RAFTELIS

March 11, 2019

Mr. Dan Brown
Chief Executive Officer
Roanoke Rapids Sanitary District
PO Box 308
Roanoke Rapids, NC 27870

Dear Mr. Brown,

Raftelis has completed an evaluation to develop cost-justified water and wastewater system development fees for consideration by the Roanoke Rapids Sanitary District (RRSD). This letter documents the results of the analysis, which is based on an approach for establishing system development fees set forth in North Carolina General Statute 162A Article 8 – "System Development Fees." As one of the largest and most respected utility financial, rate, management, and operational consulting firms in the U.S., and having prepared system development fee calculations for utilities in North Carolina and across the U.S. since 1993, Raftelis is qualified to perform system development fee calculations for water and wastewater utilities in North Carolina.

Background

System development fees are one-time charges assessed to new water and/or wastewater customers for their use of system capacity and serve as an equitable method by which to recover up-front system capacity costs from those using the capacity. North Carolina General Statute 162A Article 8 ("Article 8") provides for the uniform authority to implement system development fees for public water and wastewater systems in North Carolina and was passed by the North Carolina General Assembly and signed into law on July 20, 2017. According to the statute, system development fees must be adopted in accordance with the conditions and limitations of Article 8, and those fees in effect as of October 1, 2017 must conform to the requirements set forth in the Article no later than July 1, 2018. In addition, the system development fees must also be prepared by a financial professional or licensed professional engineer, qualified by experience and training or education, who, according to the Article, shall:

- Document in reasonable detail the facts and data used in the analysis and their sufficiency and reliability.
- Employ generally accepted accounting, engineering, and planning methodologies, including the buy-in, incremental cost or marginal cost, and combined cost approaches for each service, setting forth appropriate analysis to the consideration and selection of an approach appropriate to the circumstances and adapted as necessary to satisfy all requirements of the Article.

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- Document and demonstrate the reliable application of the methodologies to the facts and data, including all reasoning, analysis, and interim calculations underlying each identifiable component of the system development fee and the aggregate thereof.
- Identify all assumptions and limiting conditions affecting the analysis and demonstrate that they do not materially undermine the reliability of conclusions reached.
- Calculate a final system development fee per service unit of new development and include an equivalency or conversion table for use in determining the fees applicable for various categories of demand.
- Consider a planning horizon of not less than 5 years, nor more than 20 years.

This letter report documents the results of the calculation of water and wastewater system development fees for RRSD in accordance with these requirements.

Article 8 references three methodologies that can be used to calculate system development fees. These include the buy-in method, the incremental cost method, and the combined cost method. A description of each of these methods follows:

Capacity Buy-In Approach

The Capacity Buy-In Methodology is most appropriate in cases where the existing system assets provide adequate capacity to provide service to new customers. This approach calculates a fee based upon the proportional cost of each user's share of existing plant capacity. The cost of the facilities is based on fixed assets records and usually includes escalation of the depreciated value of those assets to current dollars.

Incremental Cost Approach

The second method used to calculate water and wastewater system development fees is the Incremental Cost (or Marginal Cost) Methodology. This method focuses on the cost of adding additional facilities to serve new customers. It is most appropriate when existing facilities do not have adequate capacity to provide service to new customers, and the cost for new capacity can be tied to an approved capital improvement plan (CIP) that covers at least a 5-year planning period.

Combined Approach

A combined approach, which is a combination of the Buy-In and Incremental Cost approaches, can be used when the existing assets provide some capacity to accommodate new customers, but where the capital improvement plan also identifies significant capital investment to add additional infrastructure to address future growth and capacity needs.

Summary of Results

To perform the System Development Fee calculation, Raftelis requested and was provided with the following data from District staff:

- Water and wastewater fixed asset data;
- Outstanding utility debt and associated debt service;
- Contributed capital;
- Capacity in water and wastewater systems.

The Buy-In Approach was chosen as the method to calculate the System Development Fees for RRSD, since RRSD's existing water and wastewater treatment facilities have adequate capacity to accommodate the anticipated growth in the near term.

Using the Buy-In approach, Raftelis calculated the estimated cost, or investment in, the current capacity available to provide utility services to existing and new customers. This analysis was based on a review of fixed asset records and other information as of June 30, 2018. The depreciated value of the assets was first adjusted to reflect an estimated replacement cost to determine the "replacement cost new less depreciation" (RCNLD) value for the assets. The asset values were escalated using the Handy Whitman Index of Public Utility Construction Costs (for the South Atlantic Region).

The RCNLD value of the water assets includes water supply, treatment, transmission and distribution facilities and land, but excludes small, non-core equipment including vehicles and meters. The RCNLD value of the wastewater assets includes wastewater treatment, collection system facilities, disposal facilities and land, but excludes small equipment and vehicles.

Results of the asset escalation by asset category are shown in Exhibits 1 and 2.

Exhibit 1: RCNLD of Existing Water Assets

Existing Water Assets		
Asset Category	**RCNLD**	
Admin	$	58,176
Distribution & Collection		12,276,527
Water Treatment Plant		6,870,559
Land		101,971
Total: Existing Water Assets	**$**	**19,307,233**

Exhibit 2: RCNLD of Existing Wastewater Assets

Existing Wastewater Assets	
Asset Category	**RCNLD**
Admin	$ 969,158
Distribution & Collection	21,888,139
Wastewater Treatment Plant	13,231,046
Land	501,456
Total: Existing Wastewater Assets	**$ 36,589,799**

Several adjustments were then made to the estimated water and wastewater RCNLD values in accordance with Article 8, which included adjustments for contributed assets, non-core assets, and outstanding debt service as described below.

