



April 13, 2023

Lee Tillman
Director of Finance
City of Havelock
P.O. Box 368
Havelock, NC 28532

Subject: Water and Sewer System Development Fees for FY 2024

Dear Ms. Tillman:

Raftelis Financial Consultants, Inc. (“Raftelis”) has completed an evaluation to develop cost-justified water and sewer system development fees for fiscal year (“FY”) 2024 for consideration by the City of Havelock (“City”). 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 City 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 City. It is the responsibility of the City to ensure compliance of the system development fees with North Carolina General Statute 162A Article 8 – “System Development Fees.”. The scope of work does 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 City.

In developing the conclusions contained within this report, Raftelis has relied on certain assumptions and information provided by the City, 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 City. 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 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. 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 2024 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 City 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 Buy-In method was used to calculate the water and sewer fees for the City, because there are no significant capacity-adding projects planned in the City's CIP.

Water and Sewer Buy-In Fee Calculations

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

A listing of fixed assets provided by the City, as of June 30, 2022, was reviewed and each individual asset was categorized into one of the categories shown in Table 1.

Table 1. Fixed Asset Categories

Water & Sewer System
Plant
SCADA/Outfall Projects
Distribution/Collection
Equipment (Pumps, Tanks)
Land
Other Improvements
Vehicles

Several types of assets were excluded from the final calculation. Excluded items included all assets identified as “Vehicles”, small equipment assets, meters, and assets that did not meet the City’s criteria for “capital assets” as defined in their Audit report¹, were excluded from the calculation of system value as these assets were not specifically identified as allowable under Article 8.

Next, the replacement value of existing assets in allowable categories was estimated. Each asset’s net book value was escalated to 2022 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, which is an industry accepted method by which to value system facilities. The estimated RCNLD values for the water and sewer system assets allowable under Article 8 are summarized in Tables 2 and 3, respectively.

Table 2. Water System Value (RCNLD)

Description	RCNLD Value
Plant	\$15,502,494
SCADA/Outfall Projects	3,667,660
Distribution	295,710
Equipment (Pumps, Tanks)	1,095,802
Land	293,347
Other Improvements	861,268
Total	\$21,716,280

¹ The 2022 audit states that “capital assets are defined by the City as assets with an initial, individual cost greater than \$5,000 and an estimated useful life greater than two years” (p. 43).

Table 3. Sewer System Value (RCNLD)

Description	RCNLD Value
Plant	\$13,150,144
SCADA/Outfall Projects	29,405,210
Collection	8,734,619
Equipment (Pumps, Tanks)	711,723
Land	-
Other Improvements	1,535,987
Total	\$53,537,683

As shown in Table 2, the RCNLD value of the water system was estimated to be approximately \$21.7 million, and, as shown in Table 3, the RCNLD value of the sewer system was estimated to be approximately \$53.5 million. Several additional adjustments were made to the estimated water and sewer system RCNLD values in accordance with Article 8, as described below.

Developer Contributed Assets:

The listing of fixed assets was reviewed to identify assets that were contributed, or paid for, by developers. The City tracks assets that were contributed by developers and identifies them in the fixed asset information. These assets were subtracted from the RCNLD value, as these assets do not represent an investment in system capacity by the City. The total RCNLD value of contributed water and sewer system assets was estimated to be approximately \$348,356 and \$1,583,363, respectively.

Debt Credit:

In calculating the system development fees for the City, a debt credit was included in the calculation. The debt credit is the outstanding principal on debt service, which is removed to reflect the outstanding debt associated with system facilities that could be repaid with water and sewer user charges. The adjustment is made to prevent recovering the cost of the assets twice, once when assessing system development fees to new customers, and then again when these customers pay user charges. The total outstanding principal for both the water and the sewer system was used as the debt credit, which was approximately \$2.8 million for the water system and approximately \$10.2 million for the sewer system.

The resulting adjustments to the water and sewer RCNLD values are summarized in Table 4.

