Rivanna Water and Sewer Authority

Board of Directors Meeting

January 23, 2018

2:15pm

695 MOORES CREEK LANE
CHARLOTTESVILLE, VA 22902-9016
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BOARD OF DIRECTORS

Regular Meeting of the Board of Directors of Rivanna Water & Sewer Authority

DATE: **January 23, 2017**

LOCATION: **Conference Room, Administration Building**
695 Moores Creek Lane, Charlottesville, VA

TIME: **2:15 p.m.**

AGENDA

1. ***CALL TO ORDER***

2. ***MINUTES OF PREVIOUS BOARD MEETINGS***
   a) *Minutes of Regular Board Meeting on December 19, 2017*

3. ***RECOGNITION***

4. ***EXECUTIVE DIRECTOR'S REPORT***

5. ***ITEMS FROM THE PUBLIC***

6. ***RESPONSES TO PUBLIC COMMENTS***

7. ***CONSENT AGENDA***
   a. *Staff Report on Fianance*
   b. *Staff Report on Ongoing Projects*
   c. *Staff Report on Operations*
   d. *Recommendation for Award of Non-Professional Services Contract for Strategic Plan Development and Implementation: Raftelis Financial Consultants*
   e. *Recommendation for Award of Construction Contract Award – Piney Mountain Ground Storage Tank Improvements: Utility Services Co., Inc.*

8. ***OTHER BUSINESS***
   a. *Community Water Supply Program – Review of the South Fork Rivanna Reservoir to Ragged Mountain Reservoir Water Line Project*

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

10. ***CLOSED MEETING***

11. ***ADJOURNMENT***

GUIDELINES FOR PUBLIC COMMENT AT RIVANNA BOARD OF DIRECTORS MEETINGS

If you wish to address the Rivanna Board of Directors during the time allocated for public comment, please raise your hand or stand when the Chairman asks for public comments.

Members of the public requesting to speak will be recognized during the specific time designated on the meeting agenda for "Items From The Public." Each person will be allowed to speak for up to three minutes. When two or more individuals are present from the same group, it is recommended that the group designate a spokesperson to present its comments to the Board and the designated speaker can ask other members of the group to be recognized by raising their hand or standing. Each spokesperson for a group will be allowed to speak for up to five minutes.

During public hearings, the Board will attempt to hear all members of the public who wish to speak on a subject, but it must be recognized that on rare occasion presentations may have to be limited because of time constraints. If a previous speaker has articulated your position, it is recommended that you not fully repeat the comments and instead advise the Board of your agreement. The time allocated for speakers at public hearings are the same as for regular Board meetings, although the Board can allow exceptions at its discretion.

Speakers should keep in mind that Board of Directors meetings are formal proceedings and all comments are recorded on tape. For that reason, speakers are requested to speak from the podium and wait to be recognized by the Chairman. In order to give all speakers proper respect and courtesy, the Board requests that speakers follow the following guidelines:

- Wait at your seat until recognized by the Chairman.
- Come forward and state your full name and address and your organizational affiliation if speaking for a group;
- Address your comments to the Board as a whole;
- State your position clearly and succinctly and give facts and data to support your position;
- Summarize your key points and provide the Board with a written statement, or supporting rationale, when possible;
- If you represent a group, you may ask others at the meeting to be recognized by raising their hand or standing;
- Be respectful and civil in all interactions at Board meetings;
- The Board may ask speakers questions or seek clarification, but recognize that Board meetings are not a forum for public debate; Board Members will not recognize comments made from the audience and ask that members of the audience not interrupt the comments of speakers and remain silent while others are speaking so that other members in the audience can hear the speaker;
- The Board will have the opportunity to address public comments after the public comment session has been closed;
- At the request of the Chairman, the Executive Director may address public comments after the session has been closed as well; and
- As appropriate, staff will research questions by the public and respond through a report back to the Board at the next regular meeting of the full Board. It is suggested that citizens who have questions for the Board or staff submit those questions in advance of the meeting to permit the opportunity for some research before the meeting.

The agendas of Board meetings, and supporting materials, are available from the RWSA Administration Office upon request or can be viewed on the Rivanna website(s)

Rev. September 22, 2009

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RWSA BOARD OF DIRECTORS
Minutes of Regular Meeting
December 19, 2017

A regular meeting of the Rivanna Water & Sewer Authority (RWSA) Board of Directors was held on Tuesday, December 19, 2017 at 2:15 p.m. in the 2nd floor conference room, Administration Building, 695 Moores Creek Lane, Charlottesville, Virginia.

Board Members Present: Mr. Mike Gaffney – Chair, presiding; Ms. Kathy Galvin; Ms. Lauren Hildebrand; Mr. Maurice Jones; Mr. Gary O'Connell; Dr. Liz Palmer; and Mr. Jeff Richardson (arrived at 2:28 p.m.).

Board Members Absent: None.

Staff Present: Mr. Tim Castillo, Ms. Victoria Fort, Mr. Tom Freeman, Mr. Ben Fricke, Mr. Rich Gullick, Mr. Bill Mawyer, Ms. Katie McIlwee, Mr. Scott Schiller, Ms. Michelle Simpson, Ms. Andrea Terry, Ms. Jennifer Whitaker, and Mr. Lonnie Wood.

Also Present: Mr. Kurt Krueger, RWSA counsel; members of the public and media representatives; and Mr. Robert Huff, with Robinson, Farmer, Cox Associates.

1. Call to Order

The Chair called the regular meeting of the Rivanna Water and Sewer Authority to order at 2:15 p.m.

2. Minutes of Previous Board Meetings

a) Approval of Board meeting minutes - November 2017

Mr. O'Connell moved to approve the minutes of the regular board meeting of November 14, 2017. Mr. Jones seconded the motion, which passed by a vote of 5-0, with Ms. Galvin abstaining. Mr. Richardson had not yet arrived at the meeting and was absent from the vote.

3. Recognition

Mr. Gaffney mentioned that there were no recognition items on the agenda.

4. Executive Director's Report

Mr. Mawyer reported that the Observatory Water Treatment Plant lease negotiations were moving forward in a very positive way, and with the help of Mr. Krueger, Ms. Whitaker, and Mr. Wood the Authority has developed a strategy to have not one but three documents – and UVA was in agreement with that. Mr. Mawyer stated that the intent was to capture all of the facilities that Rivanna had an interest in – including pipes, plants and pump stations – and get them into a new document or several documents.

Mr. Krueger noted that their basic premise was to try to get the basic facilities related to the plant in a lease, and if the lease was ever terminated for the plant, those facilities would stay with the plant – but everything else needed irrespective of the plant for the urban water system would be in a permanent easement.

Dr. Palmer expressed surprise that the water treatment plant had never been in a permanent easement.

Mr. Krueger stated they had not really broached the idea, but were operating under the assumption that UVA would not want to transfer a fee simple interest in the plant to Rivanna, so they would do another 99-year lease for the plant and its associated facilities but everything else was going into a permanent easement status.

Mr. O'Connell asked if the South Fork Rivanna to Ragged Mountain pump station would be on UVA property.

Mr. Mawyer responded that it could be on the UVA Foundation property, but not on UVA property. Rivanna considered that if they needed more property it would be a good time to capture it within the lease along with other properties. He stated that the site had not been specifically selected, and it was in the process now with Baker Engineering – which was doing the alignment determination, including the pump stations at each end. Mr. Mawyer noted that because the facility would not be on University property, it would not be a candidate for this lease or easement.

Dr. Palmer mentioned that with respect to the pipeline from South Fork to Ragged Mountain as it goes across Birdwood, UVA has been coming to the County stating that they have been doing work on their master plan, so she hoped Rivanna staff had been working well with the University.

Ms. Whitaker responded that the University has six or seven projects on that property currently, and Ms. Fort had been working with them.

Mr. Mawyer reported on the drinking water infrastructure plan for Crozet, which was intended to look at whether there was adequate water supply, as well as being cognizant of water treatment capacity and distribution for Crozet. He stated that Rivanna had been working with County staff to gather data on the demand side, and the consultant was also looking at the supply side and how much water came into the Beaver Creek reservoir, along with safe yield levels. Mr. Mawyer noted that Rivanna staff had gone to Richmond and met with DEQ staff and had given them a preliminary report – and they were positive about Rivanna's findings and generally they think

there is adequate capacity. He explained that with a new withdrawal permit required due to water treatment plant expansion from 1 MGD to 2 MGD, the minimum instream release requirement would come into effect, as Rivanna must account for how much should be released. Mr. Mawyer stated that they would go back to the DEQ in February and have a pre-application meeting with state and federal environmental and permitting agencies and give them a presentation. He noted that they would also be going to the Crozet community in January to give them an update.

Mr. Gaffney asked if there would be enough capacity now and then when they have to release water with a new permit, they wouldn't have enough water.

Mr. Mawyer responded that this was what they were calculating, ensuring that there is enough water for the people in the community as well as the environment in the release. He stated that Rivanna felt this was the case but had to get the environmental agencies to agree with their approach.

Mr. O'Connell noted that the stream downstream was fairly small.

Mr. Mawyer confirmed that it went to Mechums River, which made its way to the South Fork Rivanna Reservoir.

Mr. Mawyer stated that generally it was a positive finding thus far, because if there hadn't been enough water, they would potentially have to raise Beaver Creek Dam. He stated that they also wanted to address dam safety issues to get both requirements in one design.

Mr. O'Connell asked if the Crozet meeting had been confirmed for January 11.

Mr. Mawyer replied that it would be January 11 or 18, and they were trying to determine which one they were going to select, with the goal of capturing as many organizations in Crozet at one time, and a quasi-public meeting that DEQ would recognize to help meet their requirements. He agreed to have staff inform the Board as to the confirmed meeting date.

Mr. Mawyer reported that several staff members had completed some technical and management training, including Ben Fricke – who got his FAA remote pilot certification so that he can now operate a commercial drone; Travis Goode – who got his ACI concrete field testing technician certification and was implementing that at the Ivy Transfer Station; and Jim Barton – who had received a construction manager-in-training certification. He stated that Rivanna had talked with several groups from PVCC, Johns Hopkins, and St. Anne's Bellfield about environmental issues such as wastewater treatment. Mr. Mawyer noted that in January, staff would have a discussion with the Board regarding the South Fork to Ragged Mountain pipeline and pump stations and would review the project, including timeline and CIP impact.

Mr. Mawyer thanked the Board for all their support in 2017, stating that Rivanna had a good year and had moved a lot of capital projects forward, including the Rivanna Pump Station, odor control project, and granular-activated carbon. He stated that they had also completed the strategic plan and added three additional staff members.

Dr. Palmer and Ms. Galvin thanked Rivanna for a good year.

5. Items from the Public

There were no items from the public presented.

6. Responses to Public Comments

There were no responses, as there had been no comments the previous month.

7. Consent Agenda

a) Staff Report on Finance
b) Staff Report on Ongoing Projects
c) Staff Report on Operations
d) Recommendation to Award Engineering Services Contract, Crozet Flow Equalization Tank and Pumping Station Upgrade - Greeley & Hansen Engineers
e) Request for Additional Construction Administration and Inspection Services for the granular activated carbon (GAC) Improvements at Various RWSA Water Treatment Plants – Hazen and Sawyer Engineers

Mr. O'Connell moved to approve the Consent Agenda items as presented. Dr. Palmer seconded the motion, which passed by a vote of 6-0. Mr. Richardson had not yet arrived at the meeting and was absent from the vote.

8. Other Business

a) Comprehensive Annual Financial Report Fiscal Year Ending June 30, 2017

Mr. Robert Huff addressed the RWSA Board and stated that they had no disagreements with management and no opinion shopping, and all recommendations were followed, as well as the required communication with governance. He stated that the four sections in the report were self-explanatory, including anything they wished to know about the Authority. Mr. Huff stated that Rivanna's net position increased in a similar amount as the year before, as shown on their basic financial statement. He noted that his firm's primary objective as an auditor was to provide an unmodified opinion, and he mentioned that pension notes comprised a significant part of the report. Mr. Huff noted that liability can move up or down because it is a projection based on 7%. He stated that this was an excellent and reliable report.

b) Urban Water Supply Strategy Overview

Mr. Mawyer reported that after Rivanna got the South Fork Rivanna Reservoir full and it started overflowing on November 1, their attention turned to trying to get Ragged Mountain refilled. He stated that they fill Ragged Mountain from Sugar Hollow, and that has spurred a few questions from the RWSA Board and the community about the depth of decline in Sugar Hollow. Mr. Mawyer reported that there were three urban reservoirs that supply the urban water system: South Fork Rivanna, Sugar Hollow, and Ragged Mountain. He stated that South Fork contained about 900 million gallons of usable storage, Ragged Mountain had 1.5 billion gallons, and Sugar Hollow had 339 million gallons. He stated that Ragged Mountain had the smallest watershed at two square miles, which was why Rivanna had to pipe water from Sugar Hollow to fill it, as it would not fill from rainfall.

Mr. Mawyer presented a graphic showing Sugar Hollow in Whitehall, stating that they pipe water about 13.5 miles to the Ragged Mountain Reservoir, with the pipe being about 100 years old. He noted the location of the South Rivanna Water Treatment Plant and the Observatory Water Treatment Plant. Mr. Mawyer referenced a slide in the Board packets that had been done the previous week but updated to be current as of December 19. He stated that South Rivanna continued to overflow at the dam, as it was 100% full; Ragged Mountain was 80% full and about 5¾ feet below the normal pool, with the normal depth being 57 feet; Sugar Hollow was 45% full, 15½ feet below the top of the dam out of 50 feet normal depth. Mr. Mawyer noted that collectively, the urban reservoirs were currently 82.3% full, and there were 4 million gallons of day coming out of the Sugar Hollow Reservoir and emptying into the Ragged Mountain Reservoir. He presented a picture of the outfall tower at Ragged Mountain, noting a line of the normal pool at 671, which was about 6 feet down.

Mr. Mawyer reported that the strategy that staff wanted to review with the Board today included dividing the year into two time periods – winter and summer – and over the last several months, staff had been meeting and discussing what their strategy would be, including meeting with a hydrologic consultant and holding an informal discussion with DEQ regarding how they would operate the reservoirs. He presented a matrix showing the transfer process involved in filling Ragged Mountain Reservoir when Sugar Hollow was overflowing, which involves the transfer of 4 million gallons per day from Sugar Hollow to Ragged Mountain. Mr. Mawyer noted the intent was to stop the transfer when Sugar Hollow was down to about 19 feet from the top of the dam, which uses all but about 30% of the usable storage for the water in the Sugar Hollow Reservoir. He noted that staff also minimized the use of the Observatory Water Treatment Plant at about 1 million gallons per day and maximized the South Rivanna Water Treatment Plant at approximately 9 million gallons per day.

Mr. Mawyer stated that when the South Fork Rivanna Dam stops overflowing, they focus on keeping that reservoir full, so they terminate any transfer from Sugar Hollow to Ragged Mountain and any overflow out of Sugar Hollow went to South Fork. He noted that minimum instream release requirements kick in at this point, and they were required to release at least 70% of all water coming into the South Fork Rivanna Reservoir, which had a ceiling of 20 million gallons per day. He explained that with the summer period, they first evaluated whether South Fork was overflowing, and if it was they started or continued the transfer at Sugar Hollow, but the intent was to stop the transfer when it was 10 feet below the dam, rather than 19 feet – still minimizing use of Observatory WTP and maximizing use of South Rivanna WTP. Mr. Mawyer noted that the 10 feet was trying to recognize that there were three components of use for Sugar Hollow: water supply, environmental protection and having an instream release, as well as having the recreational community amenity that Sugar Hollow provided. He stated that in the summer, they would stop the transfer when it got under 10 feet below the dam, recognizing that the instream release from Sugar Hollow continued and the water level could decline further due to evaporation and transpiration by plants. He noted that if South Fork was not overflowing, they would terminate any transfer from Sugar Hollow to Ragged Mountain and maximize use of Observatory WTP, while minimizing use of South Rivanna WTP.

Mr. Mawyer stated that Sugar Hollow was a functional facility intended for water supply and held 339 million gallons, used primarily to fill Ragged Mountain, which held 1.5 billion gallons.

He presented a graphic depicting the Sugar Hollow Reservoir, noting that on November 1 it was only 2.75 feet below the top of the dam – and by December 12, it had dropped 10 feet. He noted that at the same time, Ragged Mountain had only filled from 6.0 to 6.6 feet, so just over half a foot. Mr. Mawyer emphasized that the only way to fill Ragged Mountain was from the small reservoir of Sugar Hollow, so it took a long time to get 4 million gallons a day to fill it, and this is what they were trying to balance when they brought the Sugar Hollow water level down.

Dr. Palmer asked what happened when demand exceeded 10 MGD when South Fork was not overflowing in the summertime.

Mr. Mawyer responded that currently, they would have to get the higher demand out of the South Rivanna Water Treatment Plant and the South Fork Rivanna Reservoir, because it has greater treatment capacity. He explained that they were maximizing Observatory WTP out at 5 MGD, and in the CIP there is a plan to get its capacity up closer to 10 MGD, then those numbers could shift and they may be able to supply all of the urban area if piping is done from Observatory.

Dr. Palmer asked about the timeline from completion of that project.

Mr. Mawyer replied that it would be five or six years, and he confirmed that whenever any of the reservoirs got too low, they may have to enact water restrictions.

Dr. Palmer asked if he would review the basis for the 19 feet at Sugar Hollow.

Mr. Mawyer responded that Rivanna's consultant had done a study, which clarified the useable water storage as 37 feet, and they recommended not using all of it because of the impact of stream release and evaporation. He noted that 19 feet below the top of the dam represents 70% of the usable storage and were trying to balance between the environment and human use. Mr. Mawyer stated that if they got into an emergency situation with water restrictions, they would go into the remaining 30% and use it.

Mr. O'Connell asked how instream flow requirements worked and whether they had been discussing a change with DEQ.

Mr. Mawyer responded that they had an informal discussion with DEQ regarding these operating procedures, and if the RWSA Board felt this was acceptable, Rivanna would finish its hydrologic modeling and go back to DEQ to say it was going to work for the community – then see how DEQ would change the permit, particularly related to instream release. He noted that currently this was based on the amount of water collectively in the three reservoirs, which could be misleading as they experienced over the previous summer. Mr. Mawyer stated that those minimum instream releases were developed by the community and presented to DEQ, and he hoped that DEQ would be receptive to discussion of a proposed reduction.

Dr. Palmer mentioned that it was based on hydrologic modeling.

Mr. Mawyer agreed, adding that it was also the Nature Conservancy's recommendation. He clarified that Hydrologics was working with Rivanna to come up with a model and projections,

which might require an amendment to the permit. Mr. Mawyer stated that Rivanna's hope was that they wouldn't amend the permit but would instead allow for operational rules that got them where they wanted to go as far as maintaining an adequate water supply. He stated that in the permit, the lower the reservoirs go, the less the release has to be. Mr. Mawyer stated that the release requirement when the reservoirs are collectively at 1.5 billion gallons is 70%, but when Ragged Mountain drops to 1.08 billion gallons the stream release requirement drops down to 50%, so the release requirement declines as total reservoir water levels decline.

Mr. Krueger asked if that was true of Sugar Hollow.

Mr. Mawyer responded that they had to release 100% of inflow until Ragged Mountain dropped below 1.08 billion, and then it may go down.

Ms. Whitaker clarified that the maximum release requirement decreases when the total water stored declines.

Ms. Terry stated that the release at Sugar Hollow is dictated by the amount of water in Ragged Mountain, whereas the release at South Rivanna is dictated by the total storage of the Urban Reservoirs.

Dr. Palmer mentioned that she could not find that on the website and would like to have it.

Ms. Whitaker responded that it was there, but Ms. McIlwee could provide it in an email also.

Mr. O'Connell noted that it was also in the water supply plan documents.

Mr. Mawyer reported that if the usable storage in Ragged Mountain was equal to or greater than 1.08 billion gallons, the total downstream flow must be 100% of the inflow to Sugar Hollow or 10 MGD, whichever is less. He stated that if the storage was less than 1.08 billion gallons, the downstream releases must be 100% or 2 MGD, whichever is less, so as the total in Ragged Mountain drops below 1.08 billion gallons, the release from Sugar Hollow can decline but is still 100% of the natural inflow.

Dr. Palmer asked if this information could be procured from the website.

Ms. Whitaker responded that staff could send a link.

Mr. Mawyer stated that he had heard some discussion as to whether the reservoir would be taken down to the level it was at 2015, and he presented a picture from September 2015, when Sugar Hollow was 37 feet below the top of the dam, noting that the pipe in the photo was the fish release pipe. He also presented an image of the reservoir when it was 12½ feet down, and at 19 feet they were far from being 37 feet down.

Ms. Terry stated that however the operating rules were set, the RWSA followed the minimum instream flows dictated by the permit – the permit conditions are different than in the distant past when they were releasing 400K gallons per day consistently. She stated that now they mimic

natural stream flow, and it's based on what they were predicting was coming into the watershed. Ms. Terry noted that t currently they were releasing 2.2 MGD out of Sugar Hollow into the river, which differs slightly from the 2.6 MGD used when staff made this presentation.

Ms. Terry discussed lake ecology and the sampling done to learn about the ecology of each reservoir. She stated that in the summertime, lakes become stratified and the sun warms the top layer, which is called the epilimnion. She stated that there is a section in the middle called the metalimnion, with the biggest difference between the surface and the bottom being the availability of dissolved oxygen. Ms. Terry stated that the upper parts of the reservoir were where the fish live during the summer, and the dissolved oxygen stayed in the epilimnion and metalimnion, with the fish moving around there and colder water at the bottom. She stated that in the summer, the epilimnion heats up and dissolved oxygen starts to decrease. Ms. Terry noted that Rivanna staff went out very regularly and ran water quality tests from the top to the bottom of the reservoir, which provides a good picture as to what things look like at any given time and the difference between each reservoir.

Ms. Terry explained that the water got hotter in the summer and cooled down in the fall, with colder water being denser and shifting occurring – which is a different process and timing that ends up being unstratified. She stated that Sugar Hollow was destratified in the winter, whereas Ragged Mountain was not as it was 80 feet deep. Ms. Terry stated that in the wintertime, fish could move up and down throughout the entire water column, and in the summer they were stuck in the upper epilimnion and metalimnion – so the concern might be taking water out and the impact on the fish.

Dr. Palmer noted that there was less volume to work with.

Ms. Terry confirmed this, stating that there was very little hypolimnion in South Rivanna, but it was more significant in Sugar Hollow, depending on the reservoir and the temperature and how it was moving.

Dr. Palmer asked at what level they took the water out.

Ms. Terry explained that there were two gates operable at Sugar Hollow – one at 12 feet and one at about 37½ feet from the top to the bottom. She stated that staff was proposing going to 19 feet, and in most cases the 12 feet would be in the epilimnion, with the lower one in the hypolimnion. Ms. Terry stated that the water with low dissolved oxygen levels sent downstream re-oxygenated very quickly when it hit the basin and moved into the stream itself. She stated that when the levels were down 19 feet in the winter, the fish would probably be fine because it was fairly thoroughly oxygenated throughout – but in the summer, going down 10 feet, it would likely mean that the epilimnion, metalimnion, and hypolimnion would all shift down. She mentioned that Rivanna had coordinated with the Department of Game and Inland Fisheries (DGIF) in 2015 about what was happening at the reservoir, and she has again reached out to them for coordination.

Mr. Mawyer stated that since Sugar Hollow was at 15½ feet down, Rivanna projects that within a week or so they will reach the 19-foot level, although there is a weekend rain forecast. He

stated that once they reached 19 feet, they would close the gate, with the first consideration being water supply and plenty of water held at Ragged Mountain, particularly for 2018.

Mr. O'Connell asked if they could envision transfers on and off through the winter, depending on the weather.

Mr. Mawyer responded affirmatively, stating that if it dropped below 19 feet and was turned off at that level, they would let it refill up to 10 feet below the top of the dam, then turn it on again. He stated that they would temper this with weather prediction, because with a major storm coming they were confident that there would be a lot of rain and water that would refill Sugar Hollow reasonably quickly. Mr. Mawyer stated that they were going to try to get the transfer open to try to capture the rain and get Ragged Mountain as full as possible.

