RAFTELIS

March 31, 2025

Andrew C. Bryant
Director, Lincoln County Development Services
CC: Deanna Rios; Mike Simmons
Lincoln County
353 N. Generals Blvd.
Lincolnton, NC 28092

Subject: System Development Fee Study

Dear Mr. Bryant

Raftelis Financial Consultants, Inc. ("Raftelis") has completed an evaluation to develop cost-justified water and sewer system development fees for consideration by Lincoln County ("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. It is not intended to address anything else associated with the system development fees, such as the administration of these fees, etc.

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 does 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 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, is intended as such, and not as a 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 was modified by Session Law 2021-76 and House Bill 344, which was approved on July 2, 2021. 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 no later than July 1, 2018.[1] 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.
- Employs generally accepted accounting, engineering, and planning methodologies, including the buy-in, incremental cost or marginal cost, and combined methods for each service, setting forth appropriate analysis as to the consideration and selection of a method appropriate to the circumstances and adapted as necessary to satisfy all requirements of Article 8.
- 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 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

[1] The County's system development fees in FY 2018 were prepared by Raftelis in accordance with the requirements set forth in Article 8.

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 Lincoln County included system facility assets that satisfied this definition.

Article 8 references three methodologies that could 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.

The Combined Method was used to calculate the water system development fees for the County. In recent years the County has invested in increasing existing capacity and has plans to expand their distribution system to allow the County to use the extra capacity. The Capacity Buy-In Method was used to calculate the sewer system development fees, since in general, the County's existing sewer treatment facilities have adequate infrastructure to accommodate anticipated future growth over the near term.

The following steps were completed to calculate the fees under the Combined and Buy-In methods:

1. The replacement value of existing water and sewer system facilities were calculated, and adjustments were made to derive net replacement value estimates in accordance with Article 8. Adjustments to the calculated replacement value included deducting accumulated depreciation, developer contributions, and a portion of outstanding debt.
2. Value estimates for future water capacity-related projects were taken from capital planning documents provided by the County.
3. The unit cost of system capacity was estimated by dividing the calculated system value from steps 1 and 2 by the total capacity of the system. For the Combined Method, the additional system value from step 2 was added to the calculated existing water system value. The total capacity of the system includes the current capacity of the system.
4. The amount of water and sewer capacity assumed to be demanded by one service unit of new development was identified. One equivalent residential unit ("ERU") was defined as the smallest service unit of new development.
5. The system development fee for one service unit of development was calculated by multiplying the cost per unit of the respective system capacities by the capacities associated with one ERU, as defined below.
6. The calculated system development fee for one ERU was scaled by meter size.

Calculation of System Development Fees

Step 1 – Estimate the Existing and Projected System Values 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. General assets, such as machinery and tools, computer equipment, furniture, and vehicles, were not directly attributable to a specific facility category. These assets were excluded from the calculation of system value as these assets were not specifically identified as allowable under Article 8.

Table 1. Fixed Asset Categories by System

Water System	Sewer System
Land	Land
Land Improvements	Land Improvements
Buildings	Buildings
Water Plant	Sewer Plant
Water Lines	Sewer Lines
Construction in Progress	Construction in Progress

Next, the replacement value of existing assets in allowable categories was estimated. Each asset's original cost, as contained in the fixed asset listing provided by the County, was escalated to FY 2024 dollars based on the year the asset was purchased and the corresponding escalation factor for that year. Escalation factors for each year were developed using the Handy-Whitman Index ("HWI") for the South Atlantic Region, which provides an annual index value representing the relative change in construction

costs for each year from 1908 to 2024. Using the HWI to estimate an asset's current replacement cost is an industry accepted method by which to value system facilities.

The replacement costs of the assets were adjusted by their indexed accumulated depreciation to derive the replacement cost new less accumulated depreciation ("RCNLD") amounts. The estimated RCNLD values for water and sewer system assets allowable under Article 8 are summarized in Table 2 and Table 3.