Table 4. Calculation of Buy-In Water and Sewer System Value

Description	Amount
Water System:	
System Facilities RCNLD	\$21,716,280
Less: Developer Contributed Assets	-348,356
Less: Credit for Outstanding Debt	-2,765,619
Net Water System Value	\$18,602,306
Sewer System:	
System Facilities RCNLD	\$53,537,683
Less: Developer Contributed Assets	-1,583,363
Less: Credit for Outstanding Debt	-10,187,144
Net Sewer System Value	\$41,767,176

Step 2 – Calculate the Unit Cost of System Capacity

The cost per unit of system capacity was calculated by dividing the adjusted RCNLD values (derived in Step 1) by the water and sewer system capacities. The water plant capacity is 2.8 MGD, resulting in a cost per unit of system capacity for the water system of \$6.64 per gallon, per day (\$18.6 million ÷ 2.8 MGD). The sewer plant capacity is 2.25 MGD, resulting in a cost per unit of system capacity for the sewer system of \$18.56 per gallon, per day (\$41.8 million ÷ 2.25 MGD).

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 system, one ERU of peak day capacity for the water system was defined to be 314 gallons per day (“GPD”). This amount was estimated based on information contained in a Hazen technical memorandum dated October 9, 2022, titled “Updated Conceptual Level Planning for Craven 38”. The technical memorandum stated that the average consumption per account was estimated to be 200 GPD. The technical memorandum documented an average to maximum day demand ratio of 1.57 times, resulting in an estimated ERU of 314 (200 x 1.57).

For the sewer system, the City uses regulations outlined in 15A NCAC 02T.0114 as a guideline, which specifies that “In determining the volume of sewage from dwelling units, the flow rate shall be 120 gallons per day per bedroom. The minimum volume of sewage from each dwelling unit shall be 240 gallons per day and each additional bedroom above two bedrooms shall increase the volume by 120 gallons per day.” Assuming three bedrooms per ERU, the total sewer ERU was calculated to be 360 (120 gal/bedroom x 3 bedrooms/ERU).

Step 4 – Calculate the System Development Fee for One ERU

The system development fee for one ERU was calculated by multiplying the unit cost of capacity from Step 2 by the capacity demanded by one ERU from Step 3. The calculations are provided in Table 5.

Table 5. Calculation of Water and Sewer System Development Fees for One ERU – Buy-In Approach

Description	Amount
Water System:	
Net System Value	\$18,602,306
System Capacity (MGD)	2.8
Unit Cost of Capacity (\$ / gallon per day)	\$6.64
Capacity Required for 1 ERU (gallons per day)	314.0
System Development Fee per ERU	\$2,085
Sewer System:	
Net System Value	\$41,767,176
System Capacity (MGD)	2.25
Unit Cost of Capacity (\$ / gallon, per day)	\$18.56
Capacity Required for 1 ERU (gallons per day)	360.0
System Development Fee per ERU	\$6,682

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 6.²

Table 6. Meter Capacities and Scaling Factors by Meter Size

Meter Size	Rated Meter Capacity (gpm)	Scaling Factor
5/8"	20	1.00
1"	50	2.50
1-1/2"	100	5.00
2"	160	8.00
3"	320	16.00
4"	500	25.00
6"	1,000	50.00
8"	1,600	80.00
10"	4,200	210.00
12"	5,300	265.00

gpm = Gallons per minute

² 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.

Maximum Cost Justified System Development Fees by Meter Size

The calculated water system development fee under the Buy-In Approach is \$2,085.00 and the calculated sewer system development fee under the Buy-In Approach is \$6,682.00. As mentioned previously, the system development fees for various categories of demand are scaled by applying the water meter capacity ratios shown in Table 6. The resulting water and sewer system development fees shown in Table 7 represent the maximum cost justified level of system development fees that can be assessed by the City per Article 8. If the City 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 6.

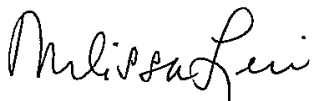
Table 7. Water and Sewer System Development Fees by Meter Size

Meter Size	Water Fee	Sewer Fee
5/8"	\$2,085	\$6,682
1"	\$5,213	\$16,705
1-1/2"	\$10,425	\$33,410
2"	\$16,680	\$53,456
3"	\$33,360	\$106,912
4"	\$52,125	\$167,050
6"	\$104,250	\$334,100
8"	\$166,800	\$534,560
10"	\$437,850	\$1,403,220
12"	\$552,525	\$1,770,730

We appreciate the opportunity to assist the City of Havelock 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.



Melissa Levin,
Vice President