Ms. Whitaker commented that the 2015 drought at 37 feet down filled in 36 hours, as there was a very steep drainage basin that had the potential to fill very quickly.

Mr. Mawyer confirmed that this was the case with a high enough rainfall.

Mr. Mawyer stated that if the Board was comfortable with this plan and 19 feet was the target level wherein they were balancing as much of the usable storage as possible without taking it down unreasonably and creating a negative situation – but at the same time they need to get water to Ragged Mountain. He stated that in the summer, they would only take it down 10 feet, giving more consideration to the community amenity aspect and other factors that will draw on the water. Mr. Mawyer presented an image of Sugar Hollow in 2015 when the level was 37 feet down, emphasizing that they would not be going anywhere near that low. He stated that the Middle James area, which includes Albemarle County, continued to be in a drought watch, with a watch for precipitation and groundwater level, and stream flows in the warning stage. Mr. Mawyer noted there is a State committee that meets every few weeks to update the information, and Rivanna follows it online. He stated that precipitation in November was much lower than normal – 1½ inches instead of the usual 3½ – and the committee predicts a drier than normal winter.

Mr. Richardson asked for clarification of how quickly Sugar Hollow filled after the weekend of heavy rain in 2015.

Ms. Whitaker clarified that it filled from 37 feet down in about 36 hours, and that rain was over a 3-4 day period, with 3-4 inches of rain – but that timeframe was not considered a drought.

Mr. Mawyer noted that this was when they were filling the new Ragged Mountain Reservoir.

Dr. Gullick stated that they filled it quicker than they might have, in hindsight, but there seemed to be a rush at the time.

Ms. Whitaker reiterated that Sugar Hollow responded very quickly to rain.

Mr. O'Connell stated that this was because of the size of the basin and the sheer volume of water that was being captured and dumped into the reservoir.

Ms. Whitaker stated that it was also due to the very steep topography there, because the water did not have time to soak into the ground – particularly when the leaves were off the trees.

Dr. Palmer noted that the same thing was true with the South Fork Rivanna Reservoir.

Mr. Gaffney mentioned that what they knew in 2002 was that they had plenty of water but not enough storage, which was why Ragged Mountain was constructed.

Mr. O'Connell asked about the percentage full at Beaver Creek in Crozet, in terms of drainage basin area and how fast it would fill if it rained, as he had seen it be fairly steady all along.

Mr. Mawyer responded that it was 80% full today, with about 400 MG the total storage capacity of Beaver Creek.

Mr. O'Connell clarified that he was looking for how fast it would refill.

Ms. Terry responded that it had a watershed of about 30 square miles.

Ms. Whitaker stated that as Rivanna had been doing a drinking water infrastructure plan, they actually created a model that was more specific to Crozet – and all the work Hydrologics was doing to refine inflow calculations had been done at Crozet. She stated that it was an interesting watershed in that during dry times it had a tendency to be slightly drier than Mechums, and during wet times it had a tendency to be a little bit wetter. Ms. Whitaker stated that staff was proposing to DEQ that they scale the gauge based on seasonality or by month, noting that at Beaver Creek in Crozet everything was holding steady. She commented that this was because they were on the dry side of median stream flows, and that reservoir in particular had a tendency to be even drier than the Mechums gauge showed.

Dr. Gullick stated that the intake structure was somewhat unique in that water flowed out of the reservoir and went to the side in a wet well, so it was flowing past as they were trying to grab some of it. He stated that they could not stop that water from being released or reduce it because they need to have it running fully past the intake valves, so Rivanna would likely be proposing a new pump station that would resolve this and provide control over what was released to the stream. He added that when they have minimum instream flow requirements, they might be releasing less than they are now when they are operating the plant. Dr. Gullick stated when they were not operating 20 or more hours a day, the operators would go down and shut off the valve that reduced the water down and hold it in the reservoir. He explained that the goal was to try to keep as much water in the reservoir as possible.

c) Crozet Interceptor Flow Equalization Tank Siting Study Results

Mr. Schiller reported that he would present the results of the siting study, stating that Crozet was on the west edge of the full wastewater collection area of the Rivanna system, with four consecutive pump stations that send the flow from Crozet to the Moores Creek plant. He stated

that in 2016, they updated the sanitary sewer model for the systems and identified that they still have some inflow and infiltration (I & I) to get out of the Crozet system to ensure they have the capacity for future peak flow as the area grows and more wastewater is contributed to the system. Mr. Schiller stated that in order to handle the I & I, it was determined that construction of a flow equalization tank was more feasible and cost effective than trying to actually remove stormwater from the system. He stated that the concept behind the tank is that as flow in the system increases during a wet weather event, a pump station will shave off the peak of the wet weather flow and send it into the tank, then once the flows go down, it will flow by gravity back into the interceptor, and go to the Moores Creek Treatment Plant. Mr. Schiller stated that staff had determined that the tank in that system would need to be designed to handle a two-year design storm.

Mr. Schiller reported that as part of the siting study, Rivanna performed draw-down tests at all four of the Crozet pump stations to confirm the capacities of those stations, then updated the model again based upon those revised capacities. He stated they looked along the interceptor to try to identify potential locations for the tank, and as part of that process also evaluated environmental and cultural issues at some of those locations. He stated that based on the sites selected, they developed some conceptual site layouts and associated cost estimates, eventually forming recommendations. Mr. Schiller referenced a picture of one of the flow equalization tanks in the Henrico County system, which was similar to what Rivanna wanted to do locally. He stated that to handle a two-year design storm, they determined that the tank would need a volume of a million gallons. Mr. Schiller stated they were looking at concrete for that tank and approximate dimensions of 72 feet in diameter and 36 feet tall. He referenced an image showing a close-up of the interceptor system in Crozet, stating that the further upstream they went in the system, the less flow would be accepted – so they would be trying to collect the most flow from the system by Pump Station 4 and shave more of the peak.

Mr. Schiller reported that Greeley-Hansen had performed the siting study for Rivanna and had analyzed several locations and parcels along the interceptor, coming up with four for additional analysis. He stated that sites 1 and 2 were located adjacent to Crozet Pump Station 4, and sites 3 and 4 were further down the interceptor. Mr. Schiller noted that the process itself required a pump station to pump the flow into the tank, then gravity flows back out, so pump capacity was required for this process. He added that by having it down by the pump station, they had alternative approaches of retrofitting the existing station instead of building a new station, which had a large cost impact.

Mr. Schiller referenced a summary of the different locations, stating that 1 and 2 were adjacent to Pump Station 4 – and the A option under each was to retrofit the current station, which results in a very significant cost differential. He stated that after meeting with the ACSA, they concluded that Site 1A would be the preference, and he noted that this remained within the 2017 CIP budget of $3.7 million. Mr. Schiller added that this also provided advantages in terms of needed improvements at Pump Station 4. He presented an aerial view of the site and conceptual layout of the facilities design, stating that they would be siting a 1-million-gallon tank as well as enough space on the property for a second tank. Mr. Schiller mentioned that the plan also shows a new access road coming off the access road to Licking Hole Creek Dam, as well as an exterior building for the odor control – which could also be built into the tank itself. He noted that the site

was about a mile west of the 240/250 split, and stated the tank would be at a lower elevation and thus would be less visible, especially during the summer when foliage was fuller.

Mr. Schiller stated that the property is owned by the group developing the Fairhill Estate development adjacent to the site, and Rivanna was in conversations with them as a preliminary step prior to site acquisition. He confirmed that the road shown is the access road to the dam at Licking Hole Creek. The road is not owned by Rivanna, so in addition to the acquisition of the site, additional access easement could be necessary– which were minimal when compared to the costs of the new sites.

Dr. Palmer asked where the development was going in, in relation to this.

Mr. Schiller responded that the property developing now was to the west and south, and other properties were being considered for conservation easements, but it was a large development and the pump station would be 30 to 40 feet down from the development.

Dr. Palmer asked if they would be discussing the potential for odor control.

Mr. Schiller responded that they would have it as part of the design, so the odor control would be designed along with the tank and would be an enclosed system to pull air out, treat it, and exhaust it. He noted that odors were not as big of an issue for Crozet as they were further down in the system where chemicals are provided for odor control treatment. Mr. Schiller pointed out that there are a number of environmental and cultural issues in the area, with site 1A minimizing the impact on those, and they would continue to identify wetland delineations and other issues going forward.

Mr. Schiller stated that with the Board's approval of the consent agenda earlier in the meeting, staff can now move forward with Greeley & Hansen for preliminary engineering, design, bidding, and construction assistance. He added that they would also move on with property acquisition issues and public notification, with an expectation for the item to be brought to the Board for award of a construction contract by December 2018, with issuance of a notice to proceed in February 2019 and substantial completion of the tank in 2020.

Mr. Gaffney asked if odor control measures would be implemented at the same time.

Mr. Schiller responded that they would.

Ms. Hildebrand asked if the design storm was a current design, or out toward 2020.

Mr. Schiller replied that it was a two-year design storm for now, based on precipitation and collection, and it was a standard used for I & I in the system added onto whatever the base was.

Ms. Whitaker clarified that the facility was sized out through 2075.

Mr. O'Connell noted that it was part of the comprehensive sewer study and its projections, incorporating how Crozet was expected to grow.

Dr. Palmer asked what might happen when there was a 10-year storm, and where the sewage would go.

Mr. Schiller responded that they were not designed to handle a 10-year storm.

Mr. Mawyer stated that it would drain to the lowest manhole in the area.

Mr. Gaffney noted that the consultant was showing a future tank inflow.

Mr. Schiller confirmed that if things changed in the future, they would have the space to put in a second tank if necessary.

Mr. Mawyer commented that this was why it was important to maintain pipes throughout the distribution system, as this was how most of the infiltration entered – through old pipes that are cracked and carrying storm water they were not originally designed to carry.

d) Request for the Approval of the Strategic Plan

Mr. Mawyer stated that Raftelis and Rivanna staff had presented the strategic plan, and he would now ask for Board approval of the plan. He reviewed that the process had begun in May with an RFP, with Mr. Gaffney serving on the selection committee that secured Raftelis. He stated that every month from June to December they held some kind of work session to move the process forward, and this was the schedule established back in June – with each goal and deadline met.

Mr. Mawyer expressed his appreciation for the work of Board and staff to move this along, noting that they came up with a strategic framework and vision: "To serve the community and be recognized as a leader in environmental stewardship." He stated they also determined the values of integrity, teamwork, respect, and quality. Mr. Mawyer stated that they also created a mission: "To serve the community by providing high-quality water treatment, which included wastewater, refuse, and recycling services – all in a financially and environmentally responsible manner." He noted that they had developed six strategic goals to work on over the next five years: workforce development, operational optimization, communication and collaboration, environmental stewardship, solid waste services, and infrastructure and master planning.

He stated the next steps were to take the six staff goal teams and hold implementation workshops to move the strategies forward, with prioritization of activities, assignment of accountability, identification of resource needs, and establishment of a realistic schedule. Mr. Mawyer stated they would then put it all together into a single annual strategy implementation plan, which would be brought back to the Board in April or May, with details on projects and necessary resources. He stated that the Board would then provide feedback, with staff developing a progress reporting process for quarterly reports back to the Board. Mr. Mawyer stated that after a year, they would go back to the beginning and establish the tactics for the next year, with the hope of completing the six goals within the five years.

Ms. Galvin commented that she thought it was fantastic to have vision, goals, measures, and strategies all on one 11x17" page.

Mr. Mawyer responded that they would be enlarging it and displaying it prominently so that staff could become familiar with it, and they were eager to move forward with the details.

Mr. Jones moved to approve the strategic plan as presented. Dr. Palmer seconded the motion, which passed by a vote of (7-0).

Mr. Mawyer mentioned that they would be bringing the item before the RSWA Board in February.

9. Other Items from Board/Staff not on Agenda

There were none presented.

10. Closed Meeting

There was no closed meeting held.

11. Adjournment

Mr. Jones moved to adjourn the Board meeting. Dr. Palmer seconded the motion, which passed by a vot of (7-0).

There being no further business, the meeting adjourned at 3:24 p.m.

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MEMORANDUM

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

FROM: **BILL MAWYER, EXECUTIVE DIRECTOR**

SUBJECT: **EXECUTIVE DIRECTOR'S REPORT**

DATE: **JANUARY 23, 2017**

Water Supply

Recent precipitation has increased our reservoir water levels. The water level in Sugar Hollow Reservoir rebounded from about 20 feet to 7 feet below the top of the dam since January 11, 2018. We plan to resume the transfer of water from Sugar Hollow to Ragged Mountain Reservoir on Monday, January 22, 2018, in accordance with our water supply strategy. RMR is about 80% full.

Community Outreach

The Water Department Manager, Dave Tungate, gave a presentation to a fifth grade class from Crozet Elementary School.

Radium in Drinking Water

The advocacy organization "Environmental Working Group" recently released a report suggesting 170 million Americans drink "radioactive tap water". The report focused on the radioactive element, radium, which is naturally present in rocks and soil within the earth's crust. Surface water is usually low in radium as compared to groundwater. All of our water sources are from surface water rivers, except for the groundwater well at Red Hill. We monitor for radium in our water treatment plants, including Red Hill, and our results are significantly lower than the Maximum Contaminant Level established by the Federal Environmental Protection Agency and the Virginia Department of Health.

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MEMORANDUM

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

FROM: **LONNIE WOOD, DIRECTOR OF FINANCE AND ADMINISTRATION**

SUBJECT: **DECEMBER MONTHLY FINANCIAL SUMMARY – FY 2018**

DATE: **JANUARY 23, 2018**

Urban Water flows and rate revenues are 2% over budget estimates for first six months of this fiscal year, and Urban Wastewater flows and rate revenues are 12% under budget. Revenues and expenses are summarized in the table below:

	Urban Water	Urban Wastewater	Total Other Rate Centers	Total Authority
Operations				
Revenues	$ 3,508,023	$ 3,168,067	$ 1,021,130	$ 7,697,220
Expenses	(3,237,069)	(3,798,987)	(945,358)	(7,981,414)
Surplus (deficit)	$ 270,954	$ (630,920)	$ 75,772	$ (284,194)
Debt Service				
Revenues	$ 2,823,583	$ 4,181,100	$ 420,989	$ 7,425,672
Expenses	(2,796,054)	(4,118,477)	(420,956)	(7,335,487)
Surplus (deficit)	$ 27,529	$ 62,623	$ 33	$ 90,185
Total				
Revenues	$ 6,331,606	$ 7,349,167	$ 1,442,119	$ 15,122,892
Expenses	(6,033,123)	(7,917,464)	(1,366,314)	(15,316,901)
Surplus (deficit)	$ 298,483	$ (568,297)	$ 75,805	$ (194,009)

Urban Wastewater received the annual Nutrient Exchange Credit of $87,105 and Albemarle County's annual septage receiving support of $109,441 in July.

Some expense categories are over the prorated year-to-date budget as follows:

A. Personnel Costs (Lab – page 10) – Lab salaries are over budget due to the August payment of accumulated leave balances to the lab manager upon his retirement, and due to overlapping salaries in July for the former lab manager and his replacement.

B. Other Services & Charges (Urban Wastewater, Administration, Engineering - pages 5, 8, 11) - The annual property and liability insurance premium of $111,600 was paid in July, which is pushing this expense category over the prorated budget for several departments. This cost will even out over time compared to budget estimates.

Urban Wastewater is also over budget on odor control costs for Crozet Interceptor/Pump Stations. Utility costs are running higher than budget estimates also. The Administration Department has expended $43,700 this fiscal year for the strategic plan, which is $13,700 more than was budgeted. The Engineering Department has paid three quarterly bills for water and sewer system modeling services, including the quarter ending last June.

C. Equipment Purchases (Crozet - page 3) – Crozet incurred some unbudgeted small equipment purchases.

D. Information Technology (Engineering – page 11) – Engineering paid $25,000 in August to renew an annual computer software license agreement.

E. Operations and Maintenance (Urban Wastewater, Administration, Maintenance – pages 5, 8, 9) – Urban Wastewater has expended $61,600 more than the total annual budget of $215,000 for Pipelines and Appurtenances due to emergency repairs. More than $116,000 was spent on a Rivanna Interceptor stream bank restoration in Dunlora in October. Unbudgeted repairs were made to the steps outside the Administration building along with tree pruning, costing a total of about $8,000. The Maintenance department incurred some unbudgeted vehicle repair costs.

F. Professional Services (Urban Water, Crozet Water – pages 2, 3) – Urban Water is $65,000 over the prorated budget for engineering and technical services but is not over the annual budget. Urban Water has spent $30,000 more than total year's budget for legal fees, related to the Observatory plant lease. This will continue to be significantly over budget. Crozet Water has spent $20,000 more than the total annual budget for engineering and technical services costs.

Attachments

Rivanna Water & Sewer Authority
Monthly Financial Statements - December 2017
Fiscal Year 2018

Consolidated Revenues and Expenses Summary

Operating Budget vs. Actual

	Notes	Budget FY 2018	Budget Year-to-Date	Actual Year-to-Date	Budget vs. Actual	Variance Percentage
Revenues						
Operations Rate Revenue		$ 15,403,127	$ 7,701,564	$ 7,274,440	$ (427,124)	-5.55%
Lease Revenue		64,000	32,000	46,528	14,528	45.40%
Admin., Maint. & Engineering Revenue		410,000	205,000	216,511	11,511	5.62%
Other Revenues		534,630	267,315	314,021	46,706	17.47%
Use of Watershed Management Funds		80,000	40,000	46,311	6,311	15.78%
Interest Allocation		15,000	7,500	15,920	8,420	112.26%
Total Operating Revenues		**$ 16,506,757**	**$ 8,253,379**	**$ 7,913,731**	**$ (339,647)**	**-4.12%**
Expenses						
Personnel Cost	**A**	$ 7,841,522	$ 3,920,761	$ 3,737,216	$ 183,545	4.68%
Professional Services	**F**	590,350	295,175	341,836	(46,661)	-15.81%
Other Services & Charges	**B**	2,552,662	1,276,331	1,438,441	(162,110)	-12.70%
Communications		142,605	71,303	76,294	(4,992)	-7.00%
Information Technology	**D**	324,400	162,200	106,593	55,607	34.28%
Supplies		44,970	22,485	20,860	1,625	7.23%
Operations & Maintenance	**E**	3,613,450	1,806,725	1,813,580	(6,855)	-0.38%
Equipment Purchases	**C**	336,300	168,150	132,855	35,295	20.99%
Depreciation		788,000	394,000	394,000	(0)	0.00%
Reserve Transfers		272,500	136,250	136,250	0	0.00%
Total Operating Expenses		**$ 16,506,759**	**$ 8,253,379**	**$ 8,197,924**	**$ 55,455**	**0.67%**
Operating Surplus/(Deficit)		**$ (2)**	**$ (1)**	**$ (284,193)**		

Debt Service Budget vs. Actual

	Budget FY 2018	Budget Year-to-Date	Actual Year-to-Date	Budget vs. Actual	Variance Percentage
Revenues					
Debt Service Rate Revenue	$ 13,561,158	$ 6,780,579	$ 6,780,582	$ 3	0.00%
Use of Reserves for 2016 Bond DS	600,000	300,000	300,000	-	0.00%
Septage Receiving Support - County	109,440	54,720	109,441	54,721	100.00%
Buck Mountain Surcharge	84,000	42,000	63,200	21,200	50.48%
Buck Mountain Lease Revenue	1,600	800	1,309	509	63.59%
Trust Fund Interest	46,400	23,200	37,703	14,503	62.51%
Reserve Fund Interest	100,500	50,250	133,438	83,188	165.55%
Total Debt Service Revenues	**$ 14,503,098**	**$ 7,251,549**	**$ 7,425,672**	**$ 174,123**	**2.40%**
Debt Service Costs					
Total Principal & Interest	$ 12,370,200	$ 6,185,100	$ 6,185,100	$ -	0.00%
Reserve Additions-Interest	99,000	49,500	133,438	(83,938)	-169.57%
Debt Service Ratio Charge	725,000	362,500	362,500	-	0.00%
Reserve Additions-CIP Growth	1,308,900	654,450	654,450	-	0.00%
Total Debt Service Costs	**$ 14,503,100**	**$ 7,251,550**	**$ 7,335,488**	**$ (83,938)**	**-1.16%**
Debt Service Surplus/(Deficit)	**$ (2)**	**$ (1)**	**$ 90,185**		

Summary

	Budget FY 2018	Budget Year-to-Date	Actual Year-to-Date	Budget vs. Actual	Variance Percentage
Total Revenues	$ 31,009,855	$ 15,504,928	$ 15,339,404	$ (165,524)	-1.07%
Total Expenses	31,009,859	15,504,929	15,533,412	(28,483)	-0.18%
Surplus/(Deficit)	**$ (4)**	**$ (2)**	**$ (194,009)**		

Rivanna Water & Sewer Authority
Monthly Financial Statements - December 2017

Urban Water Rate Center
Revenues and Expenses Summary

	Notes	*Budget FY 2018*	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Operating Budget vs. Actual						
Revenues						
Operations Rate Revenue		$ 6,758,077	$ 3,379,039	$ 3,445,303	$ 66,265	1.96%
Lease Revenue		35,000	17,500	32,882	15,382	87.90%
Miscellaneous		7,000	3,500	-	(3,500)	-100.00%
Use of Reserves		40,000	20,000	23,156	3,156	15.78%
Interest Allocation		6,300	3,150	6,682	3,532	112.13%
Total Operating Revenues		**$ 6,846,377**	**$ 3,423,189**	**$ 3,508,023**	**$ 84,835**	**2.48%**
Expenses						
Personnel Cost		$ 1,828,852	$ 914,426	$ 873,899	$ 40,528	4.43%
Professional Services	F	142,450	71,225	168,966	(97,741)	-137.23%
Other Services & Charges		606,100	303,050	232,113	70,937	23.41%
Communications		64,690	32,345	33,018	(673)	-2.08%
Information Technology		65,300	32,650	17,991	14,659	44.90%
Supplies		7,000	3,500	4,288	(788)	-22.52%
Operations & Maintenance		1,522,660	761,330	665,422	95,908	12.60%
Equipment Purchases		106,500	53,250	23,263	29,987	56.31%
Depreciation		260,000	130,000	130,000	(0)	0.00%
Reserve Transfers		250,000	125,000	125,000	0	0.00%
Subtotal Before Allocations		$ 4,853,552	$ 2,426,776	$ 2,273,960	$ 152,817	6.30%
Allocation of Support Departments		1,992,824	996,412	963,110	33,303	3.34%
Total Operating Expenses		**$ 6,846,377**	**$ 3,423,188**	**$ 3,237,069**	**$ 186,119**	**5.44%**
Operating Surplus/(Deficit)		**$ 0**	**$ 0**	**$ 270,954**		
Debt Service Budget vs. Actual						
Revenues						
Debt Service Rate Revenue		$ 5,345,730	$ 2,672,865	$ 2,672,868	$ 3	0.00%
Trust Fund Interest		18,000	9,000	14,817	5,817	64.64%
Reserve Fund Interest		18,000	9,000	71,389	62,389	693.21%
Buck Mountain Surcharge		84,000	42,000	63,200	21,200	50.48%
Lease Revenue		1,600	800	1,309	509	63.59%
Total Debt Service Revenues		**$ 5,467,330**	**$ 2,733,665**	**$ 2,823,583**	**$ 89,918**	**3.29%**
Debt Service Costs						
Total Principal & Interest		$ 4,242,130	$ 2,121,065	$ 2,121,065	$ -	0.00%
Reserve Additions-Interest		18,000	9,000	71,389	(62,389)	-693.21%
Debt Service Ratio Charge		400,000	200,000	200,000	-	0.00%
Reserve Additions-CIP Growth		807,200	403,600	403,600	-	0.00%
Total Debt Service Costs		**$ 5,467,330**	**$ 2,733,665**	**$ 2,796,054**	**$ (62,389)**	**-2.28%**
Debt Service Surplus/(Deficit)		**$ -**	**$ -**	**$ 27,529**		
Rate Center Summary						
Total Revenues		$ 12,313,707	$ 6,156,854	$ 6,331,606	$ 174,753	2.84%
Total Expenses		12,313,707	6,156,853	6,033,123	123,730	2.01%
Surplus/(Deficit)		**$ 0**	**$ 0**	**$ 298,483**		
Costs per 1000 Gallons		1.99		1.85		
Thousand Gallons Treated		3,432,018	1,716,009	1,749,773	33,764	1.97%
or						
Flow (MGD)		9.403		9.510		

