

December 13, 2024

Mr. James McQueen
Utilities Director
Hoke County, NC
663 E. Palmer Road
Raeford, NC 28376

Subject: Water and Sewer System Development Fees for FY 2025

Dear Mr. McQueen:

Raftelis Financial Consultants, Inc. (“Raftelis”) has completed an evaluation to develop cost-justified water and sewer system development fees for fiscal year (“FY”) 2025 for consideration by Hoke County, NC (“County”). This report documents the results of the analysis, which was based on an approach for establishing system development fees set forth in North Carolina General Statute 162A Article 8 – “System Development Fees.” The purpose of this report is to summarize Raftelis’ conclusion related to cost justified water and sewer system development fees.

The preparation of this report was developed by Raftelis for the County based on a specific scope of work agreed to by both parties. The scope of Raftelis’ work consisted of completing a calculation of cost justified water and sewer system development fees using common industry practices and industry standards. We provide no opinion on the legality of the system development fees implemented by the County. It is the responsibility of the County to ensure compliance of the system development fees with North Carolina General Statute 162A Article 8 – “System Development Fees.”. The scope of work did not include any additional work other than the calculation associated with the system development fees, such as opinions or recommendations on the administration of these fees, the timing and use application of revenues from the collection of these fees, etc., as that is the responsibility of the County.

In developing the conclusions contained within this report, Raftelis has relied on certain assumptions and information provided by the County, who is most knowledgeable of the water and sewer system, its finances, etc. Raftelis has not independently verified the accuracy of the information provided by the County. We believe such sources are reliable and the information obtained to be reasonable and appropriate for the analysis undertaken and the conclusions reached. The conclusions contained in this report are as of the stated date, for a specific use and purpose, and made under specific assumptions and limiting conditions. The reader is cautioned and reminded that the conclusions presented in this report apply only as to the effective date indicated. Raftelis makes no warranty, expressed or implied, with respect to the opinions and conclusions contained in this report. Any statement in this report involving estimates or matters of opinion, whether or not specifically designated, are intended as such, and not as representation of fact.

Background

System development fees are one-time charges assessed to new water and/or sewer 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 sewer systems in North Carolina and was passed by the North Carolina General Assembly and signed into law on July 20, 2017, and has been modified since adoption. According to the statute, system development fees are required to be adopted in accordance with the conditions and limitations of Article 8, and the fees are required to conform to the requirements set forth in the Article. 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 methods 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.
- 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 five years, nor more than 20 years.
- Use the gallons per day per service unit that the local government unit applies to its water or sewer system engineering for planning purposes for water or sewer, as appropriate, in calculating the system development fee.

This letter report documents the results of the calculation of water and sewer system development fees for FY 2025 in accordance with these requirements. In general, system development fees are calculated based on (1) a cost analysis of the existing or planned infrastructure that is in place, or will be constructed, to serve new capacity demands, and (2) the existing or additional capacity associated with these assets. Article 8 is relatively explicit in the identification of infrastructure assets that may be included as part of the system development fee calculation, as the Article defines allowable assets to include the following types, as provided in Section 201: *“A water supply, treatment, storage, or distribution facility, or a wastewater collection, treatment, or disposal facility providing a general benefit to the area that facility serves and is owned or operated, or to be owned or operated, by a local governmental unit. This shall include facilities for the reuse or reclamation of water and any land associated with the facility.”*

Therefore, the method used to calculate system development fees for the County included system facility assets that satisfied this definition.

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 is included in the following paragraphs:

Capacity Buy-In Method:

Under the Capacity Buy-In Method, a system development fee is calculated based on the proportional cost of each user's share of existing system capacity. This approach is typically used when existing facilities can provide adequate capacity to accommodate future growth. The cost of capacity is derived by dividing the estimated value of existing facilities by the current capacity provided by existing facilities.

Adjustments to the value of existing facilities are made for developer contributed assets, grant funds, and outstanding debt.

Incremental Cost Method:

Under the Incremental Cost (or Marginal Cost) Method, a system development fee is calculated based on a new customer's proportional share of the incremental future cost of system capacity. This approach is typically used when existing facilities have limited or no capacity to accommodate future growth. The cost of capacity is calculated by dividing the total cost of growth-related capital investments by the additional capacity provided as a result of the investments.