Contributed Assets

The listing of fixed assets provided was reviewed to identify assets that were contributed or paid for by developers, and these assets were subtracted from the RCNLD value, as these assets do not represent an investment in system capacity by RRSD. In addition, assets that were grant funded were also subtracted from the RCNLD value.

Non-Core Fixed Assets

The RCNLD value excludes non-core assets such as small equipment, vehicles, meters, and other.

Outstanding Debt Service Credit

Utilities often borrow funds to construct assets, and revenues from retail rates and charges can be used to make the payments on these borrowed funds. To ensure that new customers are not being double charged for these assets, once through the System Development Fees and again through retail rates and charges, the outstanding debt that is paid for through retail rates and charges should be deducted from the calculation.

The RCNLD values for water and wastewater assets with the adjustments as described above are shown in Exhibits 3 and 4 below.

Exhibit 3: Determination of Water Assets for System Development Calculation

Adjustments to Water Assets		
Total Water Assets	**$**	**19,307,233**
Less:		
Contributed and Grant Funded Assets		(581,029)
Vehicles, Non-core Equipment, Computers		(266,412)
Meters		(1,357,320)
Admin		(58,176)
Total: Net Water Assets		**17,044,295**
Less:		
Outstanding Principal Debt		(1,104,804)
Water Assets for System Development Fee Calculation	**$**	**15,939,491**

Exhibit 4: Determination of Wastewater Assets for System Development Calculation

Adjustments to Wastewater Assets		
Total Water Assets	**$**	**36,589,799**
Less:		
Contributed and Grant Funded Assets		(2,028,821)
Vehicles, Non-core Equipment, Computers		(205,199)
Meters		-
Admin		(969,158)
Total: Net Water Assets		**33,386,622**
Less:		
Outstanding Principal Debt		(5,605,484)
Wastewater Assets for System Development Fee Calculation	**$**	**27,781,138**

The adjusted RCNLD values for water and wastewater were then converted to a unit cost of capacity by dividing the RCNLD value by current capacity available (Capacity) to yield a basic unit of measure of cost per gallon per day (GPD) for water and wastewater capacity, as shown in Exhibit 5.

Exhibit 5: Cost per GPD of Core Utility Assets

	Water	Wastewater
Adjusted RCNLD	$15,939,491	$27,781,138
Capacity [MGD]	10	8.34
Cost per GPD	**$1.59**	**$3.33**

This measure becomes the basic building block or starting point for determining the *maximum cost-justified level* of the water and wastewater System Development Fees. Fees for different types of customers are based on this cost of capacity multiplied by the amount of capacity needed to serve each type or class of customer.

The next step is to define the level of demand associated with a typical residential customer often referred to as an Equivalent Residential Unit, or ERU. Per the wastewater flow design standards adopted by the State and defined in the North Carolina Administrative Code (NCAC 02T.0114), a peak flow rate of 120 gallons per day per bedroom for a residential home is required. Based on discussions with RRSD staff, this analysis assumes an average of a two-bedroom and three-bedroom home. Applying the State standards to the average number of bedrooms, it is determined that an ERU requires a standard level of service of 300 gallons per day of capacity each for water and wastewater.

Exhibit 6: Water and Wastewater Equivalent Residential Unit

	Water - GPD per ERU	Wastewater - GPD per ERU
Equivalent Residential Unit	300	300

Assessment Methodology

The analysis provides a maximum cost-justified level of System Development Fees that can be assessed by RRSD. For residential customers, the calculation of the System Development Fee is based on the cost per gallon per day multiplied times the number of gallons per day required to serve each ERU, as shown below in Exhibit 7.

Exhibit 7: System Development Fee Calculation for Water and Wastewater Systems

System Development Fee Calculation		
Water Calculation		
Cost per GPD	$	1.59
GPD per ERU		300
Maximum System Development Fee for 3/4" Meter	**$**	**478**
Wastewater Calculation		
Cost per GPD	$	3.33
GPD per ERU		300
Maximum System Development Fee for 3/4" Meter	**$**	**999**

For non-residential customers (or customers with larger meters), the fees for the smallest residential meter can be used and then scaled up by the flow ratios for each meter size, the results

of which are shown in Exhibit 8.[1] This method provides a straightforward approach that is simple to administer and reasonably equitable for new customers. Exhibit 8 shows the resulting maximum cost-justified System Development Fees by meter size for meters ranging from 3/4 inches to 10 inches. For these calculations, the System Development Fees have been rounded to the nearest dollar.

Exhibit 8: Calculated Maximum System Development Fees for Water and Wastewater Customers

Meter Size	Meter Ratio	Water	Wastewater
3/4"	1.00	$ 478	$ 999
1"	1.67	797	1,666
1.5"	3.33	1,594	3,331
2"	8.33	3,985	8,328
3"	16.67	7,970	16,655
4"	33.33	15,939	33,311
6"	53.33	25,503	53,297
8"	93.33	44,630	93,270
10"	183.33	87,666	183,209

RRSD may elect to charge a cost per gallon that is less than the maximum cost-justified charge documented in this report. If RRSD elects to charge a fee that is less, all customers must be treated equally, meaning the same reduced cost per gallon per day must be used for all customers.

We appreciate the opportunity to assist the Roanoke Rapids Sanitary District with this important engagement. Should you have questions, please do not hesitate to contact me at (704) 373-1199.

Very truly yours,

RAFTELIS

Melissa Levin
Senior Manager

[1] See the AWWA M-1 Manual – Appendix B- Equivalent Meter Ratios; pp.326 for meter sizes through 1.5". For meters 2" and larger, RRSD uses Octave Ultrasonic Meters. See https://www.mastermeter.com/wp-content/uploads/Octave-Ultrasonic-Meter-Product-Sheet.pdf