Rivanna Water & Sewer Authority
Monthly Financial Statements - December 2017

Crozet Water Rate Center
Revenues and Expenses Summary

Operating Budget vs. Actual

	Notes	Budget FY 2018	Budget Year-to-Date	Actual Year-to-Date	Budget vs. Actual	Variance Percentage
Revenues						
Operations Rate Revenue		$ 915,336	$ 457,668	$ 457,668	$ -	0.00%
Lease Revenues		29,000	14,500	13,646	(854)	-5.89%
Use of Reserves		24,000	12,000	17,009	5,009	41.74%
Interest Allocation		900	450	1,005	555	123.29%
Total Operating Revenues		**$ 969,236**	**$ 484,618**	**$ 489,327**	**$ 4,709**	**0.97%**
Expenses						
Personnel Cost		$ 289,212	$ 144,606	$ 137,179	$ 7,427	5.14%
Professional Services	F	47,000	23,500	67,150	(43,650)	-185.74%
Other Services & Charges		121,480	60,740	49,545	11,195	18.43%
Communications		4,230	2,115	2,418	(303)	-14.31%
Information Technology		14,200	7,100	509	6,591	92.83%
Supplies		670	335	689	(354)	-105.73%
Operations & Maintenance		233,630	116,815	115,811	1,004	0.86%
Equipment Purchases	C	26,400	13,200	20,694	(7,494)	-56.77%
Depreciation		25,000	12,500	12,500	0	0.00%
Reserve Transfers		20,000	10,000	10,000	(0)	0.00%
Subtotal Before Allocations		$ 781,822	$ 390,911	$ 416,495	$ (25,584)	-6.54%
Allocation of Support Departments		187,417	93,708	90,971	2,737	2.92%
Total Operating Expenses		**$ 969,238**	**$ 484,619**	**$ 507,466**	**$ (22,847)**	**-4.71%**
Operating Surplus/(Deficit)		**$ (2)**	**$ (1)**	**$ (18,139)**		

Debt Service Budget vs. Actual

Revenues						
Debt Service Rate Revenue		$ 691,476	$ 345,738	$ 345,738	$ -	0.00%
Trust Fund Interest		1,800	900	1,433	533	59.19%
Reserve Fund Interest		2,700	1,350	2,002	652	48.26%
Total Debt Service Revenues		**$ 695,976**	**$ 347,988**	**$ 349,172**	**$ 1,184**	**0.34%**
Debt Service Costs						
Total Principal & Interest		$ 426,977	$ 213,489	$ 213,489	$ -	0.00%
Reserve Additions-Interest		2,700	1,350	2,002	(652)	-48.26%
Reserve Additions-CIP Growth		266,300	133,150	133,150	-	0.00%
Total Debt Service Costs		**$ 695,977**	**$ 347,989**	**$ 348,640**	**$ (652)**	**-0.19%**
Debt Service Surplus/(Deficit)		**$ (1)**	**$ (1)**	**$ 532**		

Rate Center Summary

Total Revenues	$ 1,665,212	$ 832,606	$ 838,499	$ 5,893	0.71%
Total Expenses	1,665,215	832,608	856,106	(23,498)	-2.82%
Surplus/(Deficit)	**$ (3)**	**$ (2)**	**$ (17,607)**		
Costs per 1000 Gallons	5.31		4.99		
Thousand Gallons Treated	182,610	91,305	101,781	10,476	11.47%
Flow (MGD)	0.500		0.553		

Rivanna Water & Sewer Authority
Monthly Financial Statements - December 2017

Scottsville Water Rate Center
Revenues and Expenses Summary

	Budget FY 2018	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Operating Budget vs. Actual					
Notes					
Revenues					
Operations Rate Revenue	$ 412,236	$ 206,118	$ 206,118	$ -	0.00%
Use of Reserves	16,000	8,000	6,147	(1,853)	
Interest Allocation	400	200	417	217	108.46%
Total Operating Revenues	**$ 428,636**	**$ 214,318**	**$ 212,682**	**$ (1,636)**	**-0.76%**
Expenses					
Personnel Cost	$ 154,467	$ 77,234	$ 72,263	$ 4,971	6.44%
Professional Services	26,000	13,000	8,891	4,109	31.61%
Other Services & Charges	19,490	9,745	10,180	(435)	-4.46%
Communications	3,210	1,605	1,897	(292)	-18.20%
Information Technology	7,000	3,500	1,131	2,369	67.69%
Supplies	750	375	75	300	80.01%
Operations & Maintenance	66,570	33,285	12,339	20,946	62.93%
Equipment Purchases	14,400	7,200	1,514	5,686	78.97%
Depreciation	17,000	8,500	8,500	(0)	0.00%
Reserve Transfers	2,500	1,250	1,250	0	0.00%
Subtotal Before Allocations	$ 311,387	$ 155,694	$ 118,040	$ 37,654	24.18%
Allocation of Support Departments	117,247	58,623	57,214	1,410	2.40%
Total Operating Expenses	**$ 428,634**	**$ 214,317**	**$ 175,254**	**$ 39,063**	**18.23%**
Operating Surplus/(Deficit)	**$ 2**	**$ 1**	**$ 37,428**		
Debt Service Budget vs. Actual					
Revenues					
Debt Service Rate Revenue	$ 129,448	$ 64,724	$ 64,722	$ (2)	0.00%
Trust Fund Interest	400	200	415	215	107.38%
Reserve Fund Interest	1,500	750	1,068	318	42.34%
Total Debt Service Revenues	**$ 131,348**	**$ 65,674**	**$ 66,204**	**$ 530**	**0.81%**
Debt Service Costs					
Total Principal & Interest	$ 129,848	$ 64,924	$ 64,924	$ -	0.00%
Reserve Additions-Interest	-	-	1,068	(1,068)	
Reserve Additions-CIP Growth	1,500	750	750	-	
Total Debt Service Costs	**$ 131,348**	**$ 65,674**	**$ 66,742**	**$ (1,068)**	**-1.63%**
Debt Service Surplus/(Deficit)	**$ -**	**$ -**	**$ (537)**		

Rate Center Summary					
Total Revenues	$ 559,984	$ 279,992	$ 278,886	$ (1,106)	-0.39%
Total Expenses	559,982	279,991	241,995	37,996	13.57%
Surplus/(Deficit)	**$ 2**	**$ 1**	**$ 36,891**		
Costs per 1000 Gallons	22.39		21.09		
Thousand Gallons Treated	19,143	9,572	8,309	(1,263)	-13.19%
or					
Flow (MGD)	0.052		0.045		

Rivanna Water & Sewer Authority
Monthly Financial Statements - December 2017

Urban Wastewater Rate Center
Revenues and Expenses Summary

	Notes	*Budget FY 2018*	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Operating Budget vs. Actual						
Revenues						
Operations Rate Revenue		$ 6,680,446	$ 3,340,223	$ 2,846,835	$ (493,388)	-14.77%
Stone Robinson WWTP		27,630	13,815	10,612	(3,203)	-23.19%
Septage Acceptance		390,000	195,000	216,305	21,305	10.93%
Nutrient Credits		100,000	50,000	87,105	37,105	74.21%
Miscellaneous Revenue		10,000	5,000	-	(5,000)	-100.00%
Interest Allocation		6,800	3,400	7,211	3,811	112.08%
Total Operating Revenues		**$ 7,214,876**	**$ 3,607,438**	**$ 3,168,067**	**$ (439,371)**	**-12.18%**
Expenses						
Personnel Cost		$ 1,230,128	$ 615,064	$ 535,624	$ 79,440	12.92%
Professional Services		54,000	27,000	10,700	16,300	60.37%
Other Services & Charges	**B**	1,571,400	785,700	978,004	(192,304)	-24.48%
Communications		10,430	5,215	6,778	(1,563)	-29.97%
Information Technology		57,300	28,650	13,086	15,564	54.32%
Supplies		2,700	1,350	649	701	51.90%
Operations & Maintenance	**E**	1,390,300	695,150	834,911	(139,761)	-20.11%
Equipment Purchases		54,000	27,000	25,935	1,065	3.95%
Depreciation		465,000	232,500	232,500	-	0.00%
Reserve Transfers		-	-	-	-	
Subtotal Before Allocations		$ 4,835,258	$ 2,417,629	$ 2,638,188	$ (220,559)	-9.12%
Allocation of Support Departments		2,379,618	1,189,809	1,160,799	29,010	2.44%
Total Operating Expenses		**$ 7,214,876**	**$ 3,607,438**	**$ 3,798,987**	**$ (191,549)**	**-5.31%**
Operating Surplus/(Deficit)		**$ 0**	**$ 0**	**$ (630,920)**		
Debt Service Budget vs. Actual						
Revenues						
Debt Service Rate Revenue		$ 7,384,689	$ 3,692,345	$ 3,692,346	$ 2	0.00%
Use of Reserves for 2016 Bond DS		600,000	300,000	300,000	-	0.00%
Septage Receiving Support - County		109,440	54,720	109,441	54,721	100.00%
Trust Fund Interest		26,200	13,100	21,001	7,901	60.31%
Reserve Fund Interest		77,300	38,650	58,312	19,662	50.87%
Total Debt Service Revenues		**$ 8,197,629**	**$ 4,098,815**	**$ 4,181,100**	**$ 82,285**	**2.01%**
Debt Service Costs						
Total Principal & Interest		$ 7,561,430	$ 3,780,715	$ 3,780,715	$ -	0.00%
Reserve Additions-Interest		77,300	38,650	58,312	(19,662)	-50.87%
Debt Service Ratio Charge		325,000	162,500	162,500	-	0.00%
Reserve Additions-CIP Growth		233,900	116,950	116,950	-	0.00%
Total Debt Service Costs		**$ 8,197,630**	**$ 4,098,815**	**$ 4,118,477**	**$ (19,662)**	**-0.48%**
Debt Service Surplus/(Deficit)		**$ (1)**	**$ (1)**	**$ 62,623**		
Rate Center Summary						
Total Revenues		$ 15,412,505	$ 7,706,253	$ 7,349,167	$ (357,086)	-4.63%
Total Expenses		15,412,506	7,706,253	7,917,464	(211,211)	-2.74%
Surplus/(Deficit)		**$ (1)**	**$ (0)**	**$ (568,298)**		
Costs per 1000 Gallons		2.11		2.52		
Thousand Gallons Treated		3,424,639	1,712,320	1,510,269	(202,051)	-11.80%
or						
Flow (MGD)		9.383		8.208		

Rivanna Water & Sewer Authority
Monthly Financial Statements - December 2017

Glenmore Wastewater Rate Center
Revenues and Expenses Summary

	Budget FY 2018	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Operating Budget vs. Actual					
Notes					
Revenues					
Operations Rate Revenue	$ 352,344	$ 176,172	$ 176,172	$ -	0.00%
Interest Allocation	300	150	334	184	122.86%
Total Operating Revenues	**$ 352,644**	**$ 176,322**	**$ 176,506**	**$ 184**	**0.10%**
Expenses					
Personnel Cost	$ 90,823	$ 45,412	$ 39,421	$ 5,991	13.19%
Professional Services	3,000	1,500	-	1,500	
Other Services & Charges	31,490	15,745	16,990	(1,245)	-7.91%
Communications	2,600	1,300	696	604	46.43%
Information Technology	3,500	1,750	-	1,750	100.00%
Supplies	100	50	-	50	100.00%
Operations & Maintenance	121,450	60,725	41,203	19,522	32.15%
Equipment Purchases	3,100	1,550	1,300	250	16.13%
Depreciation	5,000	2,500	2,500	(0)	0.00%
Subtotal Before Allocations	$ 261,063	$ 130,532	$ 102,110	$ 28,422	21.77%
Allocation of Support Departments	91,584	45,792	44,656	1,136	2.48%
Total Operating Expenses	**$ 352,647**	**$ 176,324**	**$ 146,766**	**$ 29,558**	**16.76%**
Operating Surplus/(Deficit)	**$ (3)**	**$ (2)**	**$ 29,740**		
Debt Service Budget vs. Actual					
Revenues					
Debt Service Rate Revenue	$ 1,582	$ 791	$ 792	$ 1	0.13%
Trust Fund Interest	-	-	-	-	
Reserve Fund Interest	600	300	400	100	33.44%
Total Debt Service Revenues	**$ 2,182**	**$ 1,091**	**$ 1,192**	**$ 1**	**0.09%**
Debt Service Costs					
Total Principal & Interest	$ 1,582	$ 791	$ 791	$ -	0.00%
Reserve Additions-Interest	600	300	400	(100)	-33.44%
Total Debt Service Costs	**$ 2,182**	**$ 1,091**	**$ 1,191**	**$ (100)**	**-9.19%**
Debt Service Surplus/(Deficit)	**$ -**	**$ -**	**$ 1**		

Rate Center Summary					
Total Revenues	$ 354,826	$ 177,413	$ 177,699	$ 286	0.16%
Total Expenses	354,829	177,415	147,957	29,457	16.60%
Surplus/(Deficit)	**$ (3)**	**$ (2)**	**$ 29,741**		
Costs per 1000 Gallons	8.12		7.49		
Thousand Gallons Treated	43,412	21,706	19,598	(2,108)	**-9.71%**
or					
Flow (MGD)	0.119		0.107		

Rivanna Water & Sewer Authority
Monthly Financial Statements - December 2017

Scottsville Wastewater Rate Center
Revenues and Expenses Summary

Operating Budget vs. Actual

	Notes	Budget FY 2018	Budget Year-to-Date	Actual Year-to-Date	Budget vs. Actual	Variance Percentage
Revenues						
Operations Rate Revenue		$ 284,688	$ 142,344	$ 142,344	$ -	0.00%
Interest Allocation		300	150	271	121	80.40%
Total Operating Revenues		**$ 284,988**	**$ 142,494**	**$ 142,615**	**$ 121**	**0.08%**
Expenses						
Personnel Cost		$ 90,848	$ 45,424	$ 39,420	$ 6,004	13.22%
Professional Services		2,000	1,000	-	1,000	100.00%
Other Services & Charges		22,900	11,450	14,233	(2,783)	-24.30%
Communications		2,630	1,315	2,046	(731)	-55.55%
Information Technology		4,400	2,200	-	2,200	100.00%
Supplies		100	50	-	50	100.00%
Operations & Maintenance		57,850	28,925	9,568	19,357	66.92%
Equipment Purchases		3,400	1,700	1,300	400	23.53%
Depreciation		16,000	8,000	8,000	0	0.00%
Subtotal Before Allocations		$ 200,128	$ 100,064	$ 74,566	$ 25,498	25.48%
Allocation of Support Departments		84,858	42,429	41,305	1,124	2.65%
Total Operating Expenses		**$ 284,987**	**$ 142,493**	**$ 115,872**	**$ 26,622**	**18.68%**
Operating Surplus/(Deficit)		**$ 1**	**$ 1**	**$ 26,743**		

Debt Service Budget vs. Actual

Revenues						
Debt Service Rate Revenue		$ 8,233	$ 4,117	$ 4,116	$ (1)	-0.01%
Trust Fund Interest		-	-	38	38	
Reserve Fund Interest		400	200	267	67	33.42%
Total Debt Service Revenues		**$ 8,633**	**$ 4,317**	**$ 4,421**	**$ 104**	**2.41%**
Debt Service Costs						
Total Principal & Interest		$ 8,233	$ 4,117	$ 4,117	$ -	0.00%
Reserve Additions-Interest		400	200	267	(67)	-33.42%
Estimated New Principal & Interest		-	-	-	-	
Total Debt Service Costs		**$ 8,633**	**$ 4,317**	**$ 4,383**	**$ (67)**	**-1.55%**
Debt Service Surplus/(Deficit)		**$ -**	**$ -**	**$ 37**		

Rate Center Summary

Total Revenues	$ 293,621	$ 146,811	$ 147,035	$ 225	0.15%
Total Expenses	293,620	146,810	120,255	26,555	18.09%
Surplus/(Deficit)	**$ 1**	**$ 1**	**$ 26,780**		
Costs per 1000 Gallons	14.27		14.74		
Thousand Gallons Treated	19,967	9,984	7,863	(2,121)	**-21.24%**
or					
Flow (MGD)	0.055		0.043		

Rivanna Water & Sewer Authority
Monthly Financial Statements - December 2017

Administration

Operating Budget vs. Actual

	Notes	*Budget FY 2018*	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Revenues						
Payment for Services SWA		$ 409,000	$ 204,500	$ 204,500	$ (0)	0.00%
Miscellaneous Revenue		1,000	500	4,284	3,784	756.82%
Total Operating Revenues		**$ 410,000**	**$ 205,000**	**$ 208,784**	**$ 3,784**	**1.85%**
Expenses						
Personnel Cost		$ 1,544,126	$ 772,063	$ 773,399	$ (1,336)	-0.17%
Professional Services		171,900	85,950	81,222	4,728	5.50%
Other Services & Charges	**B**	111,940	55,970	89,123	(33,153)	-59.23%
Communications		21,280	10,640	7,895	2,745	25.80%
Information Technology		118,000	59,000	36,932	22,068	37.40%
Supplies		22,000	11,000	10,719	281	2.55%
Operations & Maintenance	**E**	36,600	18,300	28,932	(10,632)	-58.10%
Equipment Purchases		8,300	4,150	4,150	(0)	0.00%
Depreciation		-	-	-	-	
Total Operating Expenses		**$ 2,034,146**	**$ 1,017,073**	**$ 1,032,373**	**$ (15,299)**	**-1.50%**

Department Summary

Net Costs Allocable to Rate Centers		**$ (1,624,146)**	**$ (812,073)**	**$ (823,589)**	**$ 11,515**	**-1.42%**
Allocations to the Rate Centers						
Urban Water	44.00%	**$ 714,624**	**$ 357,312**	**$ 362,379**	**$ (5,067)**	
Crozet Water	4.00%	**$ 64,966**	**32,483**	**32,944**	**(461)**	
Scottsville Water	2.00%	**$ 32,483**	**16,241**	**16,472**	**(230)**	
Urban Wastewater	48.00%	**$ 779,590**	**389,795**	**395,323**	**(5,527)**	
Glenmore Wastewater	1.00%	**$ 16,241**	**8,121**	**8,236**	**(115)**	
Scottsville Wastewater	1.00%	**$ 16,241**	**8,121**	**8,236**	**(115)**	
	100.00%	**$ 1,624,146**	**$ 812,073**	**$ 823,589**	**$ (11,515)**	

Rivanna Water & Sewer Authority
Monthly Financial Statements - December 2017

Maintenance

Operating Budget vs. Actual

	Notes	*Budget FY 2018*	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Revenues						
Miscellaneous Revenue		-	-	4,610	4,610	
Total Operating Revenues		**$ -**	**$ -**	**$ 4,610**	**$ 4,610**	
Expenses						
Personnel Cost		$ 1,150,821	$ 575,410	$ 564,298	$ 11,112	1.93%
Professional Services		-	-	-	-	
Other Services & Charges		12,300	6,150	11,105	(4,955)	-80.56%
Communications		15,635	7,818	12,315	(4,497)	-57.53%
Information Technology		6,500	3,250	2,328	922	28.37%
Supplies		500	250	95	155	61.81%
Operations & Maintenance	**E**	64,450	32,225	42,149	(9,924)	-30.80%
Equipment Purchases		94,850	47,425	42,490	4,935	10.41%
Depreciation		-	-	-	-	
Total Operating Expenses		**$ 1,345,056**	**$ 672,528**	**$ 674,780**	**$ (2,252)**	**-0.33%**

Department Summary

Net Costs Allocable to Rate Centers		**$ (1,345,056)**	**$ (672,528)**	**$ (670,170)**	**$ 6,863**	**-1.02%**
Allocations to the Rate Centers						
Urban Water	30.00%	**$ 403,517**	**$ 201,758**	**$ 201,051**	**$ 707**	
Crozet Water	3.50%	**47,077**	**23,538**	**23,456**	**83**	
Scottsville Water	3.50%	**47,077**	**23,538**	**23,456**	**83**	
Urban Wastewater	56.50%	**759,957**	**379,978**	**378,646**	**1,332**	
Glenmore Wastewater	3.50%	**47,077**	**23,538**	**23,456**	**83**	
Scottsville Wastewater	3.00%	**40,352**	**20,176**	**20,105**	**71**	
	100.00%	**$ 1,345,056**	**$ 672,528**	**$ 670,170**	**$ 2,358**	

Rivanna Water & Sewer Authority
Monthly Financial Statements - December 2017

Laboratory

Operating Budget vs. Actual

		Budget FY 2018	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
	Notes					
Revenues						
N/A						
Expenses						
Personnel Cost	**A**	$ 293,948	$ 146,974	$ 182,123	$ (35,149)	-23.92%
Professional Services		-	-	-	-	
Other Services & Charges		10,412	5,206	4,649	557	10.69%
Communications		600	300	500	(200)	
Information Technology		2,200	1,100	270	830	75.46%
Supplies		1,650	825	1,176	(351)	-42.51%
Operations & Maintenance		55,000	27,500	28,785	(1,285)	-4.67%
Equipment Purchases		1,500	750	500	250	33.34%
Depreciation		-	-	-	-	
Total Operating Expenses		**$ 365,310**	**$ 182,655**	**$ 218,003**	**$ (35,348)**	**-19.35%**

Department Summary

Net Costs Allocable to Rate Centers		**$ (365,310)**	**$ (182,655)**	**$ (218,003)**	**$ 35,348**	**-19.35%**
Allocations to the Rate Centers						
Urban Water	44.00%	**$ 160,736**	**$ 80,368**	**$ 95,921**	**$ (15,553)**	
Crozet Water	4.00%	**14,612**	**7,306**	**8,720**	**(1,414)**	
Scottsville Water	2.00%	**7,306**	**3,653**	**4,360**	**(707)**	
Urban Wastewater	47.00%	**171,696**	**85,848**	**102,461**	**(16,613)**	
Glenmore Wastewater	1.50%	**5,480**	**2,740**	**3,270**	**(530)**	
Scottsville Wastewater	1.50%	**5,480**	**2,740**	**3,270**	**(530)**	
	100.00%	**$ 365,310**	**$ 182,655**	**$ 218,003**	**$ (35,348)**	

