Ms. Fort stated that the scenarios displayed included a sunny-day breach and the PMF under a  
775 dam failure and non-failure situation.

776  
777 Ms. Fort stated that she would lastly review dam projects that were either in the planning phase  
778 or were completed. She stated that this year, drainage improvements were completed at the  
779 Lickinghole Creek Dam and Ragged Mountain Dam. She stated that last year, they replaced the  
780 rubber crest gate at the Sugar Hollow Dam, alterations to the Ivy MUC irrigation pond dam to  
781 lower the effective height of the dam and spillway so that it would fall below the requirements  
782 for state regulation. She stated that a number of repairs were completed as one major project at

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

785  
786 Ms. Fort stated that in planning and design, study and inspections were being done on the Buck  
787 Mountain Pond Dam, which was the dam acquired upon purchase of the Buck Mountain  
788 property and required rehabilitation. She stated that work was being done to determine its hazard  
789 classification and the subsequent repairs needed for that location. She stated that they also were  
790 performing a planning study for eventual spillway upgrades at the Beaver Creek Dam, which  
791 was expected to be completed in early 2023 and would then move into the design phase.

792  
793 Ms. Fort stated that at the South Fork Rivanna Dam, the hydropower facility was being  
794 decommissioned, the work had been approved by FERC, awarded to a contractor, and the work  
795 was expected to start in the winter of 2023. She stated that monthly tree and brush clearing was  
796 performed at all the dams, seasonal tree removal was performed when needed, installation and  
797 maintenance of new public safety measures, and other small repairs.

798  
799 Ms. Mallek asked if decommissioning was an option for the Buck Mountain Dam.

800  
801 Ms. Fort stated that it was one of several options available, rehabilitation being another one.

802  
803 Ms. Mallek stated that the maps of the flood zones were intriguing. She stated that she was most  
804 reassured by, out of the improvements made at Ragged Mountain, the safety improvements made  
805 for all of the downstream areas that were in danger due to the original 15-foot spillway for such a  
806 large reservoir. She asked if there was an audible alarm for those who were so close in proximity  
807 along the creek.

808  
809 Ms. Fort stated that there was no audible alarm located at that facility.

810  
811 Mr. Mawyer stated that staff would notify him, and he in turn would call the City Manager and  
812 the County Executive to activate public safety personnel to evacuate certain areas and those  
813 residents.

814  
815 Ms. Whitaker stated that they had cameras at all of their dam facilities so that operators could see  
816 the facility 24/7, and there were water level sensors, so an alarm would be set off if the elevation  
817 changed a certain level in a certain amount of time, and operators then knew to respond.

818  
819 Ms. Fort stated that there was a lot of monitoring at the facilities, particularly at Ragged  
820 Mountain, where there were seepage monitors and piezometers, and if those readings changed  
821 dramatically, there would be SCADA alarms received. She stated that they recently activated the  
822 emergency action plan for Sugar Hollow. She stated that they generally were very conservative,  
823 and if rain was coming, they were already watching the data, and when certain thresholds were  
824 hit, they tried to be prepared to make notifications as early as possible.

825  
826 Mr. Rogers stated that they should think about how to ensure their emergency action plans  
827 included the possible overflow of these dams. He stated that he would check and make sure that  
828 when the notification happened, they had some indication of how much time they had and

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

832  
833 Ms. Fort stated that a state and federal requirement was for tabletop exercises to be conducted  
834 with the community at intervals, and they planned to have a large community training exercise  
835 event sometime in 2023, but it was early in the planning phases.

836  
837 Mr. Mawyer stated that this program was not often discussed but related to an issue that could  
838 greatly affect the community and came with a huge responsibility. He stated that Ms. Fort and  
839 Ms. Whitaker were the limited staff who worked on this program, and they did so excellently,  
840 but if it went poorly, it would be very drastic, so they must be practiced on how to deal with dam  
841 safety.

842  
843 Ms. Fort stated that the water operators did their jobs well and efficiently.

844  
845 Ms. Mallek asked if there was an ability to electronically open the gates. She stated that it was  
846 dangerous for people to do so by hand.

847  
848 Ms. Fort stated that they could remotely operate some of the raw water valves at Sugar Hollow,  
849 but did not have remote operation of all the dam gates.

850  
851 Ms. Whitaker stated that the rubber gate at Sugar Hollow was fully automated, so it was  
852 programmed to move appropriately, with staff oversight and a manual release valve. She stated  
853 that other facilities that were difficult to get to had some level of automation, sometimes local  
854 and sometimes remote automation.

855  
856 **10. OTHER ITEMS FROM BOARD/STAFF NOT ON AGENDA**

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

858  
859 Mr. Mawyer stated that no, January 10 was the planned closing date. He stated that the attorneys  
860 had been processing the paperwork, and things were proceeding as planned.

861  
862 **11. CLOSED MEETING**

863 There was no reason for a closed meeting.

864  
865 **12. ADJOURNMENT**

866  
867 At 3:50 p.m., Mr. O'Connell moved to adjourn the meeting of the Rivanna Water and  
868 Sewer Authority. Mr. Pinkston seconded the motion, which passed unanimously (6-0). (Mr.  
869 Richardson was absent)

870  
871 Respectfully submitted,

872  
873  
874  
875



Mr. Jeff Richardson  
Secretary - Treasurer