Combined Method:

Under the Combined Method, a system development fee is calculated based on the blended value of both the existing and expanded system capacity. As such, it is a combination of the Capacity Buy-In and Incremental Cost methods. This method is typically used when existing facilities provide adequate capacity to accommodate a portion of the capacity needs of new customers, but where significant investment in new facilities to address a portion of the capacity needs of future growth is also anticipated, or where some capacity is available in parts of the existing system, but incremental capacity will be needed for other parts of the system to serve new customers at some point in the future.

Based on a review of the data and discussions with County staff, the water treatment plant facilities have some capacity to accommodate future growth, but there are also near-term capital improvement projects needed to deliver capacity to serve new customers such as the construction of a new 6-million-gallon (MG) water treatment plant planned to start construction in 2028. As such, it was determined the most appropriate methodology to use for the water system development fee is the *Combined* approach. Similarly on the sewer side, the County has some capacity for future growth and anticipates a wastewater treatment plant expansion to accommodate new growth in the next 5 years. Therefore, it was determined that the *Combined* approach was most appropriate for the sewer system development fee methodology. The steps used to calculate the system development fees are provided below.

Fee Calculation – Existing System Value (Buy-In)

Step 1 – Estimate the Replacement Value of System Facilities and Apply Adjustments

A listing of fixed assets provided by the County, as of June 30, 2023, was reviewed and each individual asset was categorized into one of the categories shown in Table 1.

Table 1. Fixed Asset Categories

System Assets
Buildings
Equipment
Land
Plant & Distribution
Vehicle

Next, the replacement value of existing assets was estimated. Each asset's net book value was escalated to 2023 dollars based on the year the asset was purchased and the corresponding escalation factor for that year, resulting in the replacement cost new less depreciation ("RCNLD") value of the system. Escalation factors for each year were developed using the Handy-Whitman index, which is an industry accepted method by which to value system facilities. The estimated RCNLD values for the water and sewer system assets under Article 8 are summarized in Tables 2.

Table 2. Water and Sewer System Value (RCNLD)

Water System Descriptions	Water RCNLD	Sewer RCNLD
Buildings	\$77,590	\$77,590
Equipment	\$391,267	\$490,502
Land	\$80,093	\$442,711
Plant & Distribution	\$69,920,753	\$37,086,221
Vehicle	\$128,248	\$128,248
Total	\$70,597,951	\$38,225,272

As shown in Table 2, the RCNLD value of the water and sewer system was estimated to be approximately \$70.6 million and \$38.2 million, respectively. Several adjustments were made to the estimated water and sewer system RCNLD values in accordance with Article 8, as described below.

Non - Core Assets:

Assets related to vehicles and other "non-core assets" are excluded subsequently from the calculation of the water and sewer system values as these assets are not specifically identified as allowable under Article 8. Excluded assets included those relating to administrative and miscellaneous type buildings, leases, and various types of equipment.

Developer Contributed Assets:

The listing of fixed assets was reviewed to identify assets that were contributed, or paid for, by developers. According to County staff contributed assets were not included in the asset list provided so no adjustments were necessary.

Debt Credit:

Article 8 specifies that the buy-in calculation should be determined using generally accepted methods, including the consideration of debt credits and other generally accepted valuation adjustments. In calculating the system development fees for the County, a debt credit was included in the calculation as described below. The total outstanding debt principal used to fund qualifying assets was approximately \$13.9 million and \$4.4 million, respectively for water and sewer according to the data provided by County staff.

The resulting adjustments to the water and sewer RCNLD values for non-core assets and outstanding debt principal are summarized in Table 3.

Table 3. Calculation of Existing Water and Sewer System Value

Description	Water System	Sewer System
System Facilities RCNLD	\$70,597,951	\$38,225,272
Less: Non-Core Assets	(597,106)	(696,340)
Less: Outstanding Debt Principal	(13,948,280)	(4,404,720)
Net System Value	\$56,052,565	\$33,124,212

Step 2 – Calculate the Unit Cost of System Capacity

The cost per unit of system capacity was calculated by dividing the adjusted RCNLD value (derived in Step 1) by the water and sewer system capacity. The County owns and operates its own treatment facility with a maximum treatment capacity of 4.67 MGD¹. The sewer system currently has a system capacity of 1.5 MGD.