Rivanna Water & Sewer Authority
Monthly Financial Statements - December 2017

Engineering

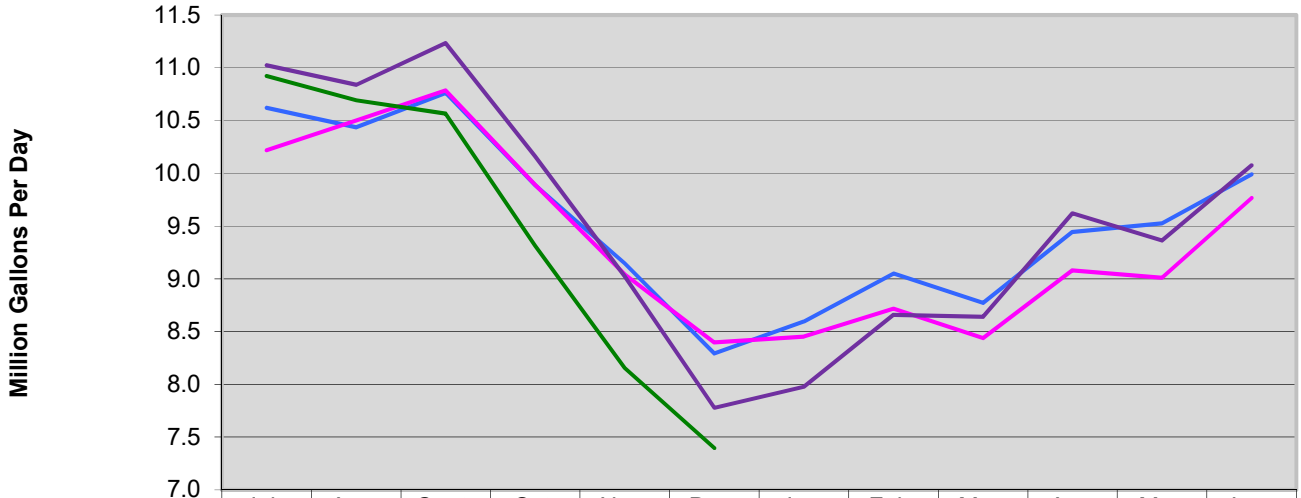
Operating Budget vs. Actual

		Budget FY 2018	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Revenues						
Payment for Services SWA		$ -	$ -	$ 3,117	$ 3,117	
Total Operating Revenues		**$ -**	**$ -**	**$ 3,117**	**$ 3,117**	
Expenses						
Personnel Cost		$ 1,168,296	$ 584,148	$ 519,590	$ 64,557	11.05%
Professional Services		144,000	72,000	4,907	67,093	93.18%
Other Services & Charges	**B**	45,150	22,575	32,499	(9,924)	-43.96%
Communications		17,300	8,650	8,731	(81)	-0.94%
Information Technology	**D**	46,000	23,000	34,346	(11,346)	-49.33%
Supplies		9,500	4,750	3,167	1,583	33.32%
Operations & Maintenance		64,940	32,470	34,461	(1,991)	-6.13%
Equipment Purchases		23,850	11,925	11,709	216	1.82%
Depreciation & Capital Reserve Transfers		-	-	-	-	
Total Operating Expenses		**$ 1,519,036**	**$ 759,518**	**$ 649,411**	**$ 110,107**	**14.50%**

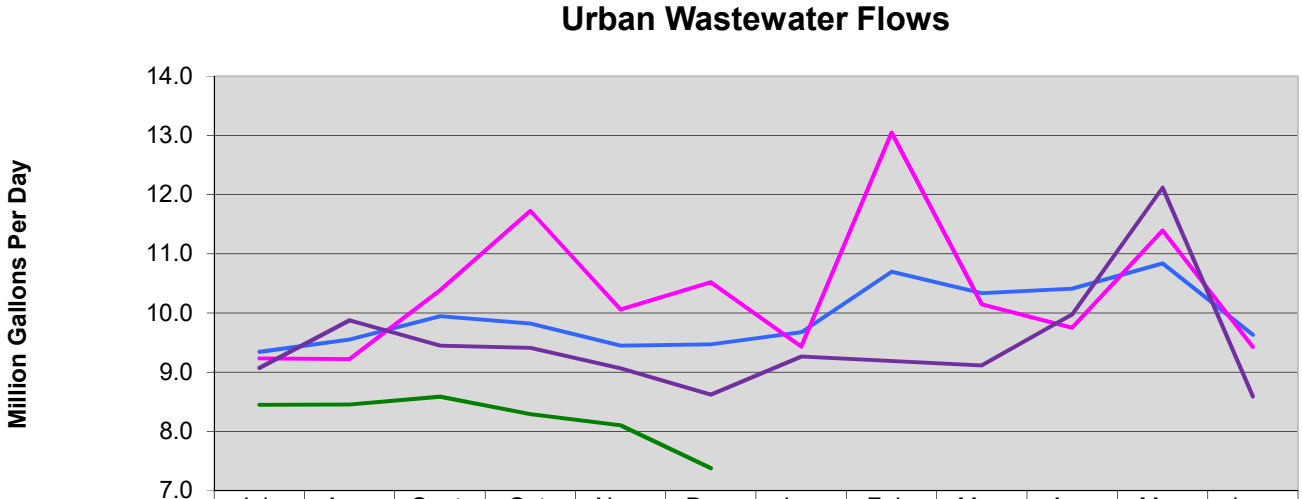
Department Summary

Net Costs Allocable to Rate Centers		**$ (1,519,036)**	**$ (759,518)**	**$ (646,294)**	**$ (106,990)**	**14.09%**
Allocations to the Rate Centers						
Urban Water	47.00%	**$ 713,947**	**$ 356,973**	**$ 303,758**	**$ 53,215**	
Crozet Water	4.00%	**60,761**	**30,381**	**25,852**	**4,529**	
Scottsville Water	2.00%	**30,381**	**15,190**	**12,926**	**2,264**	
Urban Wastewater	44.00%	**668,376**	**334,188**	**284,370**	**49,818**	
Glenmore Wastewater	1.50%	**22,786**	**11,393**	**9,694**	**1,698**	
Scottsville Wastewater	1.50%	**22,786**	**11,393**	**9,694**	**1,698**	
	100.00%	**$ 1,519,036**	**$ 759,518**	**$ 646,294**	**$ 113,223**	

Rivanna Water and Sewer Authority
Flow Graphs



	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
5 YR AVG.	10.62	10.44	10.76	9.89	9.15	8.29	8.60	9.05	8.77	9.45	9.53	9.99
FY 2016	10.22	10.50	10.79	9.89	9.04	8.40	8.45	8.72	8.44	9.08	9.01	9.77
FY 2017	11.02	10.84	11.23	10.16	9.02	7.78	7.98	8.66	8.64	9.62	9.36	10.07
FY 2018	10.92	10.69	10.57	9.31	8.16	7.40						



	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
5 YR AVG	9.34	9.55	9.95	9.82	9.45	9.47	9.67	10.70	10.33	10.41	10.84	9.63
FY 2016	9.23	9.22	10.38	11.73	10.06	10.52	9.43	13.05	10.15	9.75	11.39	9.43
FY 2017	9.07	9.87	9.45	9.41	9.06	8.62	9.26	9.19	9.12	9.97	12.12	8.59
FY 2018	8.45	8.45	8.59	8.29	8.10	7.38						

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MEMORANDUM

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

FROM: **JENNIFER WHITAKER, DIRECTOR OF ENGINEERING & MAINTENANCE**

REVIEWED BY: **BILL MAWYER, EXECUTIVE DIRECTOR**

SUBJECT: **STATUS REPORT: ONGOING PROJECTS**

DATE: **JANUARY 23, 2018**

This memorandum reports on the status of the following Capital Projects as well as other significant operations, maintenance and planning projects.

Under Construction

1. Drinking Water Activated Carbon and Water Treatment Plant Improvements
2. Wholesale Water Master Metering
3. Moores Creek AWRRF Odor Control Phase 2, Bridge Repairs & Second Centrifuge
4. Crozet Finished Water Pump Station
5. Moores Creek AWRRF Roof Replacements
6. Interceptor Sewer & Manhole Repair
7. Urgent and Emergency Repairs

Design and Bidding

8. Observatory Water Treatment Plant Expansion
9. South Rivanna Water Treatment Plant Improvements
10. Crozet Water Treatment Plant Expansion
11. Interconnect Lower Sugar Hollow and Ragged Mountain Raw Water Mains
12. Sugar Hollow Reservoir to Ragged Mountain Reservoir Transfer Flow Meter
13. Route 29 Pump Station and Pipeline
14. Piney Mountain Tank Rehabilitation
15. Avon to Pantops Water Main
16. Crozet Interceptor Pump Stations Bypass & Isolation Valves
17. Crozet Flow Equalization Tank

Planning and Studies

18. Reservoir Management Plan
19. South Fork Rivanna Reservoir to Ragged Mountain Reservoir Water Line Right-of-Way
20. South Rivanna Hydropower Plant Decommissioning
21. Drinking Water Infrastructure Plan – Crozet Area

1. Drinking Water Activated Carbon and WTP Improvements

Design Engineer:	Hazen and Sawyer
Construction Contractor:	Ulliman Shutte Construction, LLC
Construction Start:	April 2015
Percent Complete:	96%
Base Construction Contract + Change Orders to Date = Current Value:	$22,563,000 + $974,710 = $23,537,710
Expected Completion Date:	March 2018
Total Capital Project Budget:	Urban GAC: $24,000,000 Crozet GAC: $3,418,390 Scottsville GAC: $1,600,000

Current Status:

Crozet WTP – The Granular Activated Carbon (GAC) system has under gone start-up procedures and should be placed in service in February following some additional work on the carbon treated water meter vault. The GAC material was installed in the contactors on October 11-12. The GAC building, GAC contactors and piping, and chemical feed systems are 100% complete. Interior electrical conduit and wiring systems, as well as HVAC systems have been completed. Stormwater management facilities have been completed. New chainlink fencing and gates will be installed soon, as well as landscaping.

Scottsville WTP – The GAC system should be placed in operation in February. The GAC system has been filled with water and start-up testing has been completed. Issues identified during the start-up testing are currently being addressed and once complete, RWSA staff will schedule the GAC material to be delivered and installed. The GAC metal building, and GAC contactor and piping is 100% complete. Asphalt paving, lawn restoration, fencing and gate improvements are on-going.

North Rivanna WTP – The GAC system is scheduled to be in operation in February. The GAC metal building, and GAC contactors and piping have been completed. Building finishes, electrical conduit and wiring, and HVAC system installations are being completed. The electrical system rehabilitation and improvement work in the existing filter building is on-going. The existing generator has been relocated and electrical equipment has been transferred.

After reviewing the existing status of the aged, original electrical wiring systems in the filter building with the contractor, RWSA staff has determined that additional wiring up-

grades is warranted and recommended. A Request for Proposal has been issued and the contractor has provided a cost estimate for the additional work. Once a cost has been negotiated, a change order will be prepared.

South Rivanna WTP – The GAC system is anticipated to be in operation by March. The GAC metal building, and GAC contactors and piping have been completed. Work on the chemical feed systems is on-going. The filter air scour system is being completed now that the electrical room for the GAC building is in service. The liquid lime feed tanks and interior piping are complete. All clarifier and filter work is complete and in service. Electrical installations are on-going and the contractor has completed their GAC building electrical service connection.

Observatory WTP - The GAC system is anticipated to be in operation by March. The GAC building, Intermediate Pump Station building, and chlorine contact tank are complete, except for some interior painting and finishes. The electrical conduit and wiring installation for the buildings is ongoing. The new potable water service line and booster pump system is complete and in service. Landscape retaining walls and storm sewer systems have been installed, with landscaping and fencing to be installed soon.

We plan to have a press release upon completion of all GAC systems, likely in April or May 2018, along with individual on-site celebration events for Scottsville, Crozet and the Urban System (South Rivanna Water Treatment Plant).

History:

In 2006, the US EPA promulgated the Stage 2 Disinfectant and Disinfection Byproducts (D/DBP) Rule, which limits the maximum levels of certain disinfection byproducts in water distribution systems. RWSA hired Hazen and Sawyer to evaluate alternatives to reduce disinfection byproducts and ensure compliance with the Stage 2 D/DPR Rule. Hazen and Sawyer presented possible alternatives to assure continuous compliance with the Stage 2 D/DBP Rule, and the Board selected installation of granular activated carbon contactors. At the March 2015 RWSA board meeting, the Board approved a construction award to USC in the amount of $22,014,250 and a construction management work authorization in the amount of $1,686,700 to Hazen and Sawyer. In addition, the Board approved changes to the 2015-2019 Capital Improvement Plan (CIP) as follows: (1) Combined the Crozet GAC and Crozet Water Treatment Plant Improvements projects and increased the budget by $550,800 for a new total project budget of $3,190,000; (2) Increased the budget for Scottsville GAC by $382,100 for a new total project budget of $1,600,000; and (3) Combined the Urban Water GAC, South Fork Rivanna Water Treatment Plant Improvements, and the North Fork Water Treatment Plant Improvements projects into a single account with a combined total project budget of $24,000,494.

An additional CIP amendment was approved by the RWSA Board at the March 22, 2016 meeting. This adjustment increased the Crozet Water GAC and Water Treatment Plant Improvements project to $3,418,390. The RWSA Board also approved an additional change order amount to Ulliman Schutte of $840,356 at the December 15, 2015 meeting. This additional cost is for Observatory WTP flocculator upgrades, and is funded from a

separate CIP project (Observatory WTP improvements).

2. Wholesale Water Master Metering

Design Engineer:	Michael Baker International (Baker)
Construction Contractor:	Linco, Inc.
Construction Start:	January 2016
Percent Complete:	94%
Base Construction Contract + Change Orders to Date = Current Value:	$2,228,254 - $155,149 = $2,073,105
Expected Completion Date:	April 2018
Total Capital Project Budget:	$3,600,000

Current Status:

The three water treatment plant flow meters and 23 of 25 distribution system flow meters have been completed. Based on recent progress, staff anticipates completion of one of the two remaining meters in April of 2017. The final remaining site, located adjacent to Ivy Road, is currently on hold due to site access difficulties which must be coordinated with DVP. Staff is working with the contractor to resolve the issues with this site and determine a final completion schedule.

History:

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

The Board authorized staff in August of 2012 to enter into an agreement with Michael Baker International, Inc. (Baker) to complete an engineering study on metering plan alternatives. Baker's study identified several alternatives for a metering plan based on combinations of metering and estimating methodologies. Based on feedback from ACSA, the City, and RWSA, Baker recommended a Jurisdictional Approach which included installation of water meters at 34 locations at the City/County corporate boundary and at each of the three urban water treatment plants at an estimated cost of $6.4 million. At its September 2013 meeting, the RWSA Board of Directors requested staff to proceed with the Jurisdictional Coverage Approach. In February 2014, the Board of Directors authorized Baker to complete preliminary and final design for the project and to provide bid-phase services. The final design includes construction of 25 metering systems in underground vaults and required acquisition of twenty (20) permanent water line easements and one (1) permanent access easement.

Staff met with the ACSA and the City on July 12, 2017 and established a plan for implementation of the new meters in accordance with the 2012 Water Cost Allocation Agreement and the Baker Study.

3. Moores Creek AWRRF Odor Control Phase 2, Bridge Repairs and Second Centrifuge

Design Engineer:	Hazen and Sawyer
Construction Contractor:	MEB General Contractors
Construction Start:	June 2016
Percent Complete:	85%
Base Construction Contract + Change Orders to Date = Current Value:	$6,796,000 + $1,317,873 = $8,113,873
Expected Completion Date:	March 2018
Total Capital Project Budget:	Odor Control Phase 2 - $10,108,000 MC Bridge Repairs - $330,000 Second Centrifuge - $1,290,000

Current Status:

The bio-scrubber has been assembled and startup occurred in October. The biological process will be fully effective in March. Bridge repairs are underway. The second centrifuge was delivered in early December and will be installed over the next few months. The grit facilities will be tested and started up in January.

In addition to the above construction activities, the following initiatives are being conducted as part of the overall Odor Control program:

- Digester Coating ($540,000 budgeted). Odor-causing gases have been found to be emitted from the digester roofs. This project is intended to seal the interior of the digesters, reducing gas emission as well as protecting the integrity of the existing digester roof from harmful corrosion. Bids were received on August 3, 2017, and the Board approved the award at the September 2017 BOD meeting. Contract documents were executed and work began on January 2, 2018.

- Holding Pond Cleanout ($500,000 budgeted). Over time, grit and organic material have accumulated in the Wet Weather Holding Ponds and Equalization Basins and have been a source of odor. This project is to remove these accumulated solids in the summer of 2018 after the other components of the Odor Control project have been completed.

- Solids Handling ($550,000 budgeted). RWSA purchased covered trailers to load biosolids directly from the centrifuge's conveyor system. Conveyor system modifications are complete and the new trailers are being utilized.

History:

At its September 2013 meeting, members of City Council inquired about the possibility to add another phase of odor control to the current Capital Program in response to citizen

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

At the January 27, 2015 meeting, the Board approved this project with a budget of $9,330,000 and adopted it with the 2015-2019 CIP. DEQ issued the Certificate to Construct in early November 2015. This project advertised for bid on November 6, 2015 and bids were opened on December 17, 2015. Unfortunately, all of the bids were considerably over the project budget and subsequently were rejected. The design engineers, Hazen and Short Elliot Hendrickson, Inc. evaluated ways to reduce the scope of work without sacrificing the odor control goals. The redesigned project with reduced scope advertised for bid on February 5, 2016 and bids were opened on March 30, 2016. The Board of Directors approved award of the construction contract to MEB General Contractors, Inc. at the April 2016 Board Meeting with an associated capital budget increase.

4. <u>Crozet Finished Water Pump Station</u>

Design Engineer:	Short Elliot Hendrickson (SEH)
Construction Contractor:	Anderson Construction, Inc.
Construction Start:	May 2017
Percent Complete:	40 %
Base Construction Contract + Change Orders to Date = Current Value:	$1,941,000
Expected Completion Date:	September 2018
Total Capital Project Budget:	$2,600,000

<u>Current Status</u>:

Concrete footings and foundation walls have been placed for the pump station building. Discharge lines to and from the new pump station building have been placed and electrical rough-in work has begun. Pipelines are scheduled to be flushed, pressure tested and disinfected during the week of January 15. Grading work for the new driveway is in progress

<u>History</u>:

Bids were received and opened for the project on March 7, 2017. The apparent low bidder was Anderson Construction, Inc. from Lynchburg, VA. The Board of Directors approved the contract bid award of $1,941,000 at the March 2017 meeting, a Notice of Award was issued on April 10, 2017, and a Notice to Proceed was issued on May 3, 2017.

The filter plant effluent line to the ground storage tank has been installed, tested, disinfected and placed into service. The existing generator and electrical lines have been relocated and placed into a temporary location. The pipeline and generator were relocated in order to make room for the new pump station foundation excavation. Partial removal of old, existing asbestos cement (transite) pipe was completed in July.

As part of the current FY 2016 CIP, the Crozet Water Treatment Plant is being studied to expand the treatment capacity to secure future demand needs of the Crozet community. Prior to any plant expansion, it has been determined that the finished water pumping facilities are in need of replacement. The existing pump station is very small and was constructed as part of the original plant construction in the late 1960s. The pumping equipment and controls are outdated, and reduce operational reliability and efficiency. The pump house is located in a low, poorly drained area near the ground storage clearwell, and drainage issues exist. Due to the age and condition of pumps, electrical systems, building systems and controls, it has been determined that a full station replacement is necessary. An Alternatives Analysis Report was completed in June 2016, and the chosen alternative is to construct a new, larger building uphill from the existing clearwell tank. The new pump station building will be of similar construction as what is being proposed for the GAC facility at Crozet WTP.

5. <u>Moores Creek AWRRF Roof Replacements</u>

Design Engineer:	Hazen and Sawyer
Construction Contractor	Triangle Roofing Services, Inc.
Construction Start:	March 2018
Percent Complete	0%
Base Construction Contract + Change Orders to Date = Current Value:	$818,000
Expected Completion:	September 2018
Total Capital Project Budget:	$1,264,000

<u>Current Status</u>:

Construction has been deferred until March 2018 to mitigate safety hazards associated with re-roofing during the winter months.

<u>History:</u>

Construction bids were received on September 7, 2017 to replace the metal roof on eight buildings and award of the project was approved by the Board at the September Board Meeting. A Notice of Award was provided to Triangle Roofing Services, Inc. on October 10, 2017. Final Contract Documents have been executed.

The majority of the buildings at the Moores Creek Advanced Water Resource Recovery Facility were constructed in 1981 and 1982 during a major expansion of the existing treatment plant. All buildings constructed at that time were built with a metal roof system. In 2014, deficiencies were identified in the roof at the Administration Building and the roof was replaced. The materials of the original roof at the Administration Building are the

same as the roof material on the other buildings. Likewise, many of the buildings have started to experience leaks and structural deficiencies. As a result, the purpose of this project is to replace the roof systems at the following buildings at the Moores Creek AWRRF: Blower Building, Moores Creek Pump Station, Sludge Pump Station No. 2, Maintenance Building 1, and Maintenance Building 2. Following additional review of the conditions of various buildings located at the Moores Creek AWRRF, this project also now includes replacement of the roof systems Sludge Pumping Building, the Primary Pump Building, and the Effluent Pump Building.

In December 2016, the Board of Directors authorized staff to enter into a work authorization with Hazen and Sawyer to design bidding documents to replace the identified roofs at Moores Creek AWRRF. A kick-off meeting was held with plant operations and maintenance staff; asbestos testing was performed to determine impacts during demolition activities; and design is ongoing. An application was submitted to the Albemarle County Architectural Review Board and approval has been obtained.

6. <u>Interceptor Sewer and Manhole Repair</u>

Design Engineer:	Frazier Engineering
Project Start:	July 2017
Project Status:	5% Construction Complete
Construction Start:	November 2017
Completion:	2020
Total Capital Project Budget:	$1,962,389

<u>Current Status</u>:

Award of the 2017 Sanitary Sewer Rehabilitation and Repair Contract to IPR Northeast was approved by the Board at the October Board Meeting and a Notice of Award has been provided. Contract Documents are being finalized and are ready for formal execution now that bonds and insurance documents have been submitted and reviewed. Frazier Engineering continues to conduct condition assessment activities and has completed a preliminary review of previous CCTV results. Manhole inspections on various interceptors are scheduled to begin in January. Frazier recommendations based on the CCTV results and previous manhole inspections will be the basis for the initial work authorization provided to the upcoming new sewer rehabilitation contractor.

<u>History:</u>

Results from sewer flow monitoring and modeling under the Comprehensive Sanitary Sewer Study provided awareness to specific inflow and infiltration (I&I) concerns in the collection system and resulted in strengthened commitments from the City, ACSA and RWSA to continue professional engineering services to aid in the rehabilitation and repair of the sewer collection system. Engineering services will be used for sewer infrastructure condition assessments and the development of a sewer rehabilitation bid package for the procurement of a contractor to perform the recommended rehabilitation work.

7. Urgent and Emergency Repairs

Staff is currently working on several urgent repairs within the water and wastewater systems as listed below:

Project No.	Project Description	Approx. Cost
2017-03	Crozet Sewer Force Main Air Release Valve Repair	$100,000
2017-04	Crozet Water Main Repair – 5068 Three Notch'd Road	$35,000
2018-01	Rivanna Interceptor – RVI-MH-32 Erosion Repair	$25,000

- Crozet Sewer Force Main Air Release Valve Repair

  During routine inspections of the sewer force main, the Maintenance Department identified that the saddle for one of the air release valves was loose and needed to be repaired. Due to the profile of the force main however, it is not possible to dewater the force main and take pressure off the pipe at this location without the installation of line stops. As a result, a contractor will be contacted in order to assist with this repair with the intent of resolving the issue by the end of February.

- Crozet Water Main Repair – 5068 Three Notch'd Road

  A potential leak was identified near the 12-inch Crozet Water Main based on water collecting in an adjacent ditch line. The water was tested and appears to be finished water and the potential leak is located near the termination point of a recent water main replacement project. RWSA has been coordinating with ACSA and VDOT since this repair will require a street cut of Route 240 and assistance from ACSA should the line need to be cut. The repair is going to be performed by Faulconer Construction and is currently scheduled to begin on January 16th.

- Rivanna Interceptor – RVI-MH-32 Erosion Repair

  During routine inspections of the Rivanna Interceptor, the Maintenance Department observed some significant erosion around RVI-MH-32. The issue is being reviewed to determine the cause of the erosion and to develop a preferred method of repair.

8. Observatory WTP Expansion

Design Engineer:	Short Elliot Hendrickson, Inc. (SEH)
Project Start:	October 2017
Project Status:	Preliminary Engineering Report
Construction Start:	2019
Completion:	2021
Total Capital Project Budget:	$10,000,000

Current Status:

The PER will be completed by May 2018.

History:

A kick-off meeting for the PER work was held in November 2017. Hydraulic tests on the filters were conducted during the week of December 11. The consultant met with VDH on site in mid-December to review the scope of proposed improvements.