Table 2. Water System Value (RCNLD)

Description	RCNLD Value
Land	$ 16,600
Land Improvements	348,434
Buildings[2]	13,390,415
Water Plant	18,187,421
Water Lines	70,027,439
Construction in Progress	-
Total	**$ 101,970,309**

Table 3. Sewer System Value (RCNLD)

Description	RCNLD Value
Land	$ 811,827
Land Improvements	5,220
Buildings[2]	8,213,513
Sewer Plant	59,575,428
Sewer Lines	32,552,188
Total	**$ 104,158,175**

As shown above, the RCNLD value of the water system was estimated to be $102.0 million, and the RCNLD value of the sewer system was estimated to be $104.2 million. Adjustments were made to the estimated water and sewer system RCNLD values in accordance with Article 8, which included adjustments for developer contributed assets and a portion of outstanding debt, as described below.

Developer Contributed and Grant Funded Assets:

The listing of fixed assets was reviewed to identify assets that were contributed, or paid for, by developers. The County tracks assets that were contributed by developers and identifies them in the fixed asset register as such. These assets were subtracted from the RCNLD value, as these assets do not represent an investment in system capacity by the County. The total RCNLD value of the contributed water and sewer system assets was estimated to be approximately $18.2 million and $21.0 million, respectively.

[2] The "Buildings" asset category includes plant components, pump stations, and buildings that are essential to water or wastewater production or processing. It excludes administrative buildings that are not core functional components of the water and wastewater systems.

For the Incremental Cost portion of the water fee Combined calculation, the CIP provided by the county was reviewed to identify projects that will not be funded by the County. Funding sources were provided by the county along with expected costs for all qualifying CIP projects. The cost of grant funded projects was subtracted from the additional system value added by the capital improvement plan, as these costs do not represent an investment in system capacity by the County. The total value of grant funded water projects was estimated to be approximately $20.0 million.

Debt Credits

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. Article 8 also states that in applying the incremental cost or the combined cost methods to calculate a system development fee, the analysis must include a credit against the projected aggregate cost of capital improvements and that in no case shall the credit be less than 25 percent of the aggregate cost of capital improvements. In calculating the system development fees for the County, a debt credit was included in both the water combined method and sewer buy-in calculations as described below.

For the buy-in calculations, the existing debt credits were applied to reflect that a portion of the outstanding debt associated with water and sewer system facilities are to be repaid with user charges. An adjustment was made to prevent recovering the cost of the assets twice, once when assessing system development fees for new customers, and then again when these customers pay user charges.

The amount of the existing debt credit for the buy-in methods was calculated by first identifying the amount of existing outstanding debt principal attributable to both the water and sewer systems that funded qualifying assets. The total outstanding debt principal used to fund qualifying assets was approximately $52.8 million, based on the County's debt records. The total amount of outstanding principal was allocated between the water and sewer systems based on the projects associated with each issuance. Debt issuances include revenue bonds and revolving loans.

Similarly, future debt credits were applied for the incremental cost portion of the combined method used to calculate the water fee. The cost of future capacity related projects to be debt funded will be recovered through user charges. Again, this prevents new customers from paying for utility infrastructure twice.

The amount of the future debt credit for the combined method was calculated by identifying the qualifying projects in the County's capital improvement plan to be debt funded. The credit must be no less than 25% of the aggregate cost of these capital improvements. The net present value of the proposed debt principal for the qualifying water system projects was approximately $22.9 million. Because 100% of the proposed debt funding is outstanding, the total amount of related debt principal was credited for the combined method water fee calculation.

The resulting adjustments to the water and sewer RCNLD values for a portion of outstanding debt are shown in Table 4.

Table 4. Debt Credit

Description	Water	Sewer
Buy-In Calculation:		
Existing Outstanding Principal	$(18,753,792)	$(34,006,208)
Incremental Cost Calculation:		
NPV Proposed Principal	(22,867,997)	

Total Credit	**$(41,107,519)**	**$(34,006,208)**

The resulting adjustments to the water and sewer system values are shown in Table 5.