The cost per unit of system capacity for the existing water system was calculated to be \$12.02 per gallon, per day (\$56.1 million ÷ 4.67 MGD), and the cost per unit of system capacity for the existing sewer system was calculated to be \$22.08 per gallon, per day (\$33.1 million ÷ 1.5 MGD), summarized in Table 4.

Table 4. Cost per Unit of Existing System Capacity (GPD)

Existing System	Water	Sewer
Net System Value	\$56,052,565	\$33,124,212
System Capacity (MGD)	4.67	1.50
Unit Cost of Capacity (\$ / gallon per day)	\$12.02	\$22.08

Fee Calculation – Future Capital Projects (Marginal-Incremental)

Step 1 – Identify Value of System Facilities that will Serve New Growth and Apply Adjustments

The County's 5-year capital improvement plan identifies growth-related projects that will assist the County in serving new water and sewer customers. For the water system, the County has identified several projects that are used to expand current capacity to new customers as well as the construction of a water treatment plant with a capacity of 6 million gallons (MG). The capital project program costs associated with this future growth and new treatment plant as identified in the County's 5-year CIP are estimated to be \$105.3 million. On the sewer side, the County expects to complete a project for wastewater treatment plant expansion in the next 5 years. The anticipated cost of this project is approximately \$29.0 million.

As the County does not anticipate any Grant Funding for these future projects, the only adjustment made to the projects is a "Debt Credit" as discussed below.

¹ The County has the option to purchase water from Fayetteville Public Works Commission (PWC) up to a maximum usage of 51 million gallon per month. This is an available source of water until the time that the County completes the water treatment plant.

Section 207 of Article 8 states *“In applying the incremental cost or marginal cost, or the combined cost, method to calculate a system development fee with respect to capital improvements, the system development fee analysis must include as part of that methodology a credit against the projected aggregate cost of capital improvements. That credit shall be determined based upon generally accepted calculations and shall reflect a deduction of either the outstanding debt principal or the present value of projected water and sewer revenues received by the local governmental unit for the capital improvements necessitated by and attributable to such new development, anticipated over the course of the planning horizon. In no case shall the credit be less than twenty-five percent (25%) of the aggregate cost of capital improvements”*.

The County assumes that the water and sewer expansion projects will be fully funded through debt. Therefore, the net present value of future principal debt payments was deducted in the water and sewer calculation. The debt credit for water and sewer capital projects can be seen in Table 5 and Table 6 below. The debt credit was calculated so that the total value of the credit for the *Combined* approach was 25% of the aggregate cost of assets and capital.

Step 2 – Calculate the Unit Cost of System Capacity

Water capital projects identified in the 5-year CIP will provide access to treated water for new customers and will add additional treatment plant capacity. The total capacity used for the Marginal Incremental Approach is 6.0 MGD for the water system which is based on the incremental amount of capacity added from the new water treatment plant. The cost per unit of system capacity for the water system was calculated by dividing the net water system value by the water system capacity. Therefore, the cost per unit of system capacity for the water system under the Marginal Incremental Approach was calculated to be \$12.57 per gallon, per day (\$75.4 million ÷ 6.0 MGD).

Table 5. Cost per Unit of Future Water System Capacity (GPD)

10-Year Capital Plan	Water Projects
Growth Related Capital Projects	\$105,315,378
Less: Debt Credit	(29,880,776)
Costs of Expansion to be Recovered	\$75,434,602
Total Treatment Capacity (MGD)	6.00
Unit Cost of Capacity (\$ / gallon per day)	\$12.57

The wastewater treatment plant expansion project will provide an additional 3.0 MGD of treatment capacity to the sewer system and represents the incremental amount of capacity for the Marginal Incremental Approach. The cost per unit of system capacity for the sewer system was calculated by dividing the net sewer system value by the sewer system capacity. Therefore, the cost per unit of system capacity for the sewer system under the Marginal Incremental Approach was calculated to be \$5.59 per gallon, per day (\$16.8 million ÷ 3.0 MGD). The unit cost of future system capacity is summarized in Table 6 below.