SEH has completed a scope of work and design fee estimate for a Preliminary Engineering Report (PER) for this project. The PER will consider the design and costs for upgrading the plant systems to achieve a consistent 7 MGD plant capacity, as well as consider the costs involved with upgrading the plant to 10 and 12 MGD capacity.
Much of the Observatory Water Treatment Plant is original to the 1953 construction. In an effort to better understand the needed future improvements, a Condition Assessment Report was completed by SEH in October of 2013. The approved Capital Improvement Plan project was based on the findings from this report. A portion of this project was expedited in order to repair and replace old, existing equipment that was not functional. The flocculator systems have been replaced and upgraded as part of the Drinking Water Activated Carbon and WTP Improvements project (GAC). The second flocculator system was started up in May 2017, and both systems are currently in full service. The contractor needs to address some minor punchlist items in order to reach final completion.

9. South Rivanna Water Treatment Plant Improvements

Design Engineer:	Short Elliot Hendrickson (SEH)
Project Start:	October 2017
Project Status:	Preliminary Engineering Report
Construction Start:	2020
Completion:	2022
Total Capital Project Budget:	$8,160,000

Current Status:

The PER will be completed by May 2018.

History:

SEH has completed a scope of work and design fee estimate for a PER for this project. A kick-off meeting for the PER work was held in November 2017. The consultant met VDH on site in mid-December to review the scope of proposed improvements.

The basic work items for this project include expansion of the coagulant storage facilities; installation of additional filters to meet firm capacity needs; the addition of a second variable frequency drive at the Raw Water Pump Station; the relocation for the electrical gear from a sub terrain location at the Sludge Pumping Station; a new building on site for additional office, lab, control room and storage space; improvements to storm sewers to accept allowable WTP discharges; and the construction of a new metal building to cover the existing liquid lime feed piping and tanks.
The South Rivanna Water Treatment Plant is currently undergoing significant upgrades as part of the Granular Activated Carbon Project. Several other significant needs have also

been identified and have been assembled into a single project. The projects herein include: expansion of the coagulant storage facilities; installation of additional filters to meet firm capacity needs; the additional of a second variable frequency drive at the raw water pump station; the relocation of the electrical gear at the Sludge Pump Station, the up fit of the office, lab control room and storage space, and the NPDES discharge piping and outfall. The scope of this project will not increase plant treatment capacity.

10. <u>Crozet WTP Expansion</u>

Design Engineer:	Short Elliot Hendrickson (SEH)
Project Start:	August 2016
Project Status:	25 % Design Complete
Construction Start:	September 2018
Completion:	December 2020
Total Capital Project Budget:	$7,000,000

<u>Current Status</u>:

Construction documents will be completed by June 2018. The consultant's draft preliminary design and opinion of probable cost for the plant expansion will be available for our review in January 2018.

<u>History</u>:

Hydraulic tests on the treatment plant filters were conducted during the week of December 11.

SEH has completed the Preliminary Engineering Report (PER) for this project, and is in the process of addressing comments from the Virginia Department of Health. Some preliminary watershed modeling and data collection was also performed as part of this work. In addition, raw water jar testing has been performed to finalize the type of treatment parameters necessary for the upgrade work, and the testing results were incorporated into the PER. The proposed new work will provide needed updates to equipment, as well as a plant capacity upgrade to approximately 1.5 - 2.0 million gallons per day.

A new Work Authorization with SEH was executed to perform preliminary and final design documents, as well as construction administration services. A design kick-off meeting has been completed

This project was created to analyze the feasibility of increasing the supply capacity of the existing Crozet WTP by modernizing plant systems. The goal is to not drastically increase the plant footprint in regards to existing filter plant, flocculation tanks, and sedimentation basins. By modernizing the outdated equipment within these treatment systems, the plant discharge capacity can be improved by approximately 50-100%. The project currently only includes study and design funding.

11. Interconnection Lower Sugar Hollow and Ragged Mountain Raw Water Mains

Design Engineer:	Dewberry Engineers
Project Start:	October 2017
Project Status:	5% Design
Construction Start:	May 2018
Completion:	October 2018
Total Capital Project Budget:	$225,000

Current Status:

Dewberry has reviewed several alignment options in the field and has proposed a scope of work that will identify the most suitable option. We are now in the process of negotiating fees.

History:

The two 18-inch water mains that supply water from Ragged Mountain Reservoir to Observatory Water Treatment Plant are 71 and 109 years old. The mains are interconnected at the top of the Ragged Mountain Dam, with one serving the 1920's Royal Pump Station and the other serving the more modern Stadium Road Pump Station. Both pump stations provide raw water to the Observatory Water Treatment Plant. This project will serve to interconnect the two raw water lines near the Route 29/Fontaine Avenue Intersection, which will provide improved reliability and operability in the event of raw water line breaks.

12. Sugar Hollow to Ragged Mountain Reservoir Transfer Flow Meter

Design Engineer:	Michael Baker International (Baker)
Project Start:	July 2017
Project Status:	100% Design Complete
Construction Contractor:	G.L. Howard
Construction Start:	July 2018
Completion:	September 2018
Total Capital Project Budget:	$350,000

Current Status:

This project will require the Sugar Hollow to Ragged Mt. Reservoir transfer line to be out of service and unavailable for approximately 4 weeks. Due to the current refill of Ragged Mountain Reservoir staff believes that losing the option to transfer water between the two reservoirs, even for a short time period, is not recommended. Therefore, we are delaying this project until reservoir storage capacities improve and transfers from Sugar Hollow are not needed.

History:

RWSA staff has worked with the design engineers to complete plan and profile design drawings for this project. The project will include installation of a flow meter on the 18-

inch diameter Sugar Hollow Reservoir discharge pipe, and a control valve that can be operated remotely through the Observatory WTP SCADA system. The control valve will modulate the amount of flow being transferred between the two reservoirs, the flow meter will record data, and staff will be able to remotely monitor the data through the SCADA system. Additional work has been added to this project including replacement of an existing, original gate valve at the site, demolition of two existing small utility structures that have not been used in many years, demolition of the existing Gatekeeper's House, and a separate control valve vault that will optimize the accuracy of the new flow meter by creating adequate separation distance between the meter and modulating control valve. The structures to be demolished and removed have been inspected and tested for asbestos containing materials and lead based paint. There will be some special abatement work required, and the contractor will have to include these costs in their estimate.

After initial cost estimating discussions with the contractor and RWSA staff, it was found that the current project budget is not enough to complete all of the identified work aspects. The Capital Improvement Program budget will likely have to be increased in order to perform all the work in one project.

13. <u>Route 29 Pump Station and Pipeline</u>

Design Engineer:	Michael Baker International (Baker)
Project Start:	July 2018
Project Status:	Update Existing Design Report
Construction Start:	2019
Completion:	2021
Total Capital Project Budget:	$6,000,000

<u>Current Status</u>:

Work is currently underway to review and update the 2008 preliminary engineering report, including analysis of current water demand projections. Portions of the work have already been completed, including a temporary bypass pumping location near Kohl's department store, and the abandonment of existing pipeline in the median of Rte. 29 from the south end of Hollymead Town Center to Timberwood Boulevard. Other portions of the project have been completed including the Pump Station Site Acquisition and new 24-inch pipeline installed as part of the Rt. 29 VDOT Betterment project. Once the report update has been completed, the preliminary design of the remaining pipeline and the pump station will be started. Preliminary and final design along with construction funding will be included in the 2019-2023 CIP.

<u>History</u>:

This project will include construction of a 2 mgd drinking water pump station and two 1,000,000 gallon ground water storage tanks, as well as completion of a 24-inch diameter pipeline along the Meeting Street corridor. This project has been identified as a need in the County Comprehensive Plan and RWSA Capital Improvement Plan.
A report and technical memorandum on this project was previously completed in 2008. The future pump station and tanks, along with a new transmission pipeline between the

pump station and the South Rivanna Water Treatment Plant, will provide an interconnection between the areas presently served by the South Rivanna WTP and the North Rivanna WTP. The interconnection is needed for redundancy of service in the event of an emergency, during drought conditions, and to adequately serve the growing needs of the Rt. 29 area generally north of Hollymead Town Center and Airport Road.

At the May 2017 Board Meeting, a 1.6-acre parcel of land was acquired through condemnation proceedings which included a public hearing. The site location was identified in a prior project report from 2008 (completed by Michael Baker), and is also identified in the current County Comprehensive Plan. The land value of the parcel was estimated through a March 16, 2017 Property Appraisal completed by CRES, Inc., a professional real estate and appraiser company. After negotiations with the current landowner to acquire the property were unsuccessful, and final offers were refused, the land was acquired after a Certificate of Take was recorded. This property will be utilized for future construction of a new drinking water pump station and ground storage tanks.

14. <u>Piney Mountain Tank Rehabilitation</u>

Design Engineer:	Johnson, Mirmiran & Thompson (JMT)
Project Start:	September 2017
Project Status:	Construction Contract Award Pending
Construction Start:	April 2018
Completion:	October 2018
Total Capital Project Budget:	$500,000

<u>Current Status</u>:

The project was advertised for bid on November 28, 2017 and bids were opened on January 9, 2018. Staff is recommending award to the apparent low bidder at this month's Board Meeting.

<u>History</u>:

The 700,000 gallon Piney Mountain Tank serves the North Rivanna pressure zone. A routine inspection of the Piney Mountain Tank in April of 2012 revealed several deformed roof rafters, indicating the potential for structural deficiency. An in-depth structural inspection was performed in May of 2013 and a list of recommended roof repairs provided. This project includes consultant services for design and bidding of necessary roof repairs and other ancillary items, as well as construction, construction administration, and inspection services. Long term plans for the Rt. 29 service area include the modification or elimination of this facility. The current recommended improvements are needed in order to maintain the existing tank in service for at least the next 10 years.

15. Avon to Pantops Water Main

Design Engineer:	Michael Baker International (Baker)
Project Start:	August 2017
Project Status:	19% Preliminary Design Complete
Construction Start:	2020
Completion:	2023
Total Capital Project Budget:	$13,000,000

Current Status:

Route alignment determination, hydraulic modeling, and preliminary design are underway. An operations workshop was held with the City and ACSA on December 7, 2017. A hydraulic modeling workshop is anticipated in January 2018.

History:

An engineering contract has been negotiated and was approved by the Board of Directors in July 2017.

The focus of this project is on the southern half of the urban area water system which is currently served predominantly by the Avon Street and Pantops water storage tanks. The Avon Street tank is hydraulically well connected to the Observatory Water Treatment Plant while the Pantops tank is well connected to the South Rivanna Water Treatment Plant. The hydraulic connectivity between the two tanks, however, is less than desired, creating operational challenges and reduced system flexibility. In 1987, the City and ACSA developed the Southern Loop Agreement which laid out two key phases (with the first being built at the time). The 1987 Agreement and planning efforts will service as a starting point for this current project.

16. Crozet Interceptor Pump Stations Bypass and Isolation Valves

Design Engineer:	Johnson, Mirmiran & Thompson (JMT)
Project Start:	August 2017
Project Status:	90% Design Complete
Construction Start:	April 2018
Expected Completion Date:	September 2018
Total Capital Project Budget:	$720,000

Current Status:

A work authorization with JMT was finalized to provide design, bidding and construction administration related services for this project. Design services began in August. Bidding is anticipated for January/February with a contract award at the March Board Meeting.

History:

There are four pump stations located in the Crozet Interceptor system that help convey flow from the Crozet Area into the Morey Creek Interceptor and the rest of the urban collection system. These pump stations were constructed in the 1980s and provided no means of

isolating each pump station from its downstream force main. This condition complicates maintenance-related activities as each time a pump station component needs to be serviced or replaced, the volume of wastewater within the force main must be addressed at the pump station as it drains back to the wet well. In addition, the Crozet Interceptor pump stations also have limited storage within their wet wells, and any reduction of down time as a result of dealing with the impacts of no isolation valves, decreases the amount of time available to work on the equipment. In order to alleviate this condition, temporary valves called "line stops" will be temporarily installed on the force mains downstream of the pump stations to allow enough time for a new isolation valve to be installed. Isolation valves will be located in order to provide the maximum amount of down time available based on current system conditions for future pump station maintenance activities. While line stops are in place, bypass connections will also be provided at each pump station. These will allow staff the option of bringing in bypass pumps for more significant pump station shutdowns required for maintenance activities or repairs for which the isolation valves alone cannot account.

17. Crozet Flow Equalization Tank

Design Engineer:	Greeley and Hansen (G&H)
Project Start:	October 2016
Project Status:	Siting Study 100% Complete
Construction Start:	2019
Completion:	2020
Total Capital Project Budget:	$2,325,000

Current Status:

G&H has submitted a work authorization to continue the project through construction which was approved by the Board during the December meeting. The work authorization is being finalized and prepared for signatures with project kick-off anticipated for end of January/early February.

History:

G&H has completed a report documenting potential tank locations within the drainage basin. A meeting was held with ACSA on October 9, 2017 and a tank location was agreed upon for additional investigation work and preliminary engineering activities.

A Work Authorization with G&H to perform a siting study for the flow equalization tank project was issued in October 2016 and with completion expected in 2017. These services include the sizing of the flow equalization tank and the pumping station based on information from the updated model, a preliminary site selection process based on the sizing requirements identified in order to narrow down the number of sites, and an alternatives analysis performed for each selected site to evaluate the feasibility of locating the facility. This is the first step in the site selection process and will be followed by a more in depth analysis of the potential tank locations and the eventual selection of a final site. As part of the first task, pump tests are being performed at all four Crozet Pump Stations to confirm existing capacities.

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

A 2016 update to the 2006 model was completed which evaluated the I&I reduction goals previously established and future capital project needs. Based on the results of that study, it was determined that the Crozet Interceptor system and namely the existing Crozet Pump Stations (1 through 4) have adequate capacity to handle the 2015 peak wet weather flow from the Crozet Service Area during a two-year storm. However, as projected growth in the service area occurs, peak wet weather flows in the area under the storm conditions established in the updated model will begin to exceed the firm capacities of the pump stations by 2025. Additional I&I reductions in order to reduce flows enough to not exceed the pump station firm capacities are not feasible and as a result, the construction of a flow equalization tank was identified as the best method to alleviate wet weather capacity issues.

While the study indicates that capacity should not be an issue until 2025, a flow equalization tank would also provide a significant benefit to the maintenance of the Crozet Pumping Station system which currently lacks system storage necessary to allow adequate time to perform repairs on the pumps and the associated force mains while the system is down. As a result, it is important to progress into the siting study for the flow equalization tank to ensure that it can be constructed in time for the 2025 flow targets but also to facilitate less complicated and more thorough maintenance on the system that has not been possible previously.

18. Reservoir Management Plan

Consultant:	DiNatale Water Consultants
Project Start:	November 2014
Project Status:	80% Complete
Completion:	March 2018
Total Contract Cost:	$336,475

Current Status:

The second year of water quality monitoring for this project is in progress. An intensive week of sampling took place in June. A project team meeting was held on June 16 to discuss the results. Sediment sampling at Beaver Creek Reservoir and South Fork Rivanna Reservoir took place in July. The final report with recommendations is expected by March 2018.

History:

The Phase 1 report is complete, along with a related public information document, and both have been distributed to the Board and are also available for public review at www.rivanna.org/reservoir-study. In June 2014 staff received proposals for services to

develop a Reservoir Management Plan to include all five reservoirs that RWSA manages for water supply (Beaver Creek, Ragged Mountain, South Fork Rivanna, Sugar Hollow, and Totier Creek). A selection committee represented by staff from RWSA, ACSA, and the City reviewed proposals and selected two firms for interviews. DiNatale Water Consultants was awarded this contract in the amount of the $176,334, and the contract was executed in November 2014. The contract was extended in 2016, with $160,141 being approved by the Board in August 2016 for Phase 2, for a total approved contract amount of $336,475.

19. <u>South Fork Rivanna Reservoir to Ragged Mtn. Reservoir Water Line Right-of-Way</u>

Design Engineer:	Michael Baker International (Baker)
Project Start:	October 2017
Project Status:	10 % Complete
Completion:	2021
Total Capital Project Budget:	$2,295,000

<u>Current Status</u>:

The PER will be completed by August 2018. Preliminary design work began in November 2017. A project kick-off meeting was held in November, and the consultant is in the process of data collection,review and hydraulic modeling for the Preliminary Engineering Report.

<u>History</u>:

RWSA has negotiated a scope and fee with Michael Baker International for the routing study, preliminary design, plat creation and easement acquisition process.
The approved 50-year Community Water Supply Plan includes the future construction of a raw water line from the South Fork Rivanna Reservoir to the Ragged Mountain Reservoir. This water line will replace the existing Upper Sugar Hollow Pipeline along an alternative alignment to increase raw water transfer capacity in the Urban Water System. The preliminary route for the water line followed the proposed Route 29 Charlottesville Bypass; however, the Bypass project was suspended by VDOT in 2014, requiring a more detailed routing study for the future water line. This project includes a routing study, preliminary design and preparation of easement documents, as well as acquisition of water line easements along the approved route.

20. <u>South Rivanna Hydropower Plant Decommissioning</u>

Consultant:	Gomez and Sullivan
Project Start:	October 2016
Project Status:	Exemption Surrender Process – Phase 2 Underway
Construction Start:	2019
Completion:	2020
Total Capital Project Budget:	$1,000,000

Current Status:

Work associated with the development of a consultation document to be provided to local regulatory agencies has begun with the intent of hosting a meeting with agencies to discuss the decommissioning process in January/February 2018..

History:

Work associated with the first phase of the exemption surrender process with Gomez and Sullivan and Van Ness Feldman was completed confirming with FERC what the next steps in the surrender process would include. A work authorization with Gomez and Sullivan for Phase 2 of the exemption surrender process was finalized in August 2017 and includes tasks to manage the local regulatory agencies consultation process and development of the surrender application and decommissioning plan.
RWSA constructed a hydropower plant at the South Fork Rivanna Dam in 1987. Power generation at the plant was limited for a number of years due to various mechanical issues and has been completely offline for the past four years. In December 2011, RWSA retained HDR to perform a mechanical and electrical equipment assessment and to provide recommendations for capital expenditures and continued operation. This assessment identified the need to perform a number of mechanical and electrical modifications to improve operation of the hydropower plant. On June 16, 2013, while the plant was down for testing associated with repairs to the speed reducer and generator, the powerhouse flooded during a heavy rainfall event. A post-flood inspection indicated that the rising water damaged the electrical equipment. In addition to electrical system issues, the turbine blades were "stuck" and inoperable prior to the flood event. Prior to beginning any rehabilitation work on the hydropower plant, it was determined that a feasibility study should be performed that reviewed previous recommendations and took into account interaction with the Federal Energy Regulatory Commission (FERC) to determine if it was cost effective for RWSA to rehabilitate the facility. The feasibility study was conducted by Gomez and Sullivan and concluded that rehabilitation of the facility would most likely not provide a return on investment based on current market conditions. Staff recommended that RWSA proceed with surrendering the exemption to licensure with FERC and decommission the facility. During the meeting on October 25, 2016, the Board of Directors agreed with the recommendation and staff began to proceed with the surrender process.

21. Drinking Water Infrastructure Plan – Crozet Area

Design Engineer:	Hazen and Sawyer
Project Start:	June 2017
Project Status:	40% Complete
Completion:	Fall 2018
Total Capital Project Budget:	$300,000

Current Status:

Staff met with DEQ in November to review preliminary water demand, supply and downstream release findings. At DEQ's suggestion, staff will provide a pre-application

project overview to all related State and Federal Agencies in February. Staff also plans to provide an update to the Crozet community in March 2018.

History:

A progress meeting was completed in October, and additional meetings with the County of Albemarle Planning Department and the VADEQ are scheduled for November.

Hazen is currently reviewing RWSA and ACSA historical average and peak day water demand data, as well as County zoning and land use data, to develop water demand forecasts. RWSA staff has provided Hazen with existing data, reports and service area history to start their analysis. A design team kick-off meeting has been held, and additional meetings with county staff and the VA DEQ will be scheduled this Fall, when future demand analyses have been completed. Field investigation of hydraulic data is being scheduled, however, hydrant flow testing will be suspended until the current Drought Watch restrictions have been lifted.
Preliminary meetings with an Albemarle County Board member and Community Development representatives were held in May. A meeting with the Crozet Community Advisory Committee was held on June 21, 2017.

This project was previously entitled the Crozet Water Master Plan, and is identified in the current Capital Improvement Plan as such. The project name has been changed to avoid confusion with the separate Crozet Master Plan document. The Crozet water service area continues to see expanded growth in the average and maximum day water demands. Discussion with county and ACSA officials have confirmed recent growth trends that water use is increasing in Crozet. While some projects ae currently underway to address the immediate need in Crozet, this project will develop a comprehensive mid and long range plan (50 years) for the entire water system including; raw water supply, raw water pumping and conveyance, finished water treatment, finished water pumping, and finished water distribution and storage. Future water demand projections will be an important part of this project. At the June 27, 2017 Board Meeting, it was approved to award this planning project to the consulting engineering firm of Hazen and Sawyer. An Engineering Services Agreement was executed on July 5, 2017, as well as Work Authorization No. 1 for the fee of $269,120.

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MEMORANDUM

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

FROM: **DAVE TUNGATE, WATER MANAGER**
TIMOTHY CASTILLO, WASTEWATER MANAGER

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

SUBJECT: **OPERATIONS REPORT FOR DECEMBER 2017**

DATE: **JANUARY 23, 2018**

WATER OPERATIONS:

The average daily/monthly total water distributed for December 2017 was as follows:

Water Treatment Plant	***Average Daily Production (MGD)***	***Total Monthly Production (MG)***	***Maximum Daily Production in the Month (MGD)***
Observatory	0.57	17.70	---
South Rivanna	6.51	201.92	---
North Rivanna	0.31	9.70	---
Urban Total	7.39	229.32	8.68 (12/1/17)
Crozet	0.48	14.96	0.806 (12/17/17)
Scottsville	0.042	1.30	0.065 (12/17/17)
RWSA Total	7.912	245.58	---

- All RWSA water treatment facilities were in regulatory compliance during the month of December.

Status of Reservoirs (as of January 12, 2018):

- Urban Reservoirs: 81.0 % of Total Useable Capacity
- Ragged Mountain Reservoir is –5.62 feet (80.7%)
- Sugar Hollow Reservoir is – 19.97 feet (33.0%)
- South Rivanna Reservoir is full (100%)
- Beaver Creek Reservoir is – 3.05 feet (80.1%)
- Totier Creek Reservoir is full (100%)

WASTEWATER OPERATIONS:

All RWSA Water Resource Recovery Facilities (WRRFs) were in regulatory compliance with their effluent limitations during the month of December 2017. Performance of the WRRFs in December was as follows compared to the respective VADEQ permit limits:

WRRF	*Average Daily Effluent Flow (mgd)*	*Average $CBOD_5$ (ppm)*		*Average Total Suspended Solids (ppm)*		*Average Ammonia (ppm)*	
		RESULT	*LIMIT*	*RESULT*	*LIMIT*	*RESULT*	*LIMIT*
Moores Creek	7.26	<QL	11	1.5	22	0.08	8.6
Glenmore	0.120	1.3	15	3.1	30	0.05	NL
Scottsville	0.037	3.5	25	5.6	30	0.15	NL
Stone Robinson	0.002	4	30	13	30	1.8	NL

NR = Not Required
NL = No Limit
<QL: Less than analytical method quantitative level (2 ppm for CBOD, and 1 ppm for TSS) is reported as zero.

Nutrient discharges at the Moores Creek AWRRF were as follows for December 2017:

State Annual Allocation (lb./yr.)		*Average Monthly Allocation (lb./mo.)**	*Moores Creek Discharge (lb./mo.)*	*Performance as % of Average Allocation**
Nitrogen	282,994	23,583	7,742	32%
Phosphorous	18,525	1,544	507	33%

*State allocations are expressed as annual amounts. One-twelfth of that allocation is an internal monthly benchmark for comparative purposes only.