Table 5. Net System Value

Description	Amount
Water System:	
System Facilities RCNLD	101,970,309
Less: Developer Contributed Assets	-18,239,522
Less: Credit for Outstanding Debt	-18,753,792
Net System Value	**$64,976,995**
System Expansion Value	57,700,000
Less: Grant Funded Projects	-19,950,000
Less: Credit for Future Debt	-22,867,997
Added System Value	**$14,882,003**
Total: Net System Value	**$79,858,998**
Sewer System:	
System Facilities RCNLD	$104,158,175
Less: Developer Contributed Assets	-20,970,804
Less: Credit for Outstanding Debt	-34,006,208
Net System Value	**$49,181,163**

Step 2 – Calculate the Unit Cost of System Capacity

The cost per unit of system capacity was calculated by dividing the adjusted system values (derived in Step 1) by the water and sewer system capacities. For the water combined method, the value of the qualifying expansion projects is added to the existing water systems value, as these projects allow the County to utilize system capacity. The treatment capacity of the water system is currently 8.0 million gallons per day ("MGD"). Therefore, the cost per unit of system capacity for the water system was calculated to be $9.98 per gallon per day ($79,858,998 ÷ 8 MGD).

The treatment capacity of the sewer system is 6.6 MGD. Therefore, the cost per unit of system capacity for the sewer system was calculated to be $7.45 per gallon per day ($49,181,163 ÷ 6.6 MGD). This is illustrated in Table 6.

Table 6. Calculation of Water and Sewer System Unit Capacity Cost

Description	Water	Sewer
Net System Value	$79,858,998	$49,181,163
System Capacity (MGD)	8.0	6.6
Unit Cost of Capacity ($ / gallon per day)	**$9.98**	**$7.45**

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."* The County uses the North Carolina Administrative Code 15A NCAC 02T.0114 Wastewater Design Flow Rates to define the level of demand associated with a typical, or average, residential customer, which is 120 gallons per day per bedroom.

The next step is to define the level of demand associated with a typical, or average, residential customer, often referred to as an Equivalent Residential Unit, or ERU. 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 water, the County assumes 360 gallons per day per ERU based on the demand associated with a three-bedroom dwelling. This number is consistent with wastewater design flow rates as specified by the North Carolina Administrative Code Title 15A (Department of Environment and Natural Resources) Subchapter 2T, which states that the sewage from dwelling units is 120 gallons per day per bedroom. For wastewater, the County assumes a reduced demand of 240 gallons per day per ERU (two bedrooms). This reduced demand is based on the County's delegated permitting authority as authorized by the North Carolina Department of Water Resources.

Step 4 – Calculate the System Development Fee for One ERU

The analysis provides a maximum cost-justified level of capacity development fees that can be assessed by the County. For residential customers, the system development fee for one ERU was calculated by multiplying the unit cost of capacity for each utility from Step 2 by the capacity demanded by one ERU from Step 3. The calculations are provided in Table 7.

Table 7. Calculation of Water and Sewer System Unit Capacity Cost

Description	Water	Sewer
A. Weighted Average Cost/gallon/day	$9.98	$7.45
B. Per ERU Consumption	360	240
Capacity Fee Per ERU (A*B)	**$3,592.80**	**$1,788.00**

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

The system development fees for various levels of demand were scaled using 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. SDF Scaling Factors

Meter Size	Max-Rated Safe Operating Flow, gpm	Water Fee	Sewer Fee
¾"	30	$ 3,592.80	$ 1,788.41
1"	50	5,988.00	2,980.68
1.5"	100	11,976.00	5,961.35
2"	160	19,161.60	9,538.16
3"	320	38,323.20	19,076.33
4"	500	59,880.00	29,806.77
6"	1,000	119,760.00	59,613.53
8"	1,600	191,616.00	95,381.65
10"	4,200	502,992.00	250,376.83
12"	5,300	634,728.00	315,951.71

The water and sewer system development fees shown in Table 8 represent the maximum cost justified level of system development fees that can be assessed by Lincoln 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 specified in the AWWA M-1 Manual, as shown in Table 8.

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

Sincerely,

RAFTELIS FINANCIAL CONSULTANTS, INC.

[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