Table 6. Cost per Unit of Future Sewer System Capacity (GPD)

10-Year Capital Plan	Sewer Projects
Growth Related Capital Projects	\$29,000,000
Less: Debt Credit	(12,227,513)
Costs of Expansion to be Recovered	\$16,772,487
Total Treatment Capacity (MGD)	3.00
Unit Cost of Capacity (\$ / gallon per day)	\$5.59

Step 3 – Estimate the Amount of Capacity Per Service Unit of New Development

Section 205 of Article 8 states that the system development fee calculation “...use the gallons per day per service unit that the local governmental unit applies to its water or sewer system engineering for planning purposes for water or sewer, as appropriate, in calculating the system development fee.” For the water and sewer system, one ERU of peak day capacity was defined to be 225 GPD².

Step 4 – Calculate the System Development Fee for One ERU

The weighted average cost per gallon per day from both the *Buy-In* and *Incremental Cost* methods is calculated to determine the *Combined* cost per gallon per day for water and sewer system capacity. The system development fee for one ERU was then calculated by multiplying the weighted average unit cost of capacity by the capacity demanded by one ERU. The calculations for water and sewer fees, based on the Combined approach, are presented in Table 7.

Table 7. Calculation of Water and Sewer System Development Fees for One ERU

System Development Fee Calculation	Water Capacity	Water Capacity Provided %	Water Combined Approach	Sewer Capacity	Sewer Capacity Provided %	Sewer Combined Approach
Weighted Average						
System Buy-In	4.67	43.7%	\$12.02	1.50	33.3%	\$22.08
Marginal Incremental	6.00	56.3%	\$12.57	3.00	66.7%	\$5.59
Combined Costs (GPD)			\$12.33			\$11.09
Gallons per Day per ERU (GPD)			225			225
System Development Fee per ERU			\$2,774			\$2,495

² For the water system, the average demand for a County residential customer, as provided by County staff, is 150 gallons per day (GPD). To calculate the water ERU, the average demand measured in gallons per day is adjusted to account for peak day water use of 1.19 and water loss of 1.26 resulting in an adjusted ERU of 225 GPD. For the sewer system, one ERU of peak day capacity was defined to be 225 GPD and it is the level of service that the County uses for its sewer system planning purposes.

Step 5 – Scale the System Development Fees for Various Categories of Demand

The system development fees for various categories of demand were scaled using water meter capacity ratios. The scaling factors were based on rated meter capacities for each meter size, as published by the American Water Works Association in Principles of Water Rates, Fees, and Charges, as shown in Table 8.³

Table 8. Meter Capacities and Scaling Factors by Meter Size

Meter Size	Rated Meter Capacity (gpm*)	Scaling Factor
3/4"	30	1.0
1"	50	1.67
1-1/2"	100	3.33
2"	160	5.33
3"	320	10.67
4"	500	16.67
6"	1,000	33.33
8"	1,600	53.33

gpm = Gallons per minute

Maximum Cost Justified System Development Fees by Meter Size

The calculated water and sewer system development fee under the Combined Approach is \$2,774 and \$2,495, respectively. As mentioned previously, the system development fees for various categories of demand are scaled by applying the water meter capacity ratios shown in Table 8. The resulting water and sewer system development fees shown in Table 9 represent the maximum cost justified level of system development fees that can be assessed by the County per Article 8. If the County chooses to assess fees that are less than those shown in the table, the adjusted fee amounts should still reflect the scaling factors by meter size, as shown in Table 8.

Table 9. Water and Sewer System Development Fees by Meter Size

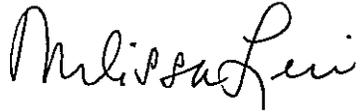
Meter Size	Water Fee	Sewer Fee
3/4"	\$2,774	\$2,495
1"	\$4,633	\$4,167
1-1/2"	\$9,239	\$8,309
2"	\$14,788	\$13,300
3"	\$29,603	\$26,624
4"	\$46,250	\$41,596
6"	\$92,472	\$83,167
8"	\$147,961	\$133,072

³ Manual of Water Supply Practices (M1), Principles of Water Rates, Fees, and Charges, American Water Works Association, 7th Edition, Table VII.2-5 on p. 338.

We appreciate the opportunity to assist Hoke County, NC with the calculation of its water and sewer system development fees. Should you have questions or need any additional information, please do not hesitate to contact me at 704-936-4441.

Sincerely,

RAFTELIS FINANCIAL CONSULTANTS, INC.

A handwritten signature in black ink that reads "Melissa Levin". The signature is written in a cursive, flowing style.

Melissa Levin,
Executive Vice President