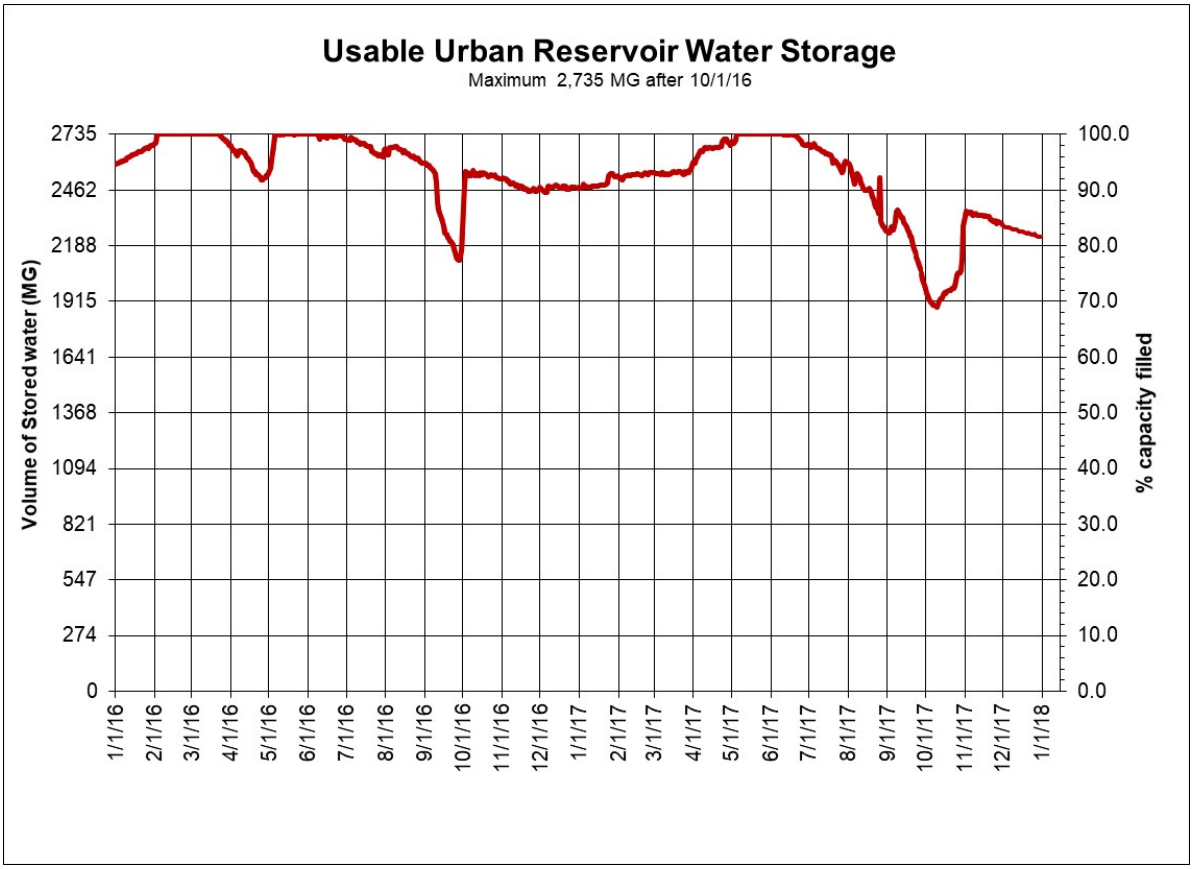
Nutrient discharges are regulated on a total annual basis. For calendar year 2017, the total nutrient discharges at the Moores Creek AWRRF were as follows:

State Permit Annual Allocation (lb./yr.) 2017		*Financial Agreement Annual Allocation (lb./yr.) 2017*	*Moores Creek Discharge (lb./yr.) 2017*	*Performance as % of State Permit Annual Allocation*	*Performance as % of Financial Agreement Annual Allocation*
Nitrogen	282,994	227,952	64,728	23%	28%
Phosphorous	18,525	13,679	2,531	14%	19%

WATER AND WASTEWATER DATA:

The following graphs are provided for review:

- Usable Urban Reservoir Water Storage
- Urban Water and Wastewater Flows versus Rainfall
- Moores Creek AWRRF BOD and TSS Loadings to Receiving Stream
- Moores Creek AWRRF Effluent Monthly Average Ammonia Concentrations
- Moores Creek AWRRF Total Phosphorus Discharged
- Moores Creek AWRRF Total Nitrogen Discharged


Usable Urban Reservoir Water Storage
Maximum 2,735 MG after 10/1/16
Volume of Stored water (MG)
% capacity filled
2735
2462
2188
1915
1641
1368
1094
821
547
274
0
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
1/1/16
2/1/16
3/1/16
4/1/16
5/1/16
6/1/16
7/1/16
8/1/16
9/1/16
10/1/16
11/1/16
12/1/16
1/1/17
2/1/17
3/1/17
4/1/17
5/1/17
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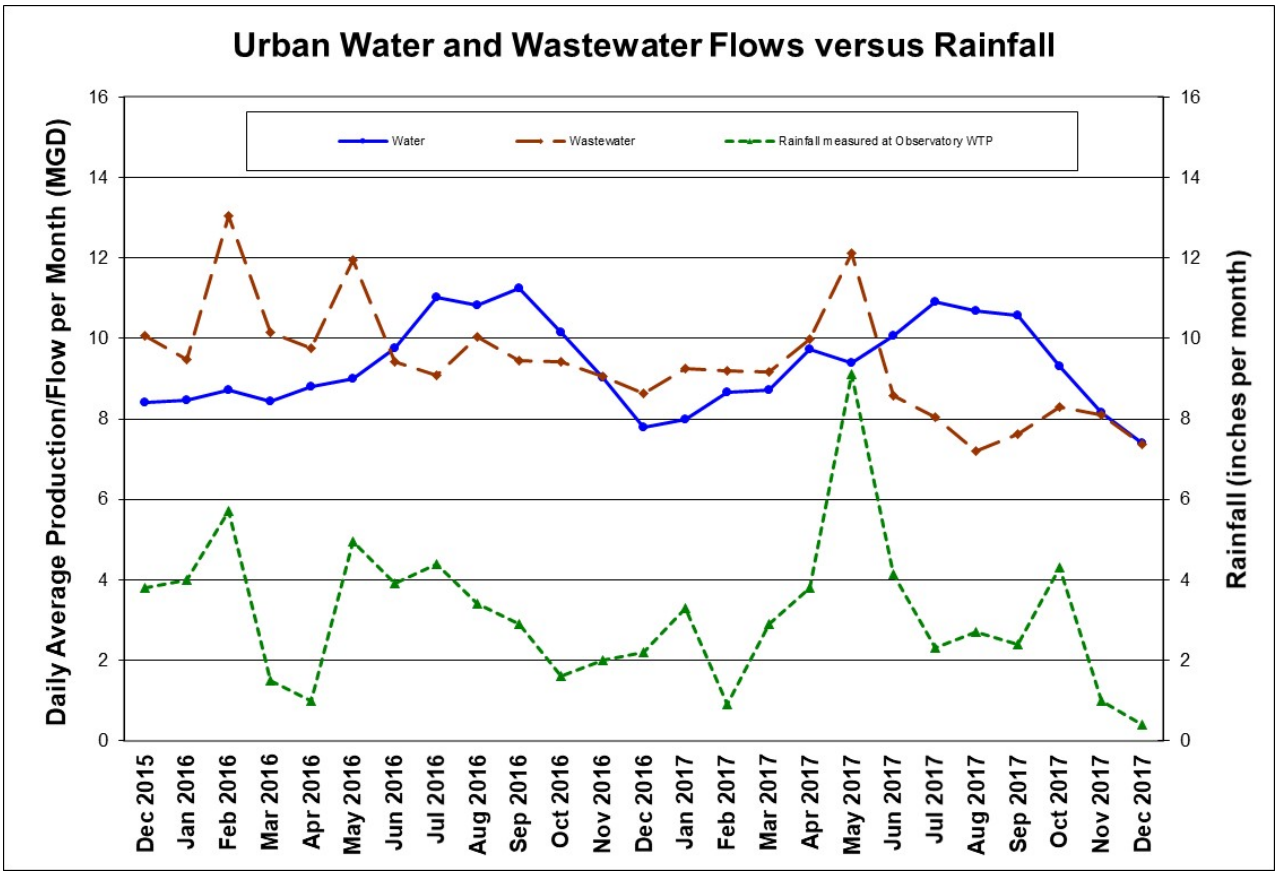
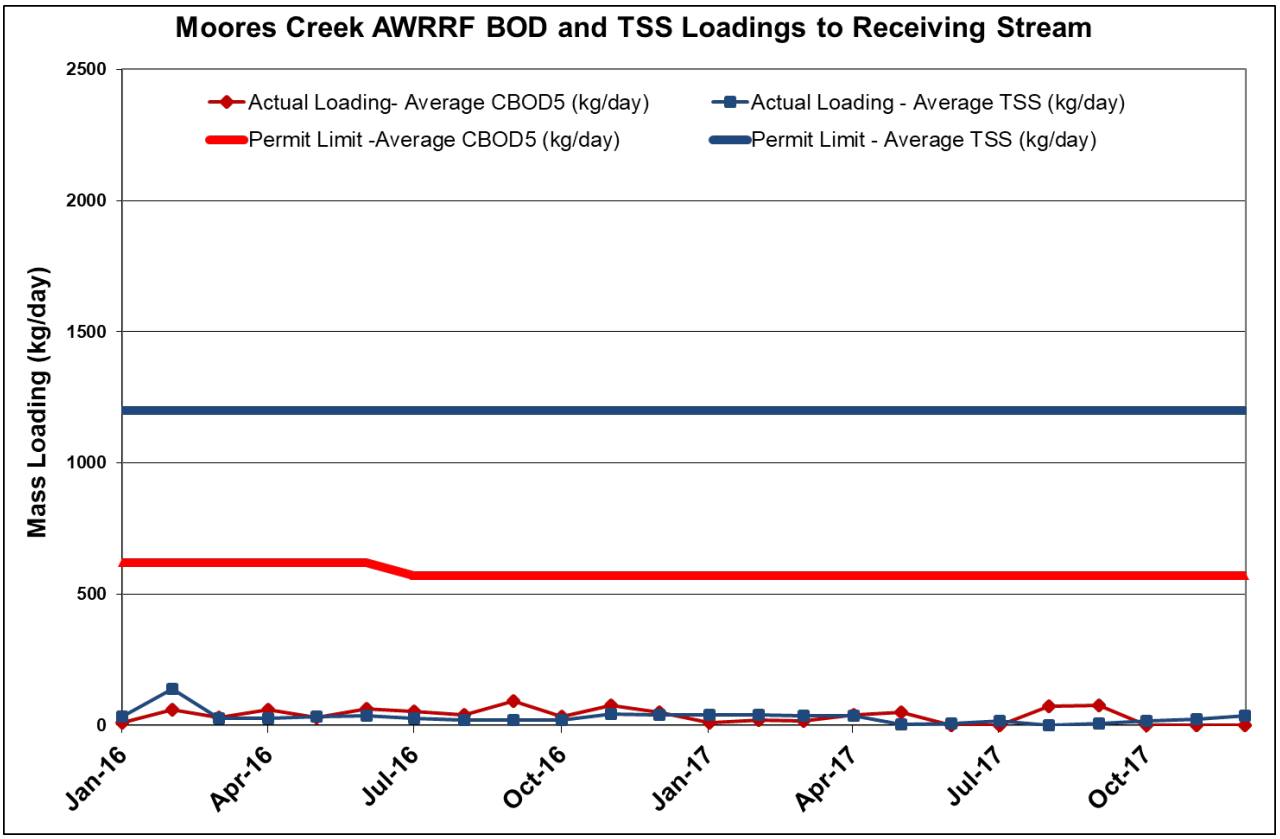
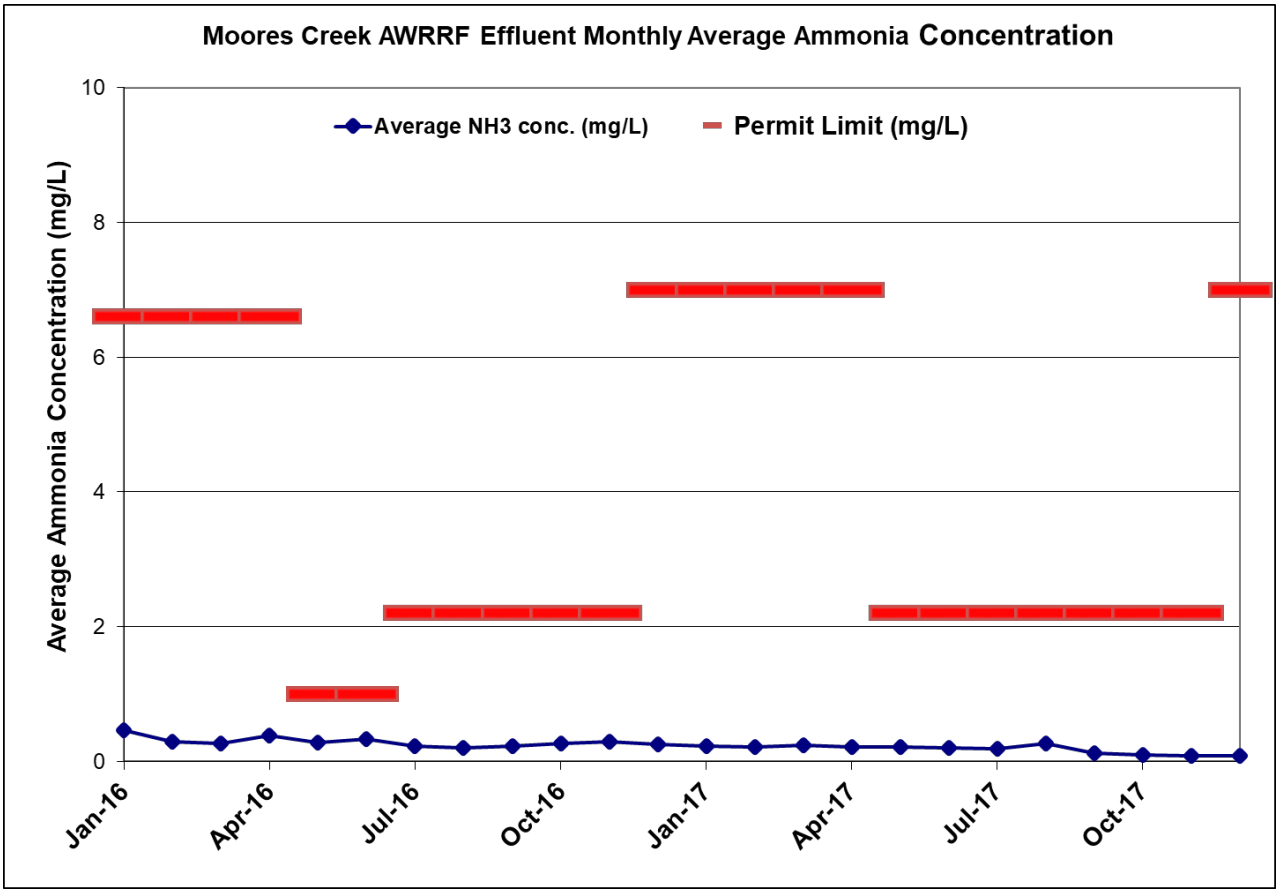
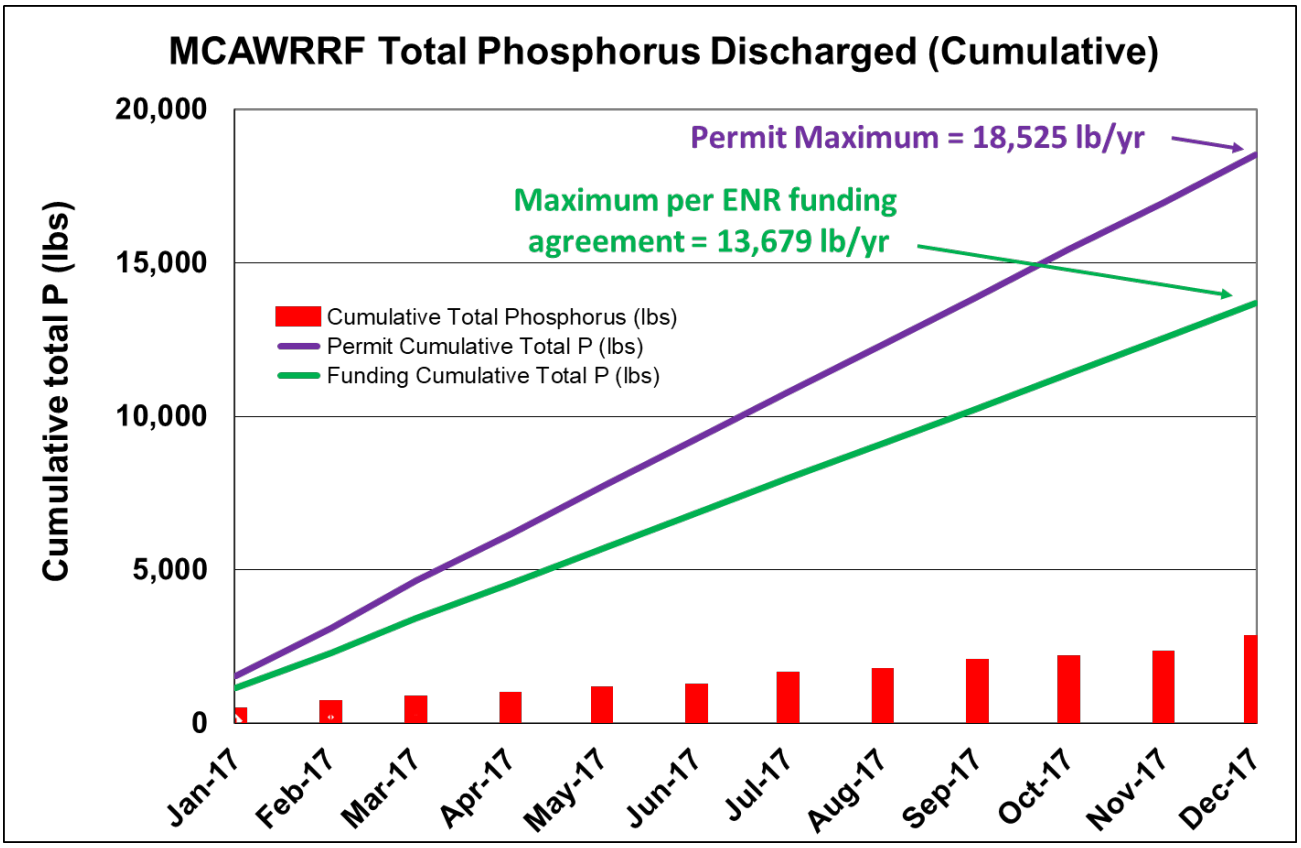
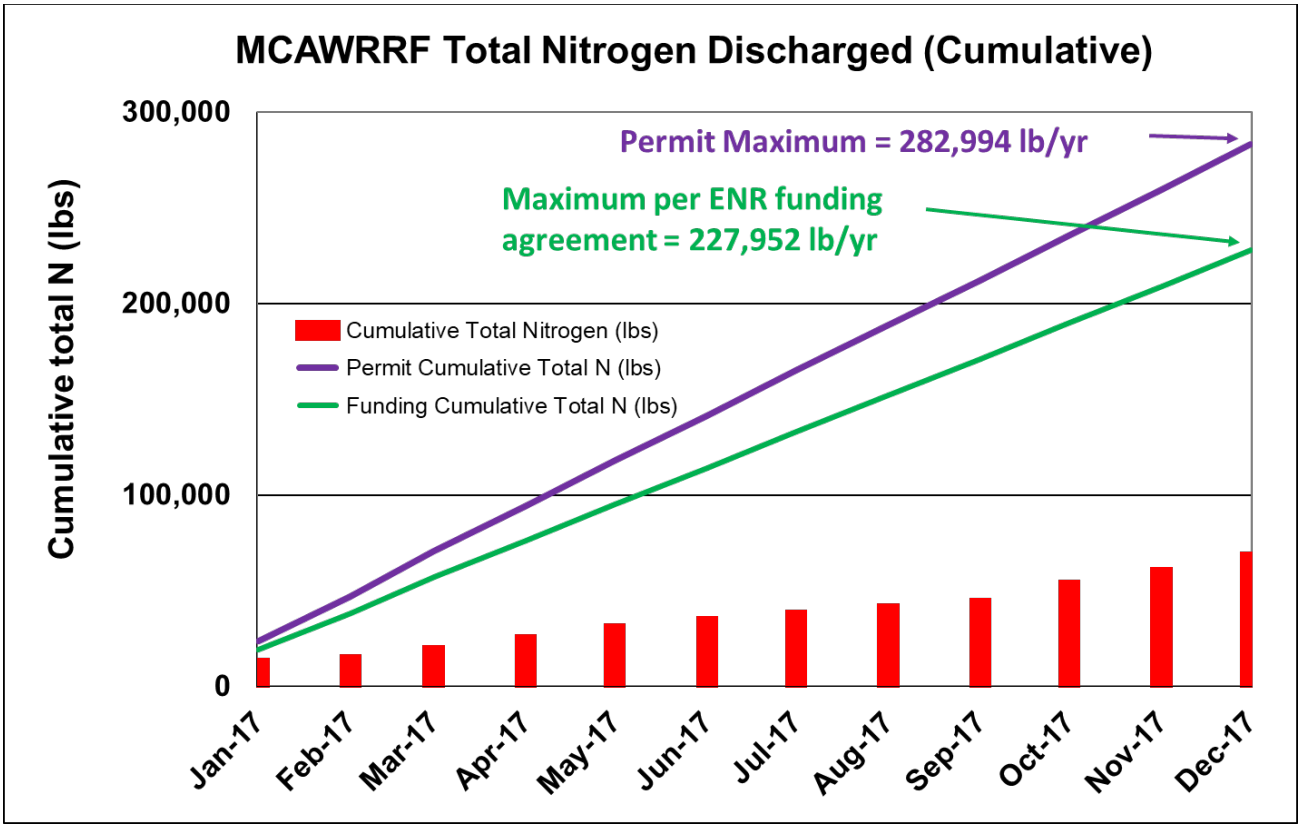

Urban Water and Wastewater Flows versus Rainfall
Water
Wastewater
Rainfall measured at Observatory WTP
Daily Average Production/Flow per Month (MGD)
Rainfall (inches per month)
16
14
12
10
8
6
4
2
0
Dec 2015
Jan 2016
Feb 2016
Mar 2016
Apr 2016
May 2016
Jun 2016
Jul 2016
Aug 2016
Sep 2016
Oct 2016
Nov 2016
Dec 2016
Jan 2017
Feb 2017
Mar 2017
Apr 2017
May 2017
Jun 2017
Jul 2017
Aug 2017
Sep 2017
Oct 2017
Nov 2017
Dec 2017


Moores Creek AWRRF BOD and TSS Loadings to Receiving Stream
Actual Loading- Average CBOD5 (kg/day)
Actual Loading - Average TSS (kg/day)
Permit Limit -Average CBOD5 (kg/day)
Permit Limit - Average TSS (kg/day)
Mass Loading (kg/day)
2500
2000
1500
1000
500
0
Jan-16
Apr-16
Jul-16
Oct-16
Jan-17
Apr-17
Jul-17
Oct-17


Moores Creek AWRRF Effluent Monthly Average Ammonia Concentration
Average NH3 conc. (mg/L)
Permit Limit (mg/L)
Average Ammonia Concentration (mg/L)
10
8
6
4
2
0
Jan-16
Apr-16
Jul-16
Oct-16
Jan-17
Apr-17
Jul-17
Oct-17


MCAWRRF Total Phosphorus Discharged (Cumulative)
Cumulative total P (lbs)
20,000
15,000
10,000
5,000
0
Permit Maximum = 18,525 lb/yr
Maximum per ENR funding agreement = 13,679 lb/yr
Cumulative Total Phosphorus (lbs)
Permit Cumulative Total P (lbs)
Funding Cumulative Total P (lbs)
Jan-17
Feb-17
Mar-17
Apr-17
May-17
Jun-17
Jul-17
Aug-17
Sep-17
Oct-17
Nov-17
Dec-17


MCAWRRF Total Nitrogen Discharged (Cumulative)
Cumulative total N (lbs)
300,000
200,000
100,000
0
Permit Maximum = 282,994 lb/yr
Maximum per ENR funding agreement = 227,952 lb/yr
Cumulative Total Nitrogen (lbs)
Permit Cumulative Total N (lbs)
Funding Cumulative Total N (lbs)
Jan-17
Feb-17
Mar-17
Apr-17
May-17
Jun-17
Jul-17
Aug-17
Sep-17
Oct-17
Nov-17
Dec-17

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MEMORANDUM

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

FROM: **BILL MAWYER, EXECUTIVE DIRECTOR**

SUBJECT: **RECOMMENDATION FOR AWARD OF A NON-PROFESSIONAL SERVICES CONTRACT FOR DEVELOPMENT AND IMPLEMENTATION OF A STRATEGIC PLAN; RAFTELIS FINANCIAL CONSULTANTS, INC**

DATE: **JANUARY 23, 2017**

After completion of the Strategic Plan in December, we would like to proceed with a second phase of services from Raftelis to assist with implementation of the six strategic goals. The original scope of work to develop the Strategic Plan was completed by Raftelis for a fixed price of $82,195. The scope of work for the second phase of the project will include:

1. Goal Team Strategy Implementation Workshops
2. Annual (Year 1) Strategy Workplan Development & Presentation
3. Strategy Implementation Performance Management System Assistance
4. Progress Reporting Assistance

The fixed price for the second phase of the project will be $61,805, for a total project cost of $144,000. Board authorization is being requested since the total contract amount will exceed $100,000. The second phase will begin in January and will be completed by June 2018.

Board Action Requested:

The Executive Director recommends that the Board of Directors authorize execution of Work Authorization #2 with Raftelis Consultants, Inc. in the amount of $61,805 for consulting services to implement the Strategic Plan. The total contract amount for Strategic Plan development and implementation services will be $144,000.

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MEMORANDUM

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

FROM: **JENNIFER WHITAKER, DIRECTOR OF ENGINEERING & MAINTENANCE**

REVIEWED BY: **BILL MAWYER, EXECUTIVE DIRECTOR**

SUBJECT: **CONSTRUCTION CONTRACT AWARD – PINEY MOUNTAIN GROUND STORAGE TANK IMPROVEMENTS**

DATE: **JANUARY 23, 2018**

The 700,000-gallon Piney Mountain Tank serves the North Rivanna pressure zone. A routine inspection of the Piney Mountain Tank revealed several deformed roof rafters, indicating the potential for structural deficiency. An in-depth structural inspection was performed and a list of recommended roof repairs provided. Although long-term plans for the Rt. 29 service area include the modification or elimination of the Piney Mountain Tank, the current recommended improvements, which include interior and exterior painting, are needed in order to maintain the existing tank in service for at least the next 10 years. RWSA obtained the services of Johnson, Mirmiran, & Thompson (JMT) to design the improvements to the Piney Mountain Tank under the existing water and sewer engineering services term contract.

Bids for RFB No. 341 – Piney Mountain Ground Storage Tank Improvements were advertised on November 28, 2017 and opened on January 9, 2018. Six bids were received with total values including Base Bid items and Alternate 1 ranging from $251,700.00 to $433,260.00. The apparent low bidder was Utility Service Co., Inc. from Perry, Georgia. JMT has reviewed the bid documents submitted by Utility Service Co. and verified that the documents are acceptable. The bid price is within the current Capital Improvement Plan budget for the Piney Mountain Tank Rehabilitation Project, therefore JMT has recommended awarding the construction project to Utility Service Co. Construction will be completed from April – October 2018.

Board Action Requested:

Staff recommends that the Board of Directors award the construction contract for the Piney Mountain Ground Storage Tank Improvements (RFB No. 341) to Utility Service Co., Inc. in the amount of $251,700.00. Staff further requests the Board of Directors to authorize the Executive Director to execute the contract with Utility Service Co. and to approve any additional change orders to the contract, only when necessary for the completion of this project, provided the total amount of all change orders does not exceed 10% of the awarded contract amount.

Community Water Supply Program

Review of the South Rivanna Reservoir to Ragged Mountain Reservoir Water Line Project

RIVANNA WATER & SEWER AUTHORITY

Presented by:

Bill Mawyer, Executive Director

January 23, 2018

Objectives of the Review

1. Overview of this significant project established by the Community Water Supply Plan

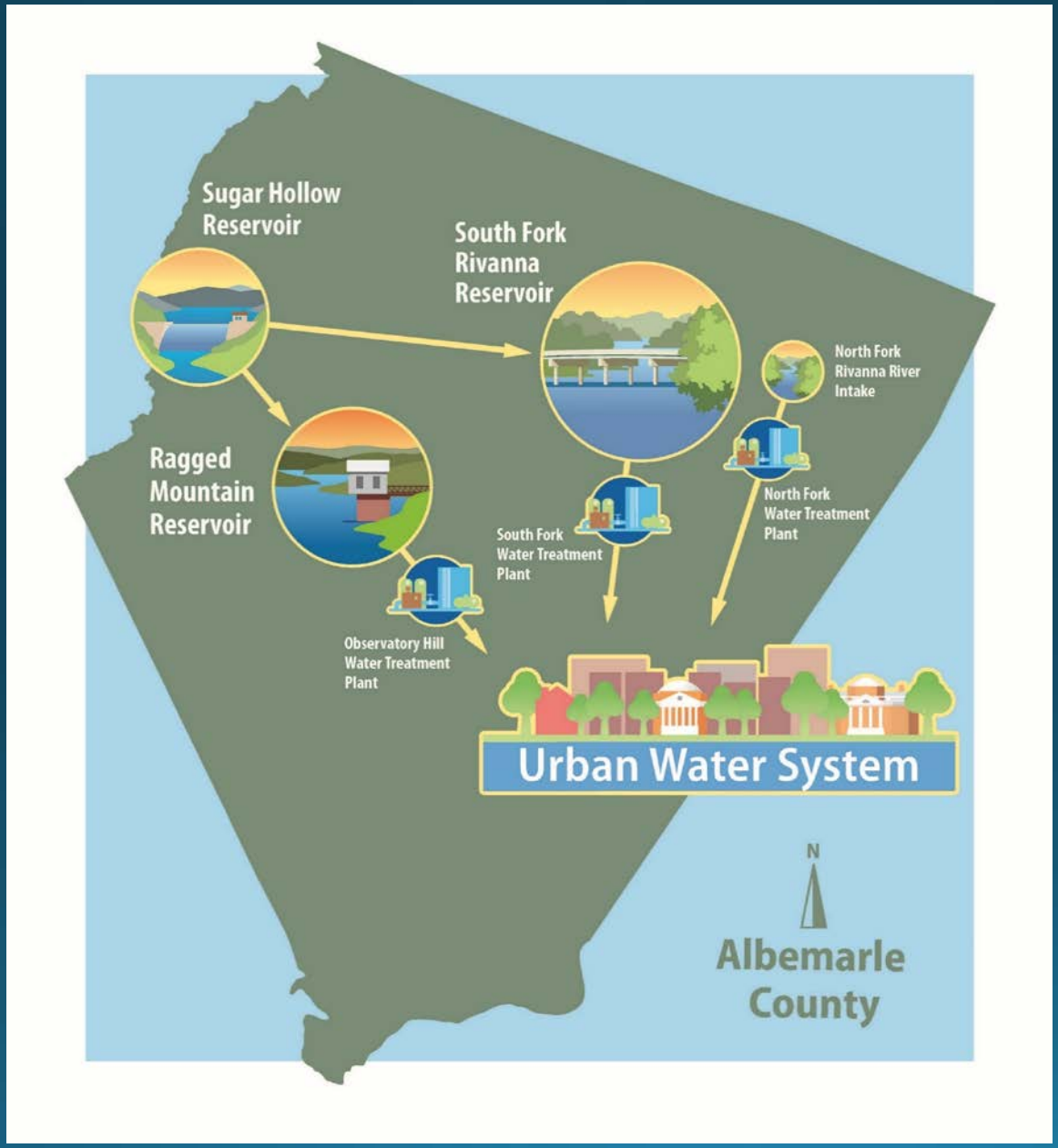
2. Review project schedule alternatives

3. Consider if the project will be implemented during the 2019-2023 CIP

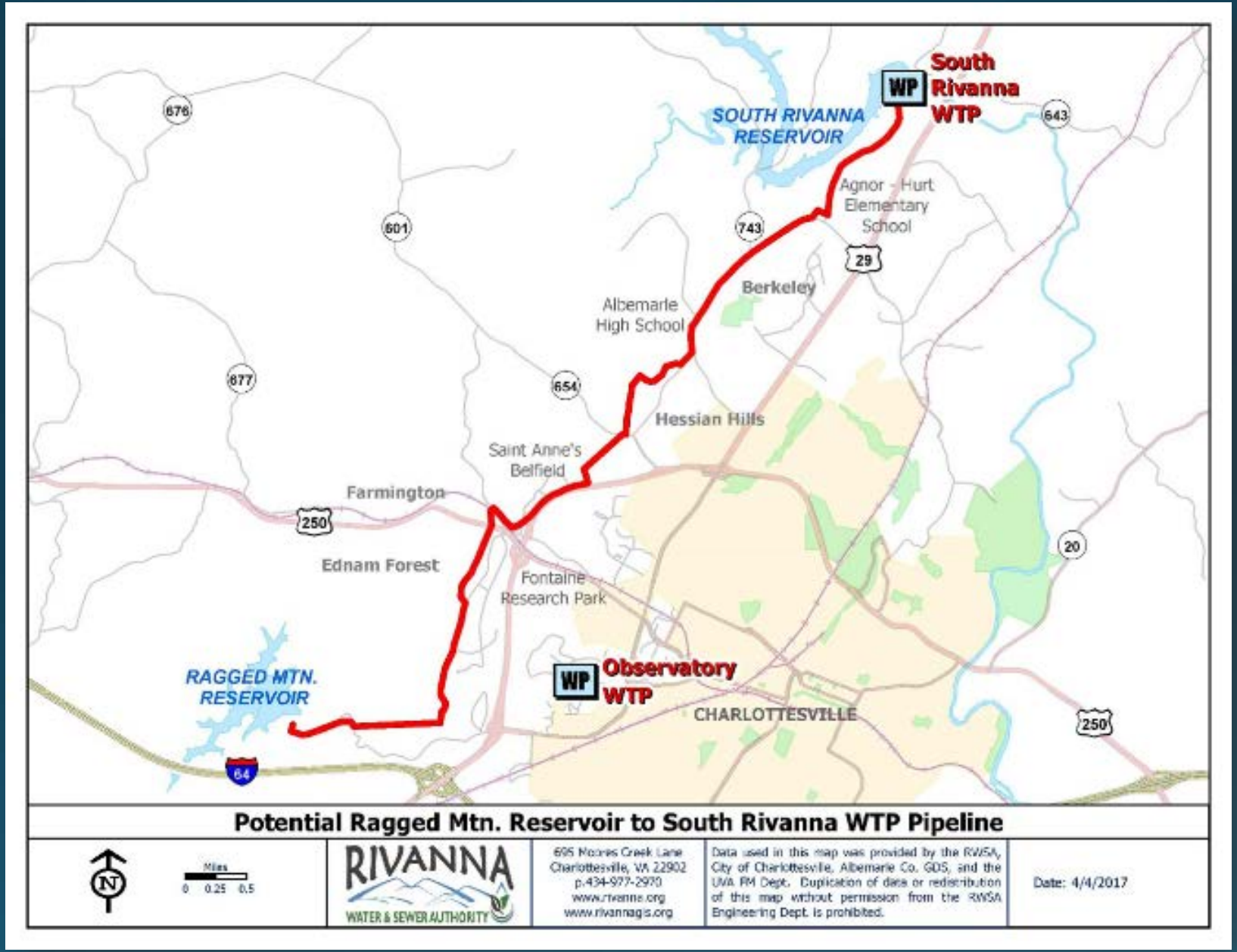
Agenda

- Location Maps
- History and Benefits
- Original Scope of Work
- Current Scope of Work
- Assumptions
- Current Debt Profile
- Guidance from Our Strategic Plan
- Construction Phasing and Completion Alternatives
  - Phase One: Ongoing Projects
  - Phase Two: Base Projects
  - Phase Three: Core Projects
- Budget Summary
- Future Debt Profiles
- Costs to Our Customers
- Summary and Questions

Urban Water System



Project Location Map



History

- Historical drought in Central Virginia in 2002 sparked a decade long water supply planning process and completion of a Community Water Supply Plan (2002-2012).
- Regulatory Permits were issued in 2008 to expand RMR for public water supply and to construct a pipeline between SFRR and RMR
  - U.S. Army Corps of Engineers (10 year permit)
    - Expires June 2018
    - Request for 10-year extension has been submitted
  - Virginia Department of Environmental Quality (15 year permit)
    - Expires February 2023
    - New application must be submitted to continue the activities authorized by the permit past this term. “The application will be evaluated by DEQ based on the regulations and laws in effect at that time.”

History

- The Ragged Mountain Dam Project Agreement was completed on January 1, 2012 by the City, ACSA, and RWSA. The Agreement set forth the terms and conditions for RWSA to construct and operate:
  - A new earthen dam at the RMR (ACSA 85%, City 15%)
  - The SRR – RMR Pipeline (ACSA 80%, City 20%)
  - Modifications to raise the RMR water level an additional 12 feet when community Demand equals 85% of the Safe Yield

- The new RMR dam was completed in 2014

- The RMR was filled by the fall of 2015

Benefits

- Increase water supply Safe Yield
- Reduce risk of water restrictions due to drought

	Voluntary	Mandatory	Emergency
Before RMR Dam	13	10	6
After RMR Dam	8	5	3

- Flexibility to fully utilize South Rivanna WTP and Observatory WTP
- Better balance of community and environmental needs

Original Scope of Work (2006)

- 36 inch raw water line, 9 miles long, 25 MGD capacity
- Intake structure in the SRR
- 2 raw water pump stations
- Pretreatment Facility at the SRWTP site to remove sediment: $7 m
- Close SHR water line
- $63 m estimate (2009)

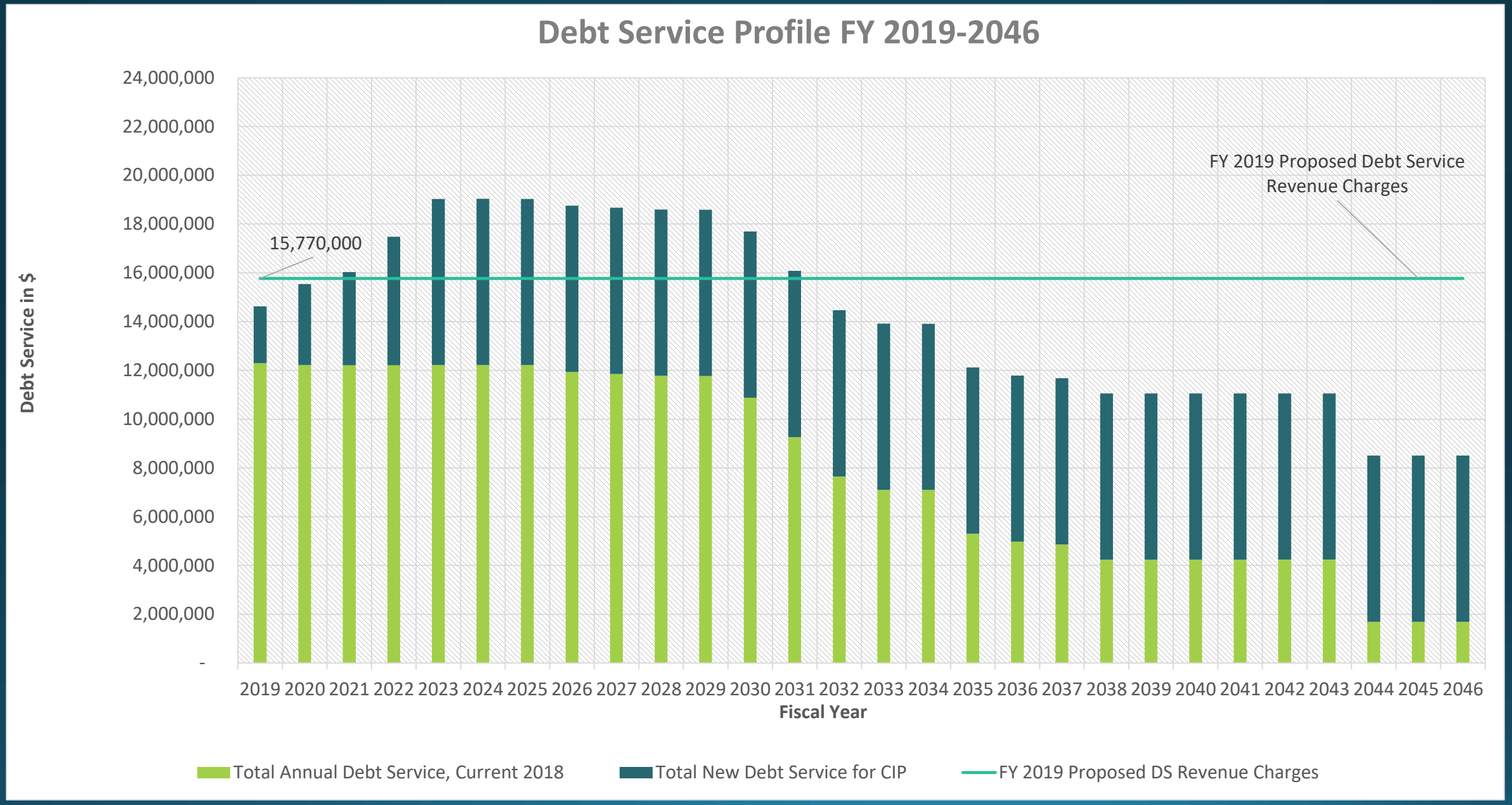
Current Scope of Work

- Original scope, plus:
  - Removal of nutrients by Pretreatment Facility: $8 m
  - Adjustment from 2009 to 2017 dollars: $19 m
  - Replacement of RMR – OWTP pipe: $10 m
  - $100 m estimate
  - 8 year project schedule

Assumptions

- Improvements to the Observatory and South Rivanna WTPs will be completed 2017-2022
- The Safe Yield of the Urban Reservoirs is expected to meet Community Demand until 2040 (14 MGD)
- The Safe Yield can be increased 2.4 MGD by increasing the RMR water level 12 feet, thereby meeting Community Demand for an additional 10 years (2050)
- Safe Yield (bathymetric studies) and Community Demand estimates will be updated by 2020 and every decade thereafter as required by the Ragged Mountain Dam Agreement

Current Debt Profile



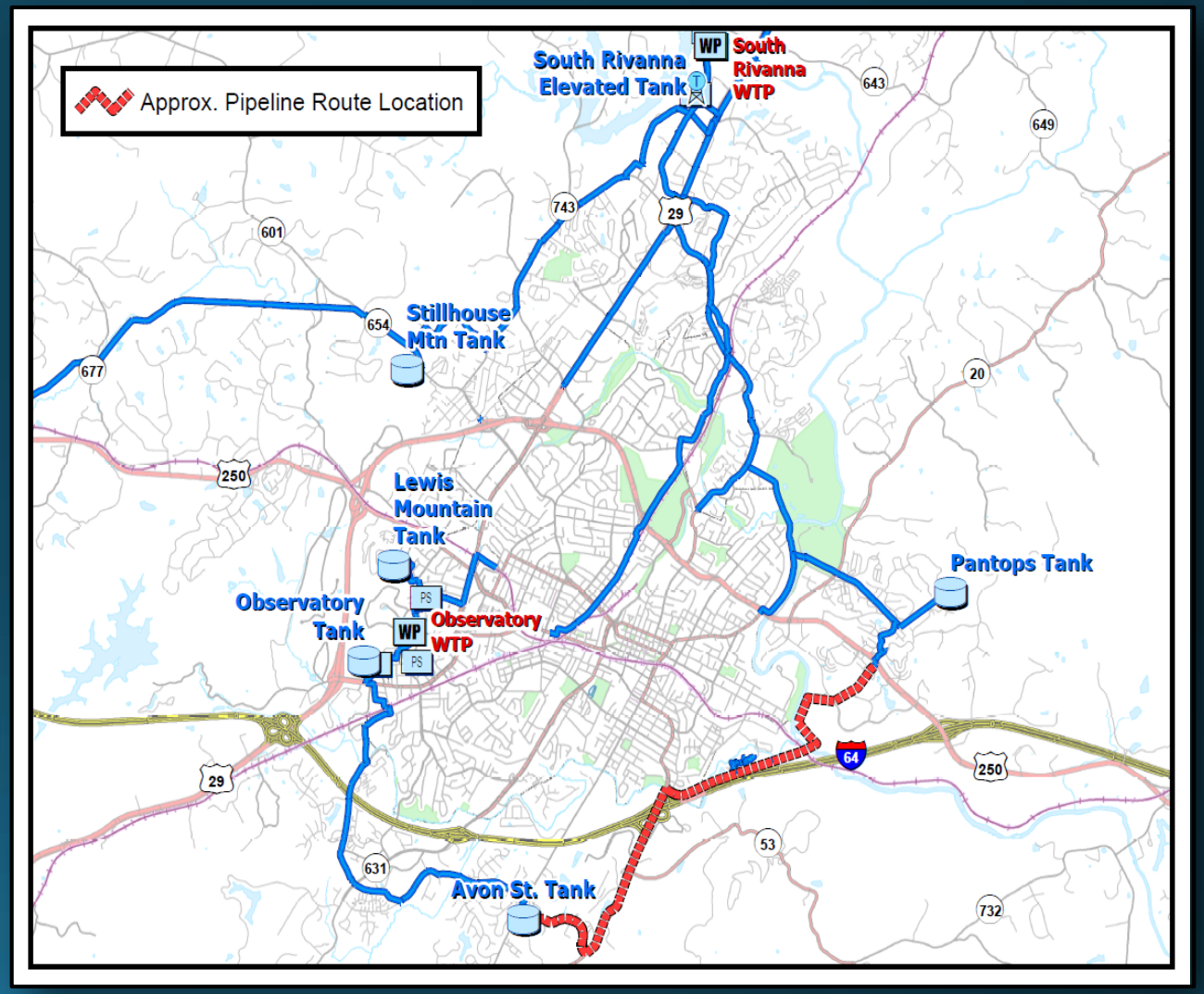
Guidance from Our Strategic Plan

- Infrastructure and Master Planning is one of our six goals
  - "To plan, deliver, and maintain dependable infrastructure in a financially responsible manner."

- The SRR to RMR Water Line Project is consistent with this goal, as it will;
  - Be a major addition to our water supply infrastructure
  - Enhance the dependability of our water supply infrastructure
  - Be completed in a financially responsible manner

Phase One - Ongoing Projects

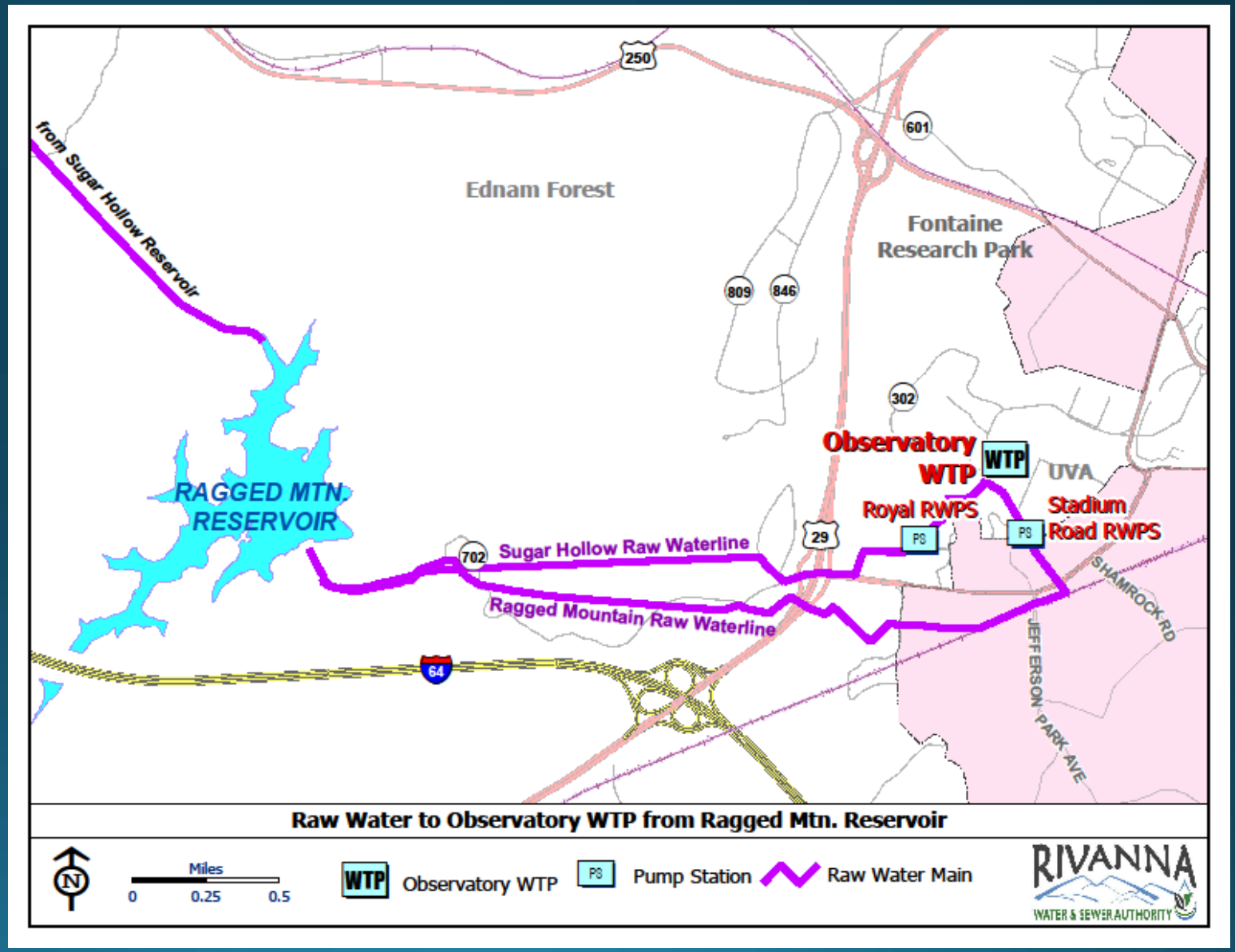
- SRR – RMR Right of Way Acquisition
  - Acquire easements or properties for the 9 mile long water line
  - 2017 – 2021
  - $2.3 m
- Improvements to Observatory and South Rivanna WTPs
  - Increase OWTP capacity to 10 MGD
  - Improvements to SRWTP: capacity remains 12 MGD
  - 2017 – 2022
  - $26 m
- Avon to Pantops Water Line
  - 24 inch water line, 3 miles long
  - 2017 – 2022
  - $13 m



Phase Two - Base Projects

- RMR – OWTP Water Line Replacement
  - Replace 3 miles of raw water piping
  - 2022 – 2026
  - $13 m

- RMR – OWTP and RMR – SRR Pump Stations Replacement
  - Replaces Stadium and Royal RWPS
  - Provides pumping from RMR to SRR
  - 2022 – 2026
  - $5 m



Phase Three – Core Projects

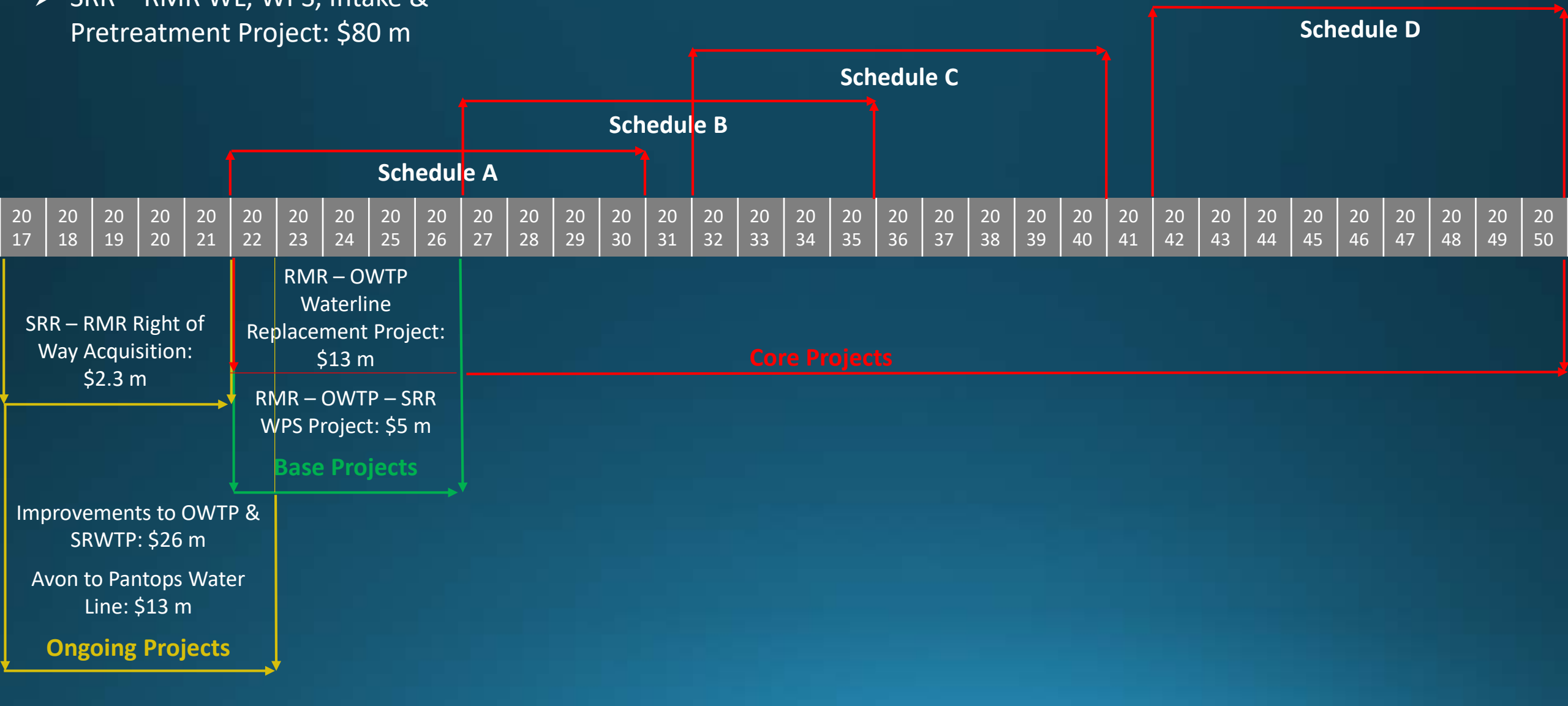
- Design and Construct:
  - 36 inch raw water line, 9 miles long, 25 MGD capacity
  - Intake structure in the SRR
  - One raw water pump station
  - Pretreatment facility
  - Close SHR water line
  - $80 m
  - 8 years for project completion with 4 possible schedules

*Note: Recommend RMR water level be raised 12 feet upon completion of these projects

Timeline

Scope of Work:

- SRR – RMR WL, WPS, Intake & Pretreatment Project: $80 m



Schedules

A: 2022 – 2030

- Increases water supply safe yield and redundancy at the earliest time
- Creates financial impact
- Can be completed by extension of our existing permits

B: 2027 – 2035

- Increases water supply safe yield and redundancy
- Adds debt when existing debt decreases
- May require additional permitting process

C: 2032 – 2040

- Provides water supply safe yield and redundancy when required by predicted water demands
- Will require an extensive permitting process

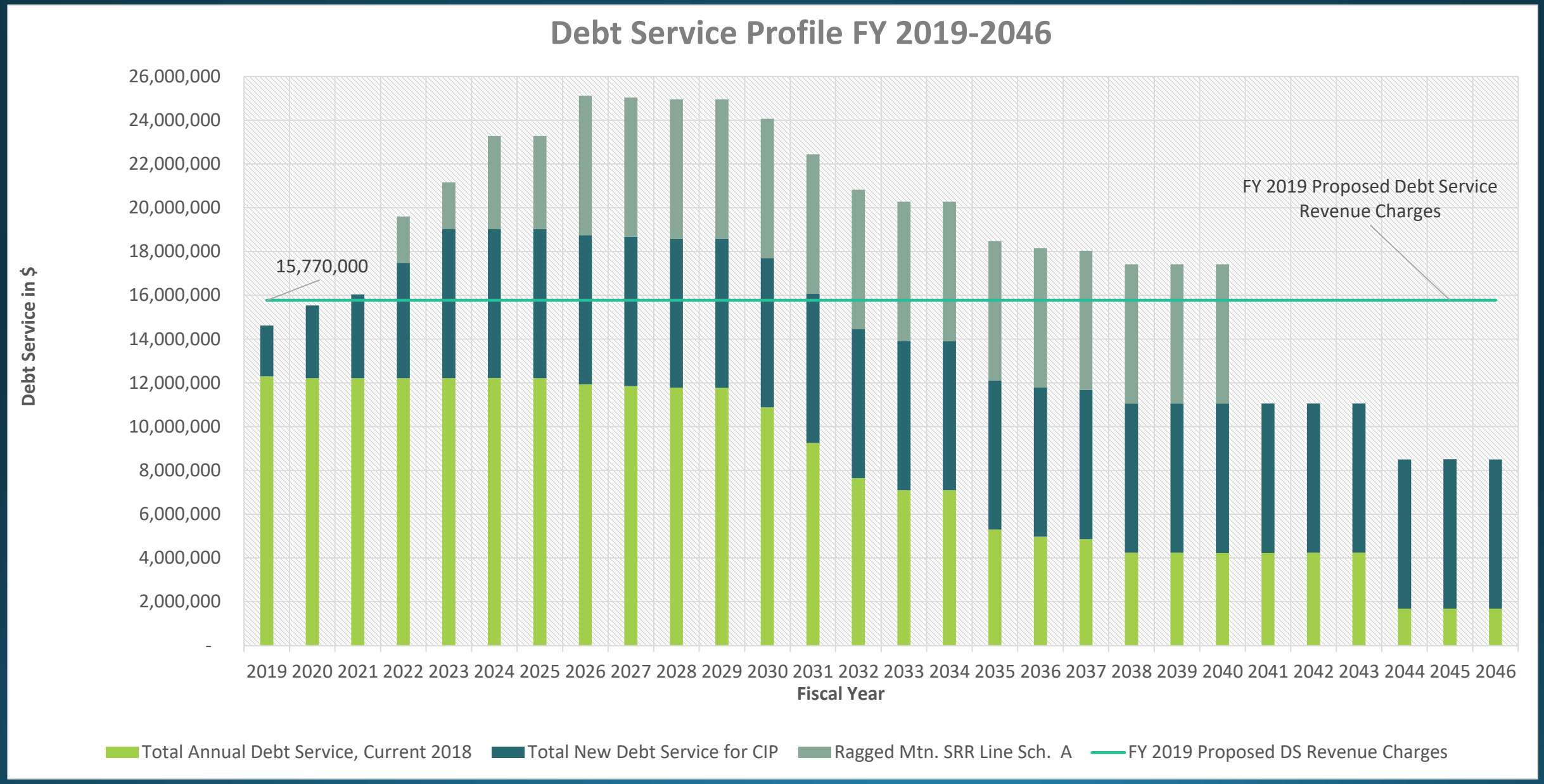
D: 2042 – 2050

- Plausible if the RMR water level is raised 12 feet by 2040 to increase the safe yield
- Provides water supply safe yield and redundancy when required by predicted water demands
- Will require an extensive permitting process

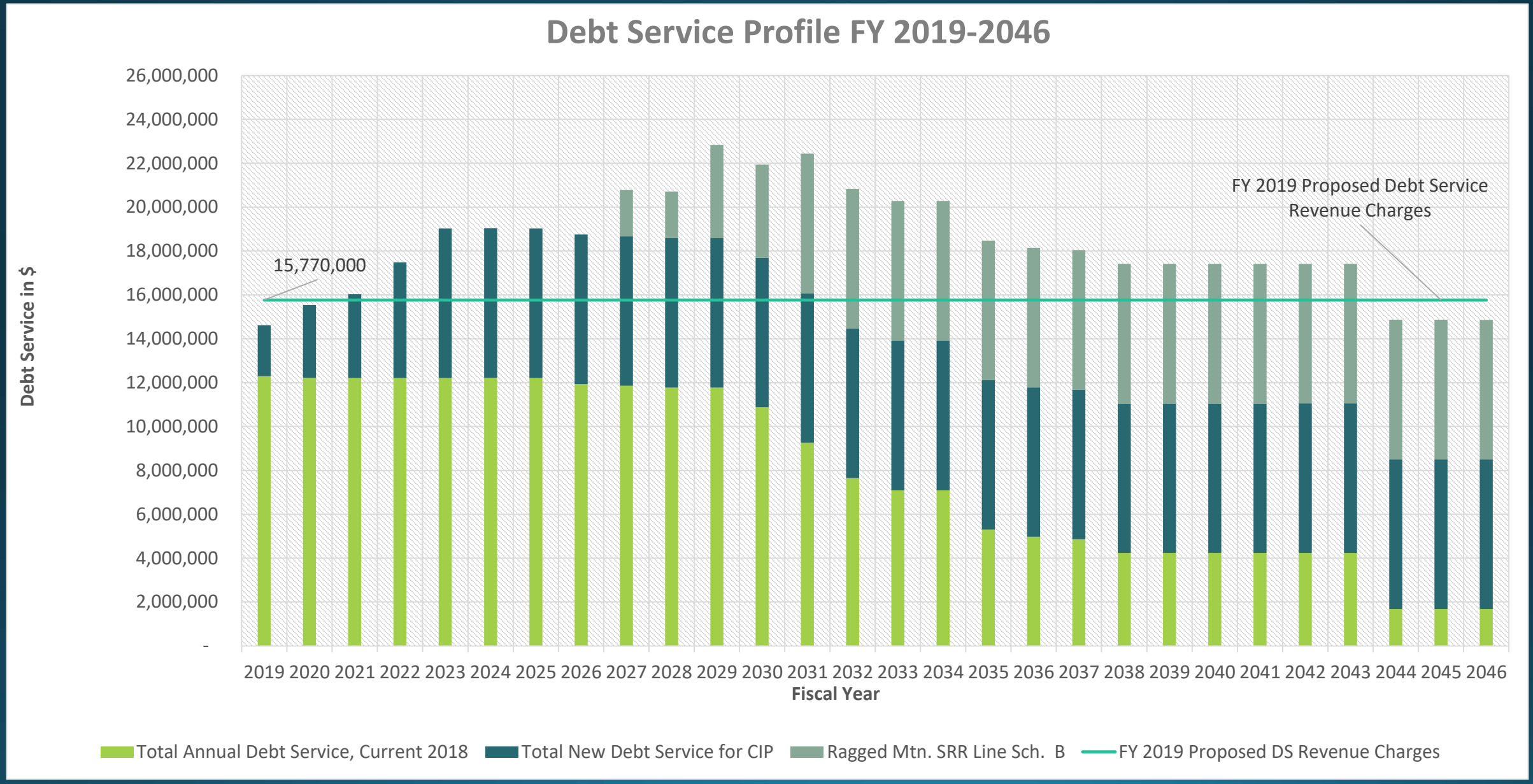
Budget Summary

• Ongoing Projects	$2.3 M
• Property Acquisition	
• Base Projects	
• RMR – OWTP Water Line Replacement	$13 M
• Pump Stations	$5 M
• SRR – RMR Water Line, Intake, PS, Pretreatment	$80 M
Total (2017)	$100 M

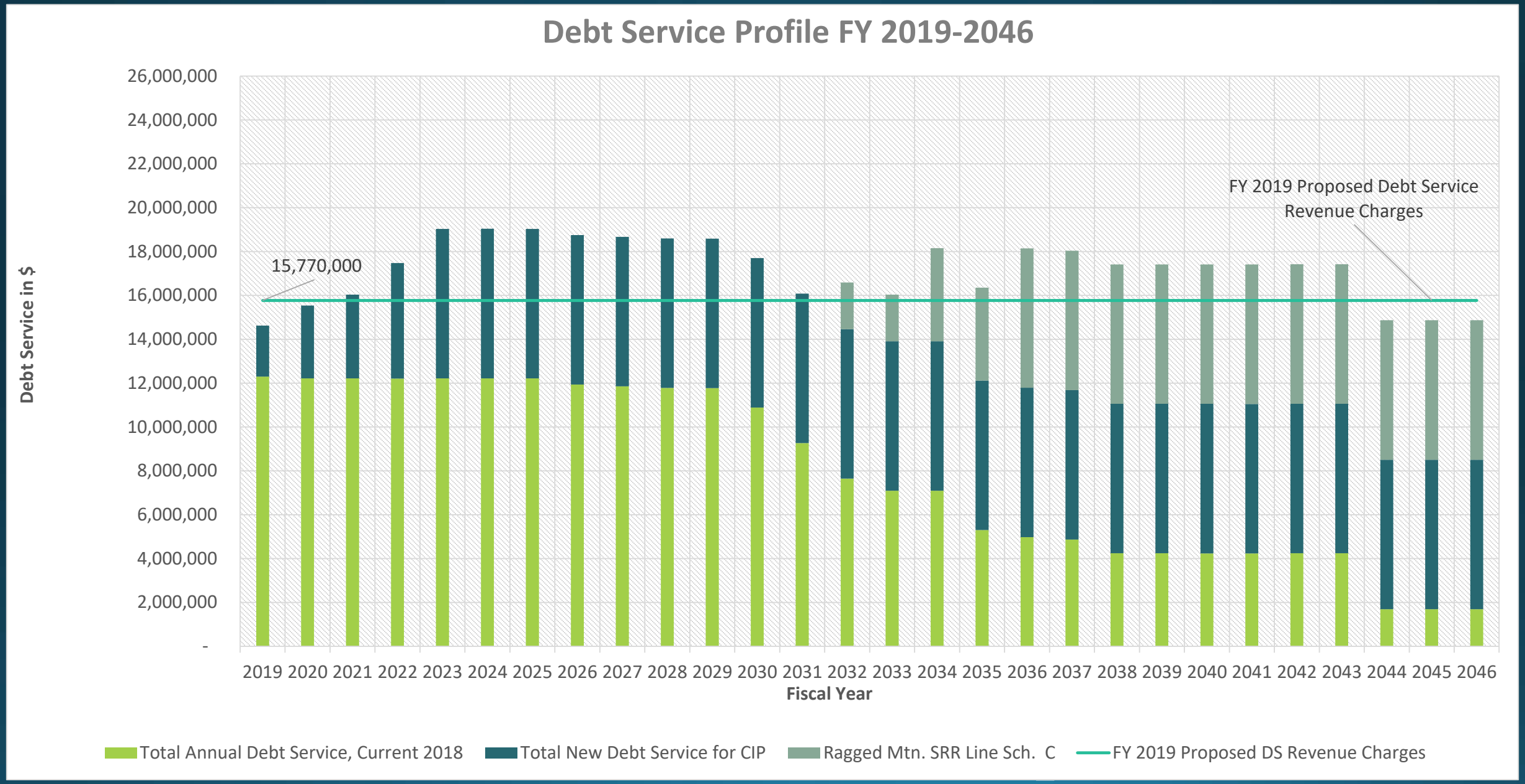
Future Debt Profile – Schedule A



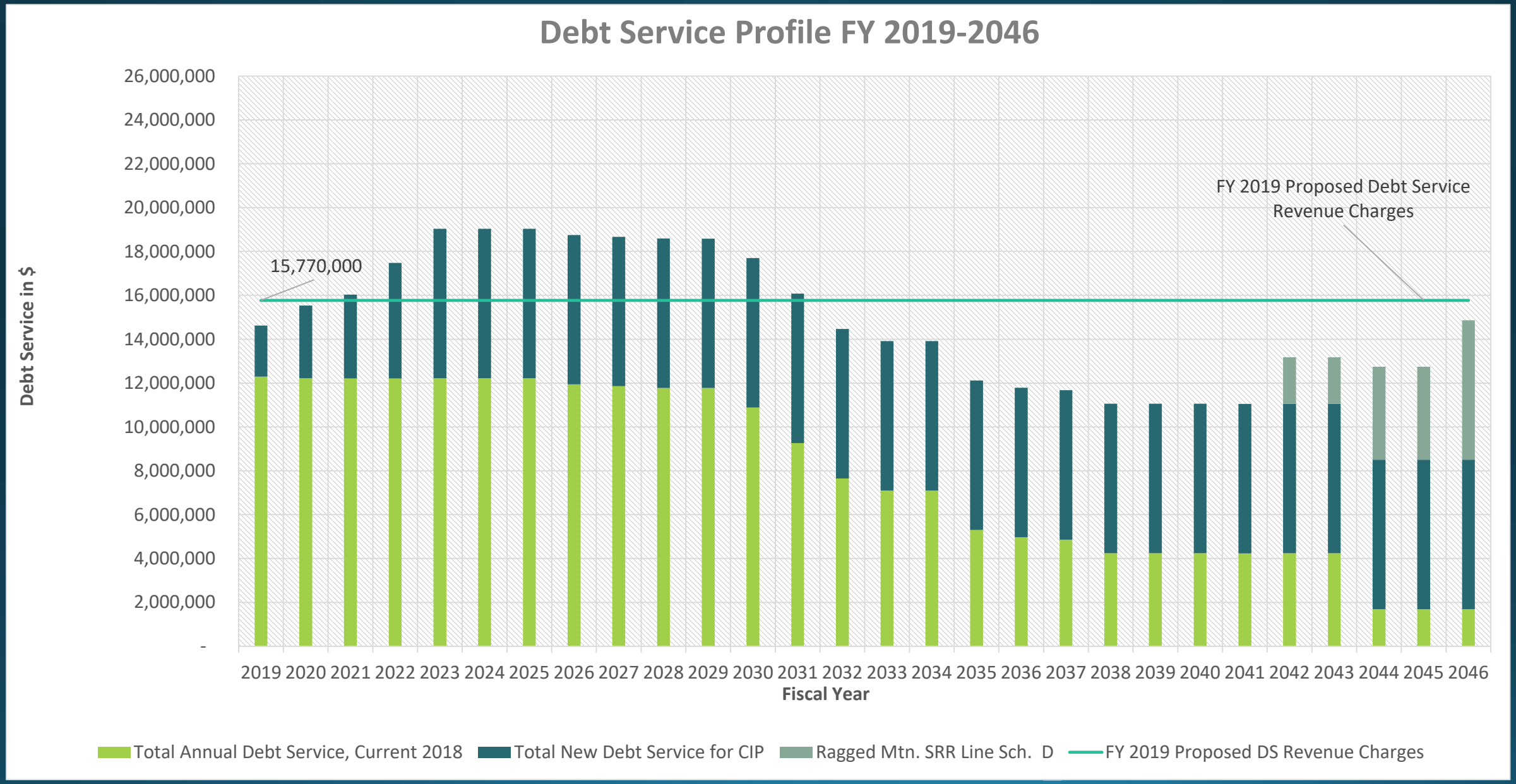
Future Debt Profile – Schedule B



Future Debt Profile – Schedule C



Future Debt Profile – Schedule D



Cost Increase to the City and ACSA

Schedule B

Year	2019	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
City %	5	6	6	6	6				*1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5															
ACSA %	10.5	8	8	8	8				*5	5	5	5	5	5	5	5	5															

*% increase above normal Operating and CIP costs solely for the SRR – RMR Projects

Summary

1. Reviewed project established by the Community Water Supply Plan
2. Reviewed project schedule alternatives
3. Considered if project will be implemented during the 2019-2023 CIP

Questions?