RAFTELIS

April 18, 2023

Michael Deaton
Water Resources Director, Town of Apex
Town of Apex
73 Hunter Street
P.O. Box 250
Apex, NC 27502

Subject: Water and Sewer System Development Fees for FY 2024

Dear Mr. Deaton:

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 Town of Apex ("Town"). 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 Town 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 Town. It is the responsibility of the Town 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 Town.

In developing the conclusions contained within this report, Raftelis has relied on certain assumptions and information provided by the Town, 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 Town. 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 Town 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 fees for the Town, since there are no significant capacity-adding water projects planned in the Town's 10-year capital improvement plan (CIP). The Combined Method was used to calculate the sewer fees for the Town, since although the Town's existing treatment capacity can accommodate some new customers, the Town is planning several growth-related projects to serve new sewer customers. The steps used to calculate the system development fees are provided below.

System Development Fee Calculation – Buy-In Approach

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

A listing of fixed assets provided by the Town, 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
Improvements
Land
Equipment
Vehicles

Assets in categories identified as "Equipment" and "Vehicles" and several office building assets within "Improvements" were excluded from the calculation of system value.

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, 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 allowable under Article 8 are summarized in Tables 2 and 3, respectively.

Table 2. Water System Value (RCNLD)

Description	RCNLD Value
Improvements	$120,302,266
Land	38,520,285
Total	**$158,822,550**

Table 3. Sewer System Value (RCNLD)

Description	RCNLD Value
Improvements	$173,332,778
Land	34,107,502
Total	**$207,440,281**

As shown in Table 2, the RCNLD value of the water system was estimated to be approximately $158.8 million, and, as shown in Table 3, the RCNLD value of the sewer system was estimated to be approximately $207.4 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 Town 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 Town. The total RCNLD value of contributed water and sewer system assets was estimated to be approximately $76.5 million and $82.4 million, respectively.

Construction Work in Progress:

The Town has several growth-related projects that were completed in fiscal year 2023 or under construction and will be completed by the end of fiscal year 2023 for both the water and sewer systems. These projects have not yet been booked to fixed assets but were added to the total system values. The total construction work in progress for the water and sewer systems is approximately $8.9 million and approximately $2.7 million, respectively.

Developer Reimbursements:

The Town has entered into several developer agreements whereby the Town reimburses developer for contributed capital (associated with pump stations and line-related projects) as new customers connect to the infrastructure built by the developer. The RCNLD value of these contributed assets has already been removed from the calculation, as explained above. However, the reimbursements made by the Town to the developer over time has resulted in the Town paying for a portion of the contributed assets. Therefore, reimbursements are added to the

RCNLD value to reflect the portion of assets paid for by the Town, which is approximately $2.5 million for the water system and approximately $5.6 million for the sewer system.

Debt Credit:

In calculating the system development fees for the Town, a debt credit was included in the calculation. The debt credit is applied to reflect that a portion of the outstanding debt associated with system facilities could be repaid with water and sewer user charges and a portion could be repaid with system development fee revenues. 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. Over the past several years, the Town has applied all of its revenues from system development fees towards cash funding its capital improvement plan. As a result, the full outstanding debt service for both the water and the sewer system was used as the debt credit, which was approximately $3.8 million for the water system and approximately $40 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	$158,822,550
Less: Developer Contributed Assets	-76,500,001
Less: Credit for Outstanding Debt	-3,815,000
Plus: Construction in Progress	8,996,937
Plus: Developer Reimbursements	2,534,503
Net Water System Value	**$90,038,989**
Sewer System:	
System Facilities RCNLD	$207,440,281
Less: Developer Contributed Assets	-82,389,554
Less: Credit for Outstanding Debt	-39,982,689
Plus: Construction in Progress	2,684,916
Plus: Developer Reimbursements	5,580,397
Net Sewer System Value	**$93,333,351**

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 Town of Apex owns 23% of the Cary/Apex Water Treatment Facility, or 12.88 MGD.[1] Therefore, the cost per unit of system capacity for the water system was calculated to be $6.99 per gallon, per day ($90.04 million ÷ 12.88 MGD).

The Town of Apex also owns 34% of the Western Wake Regional Water Reclamation Facility (6.12 MGD)[1] and 100% of the Middle Creek wastewater plant which has a capacity of 2.8 MGD. The combined treatment capacity

[1] The current treatment capacity of the Cary/Apex Water Treatment Facility is 56 MGD and 18 MGD for the WWRWRF.

of the sewer system is currently 8.92 million gallons per day ("MGD"). Therefore, the cost per unit of system capacity for the sewer system was calculated to be $10.46 per gallon, per day ($93.33 million ÷ 8.92 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 256 gallons per day ("GPD"). This amount was estimated based on information contained in The Town of Apex Service Area Planning Forecast – Long Range Water Resources Plan.[2] The technical memorandum stated that the average consumption per account per day for single family residential customers from 2016 to 2021 was estimated to be 156 GPD. The technical memorandum documented that on average, from 2016 to 2021, the system's maximum day level of demand was 1.45 times its average day demand. In addition, the technical memorandum documented the average water loss factor over this same period was 13%. Therefore, the peak day capacity requirement associated with one service unit of new residential development was estimated to be 256 GPD based on the following calculation:

Residential average day consumption per account of 156 GPD

× System peak day factor of 1.45

× Water loss factor of 1.13

= Maximum-day water capacity for single-family residential of 256 GPD

For the sewer system, one ERU of capacity demand is defined as 300 GPD. This value amount represents the amount of permitting capacity required by the State of North Carolina Department of Environmental Quality ("NCDEQ") for planning and engineering design purposes and is the amount anticipated for planning and design purposes to be used by one dwelling unit. It reflects the sewer permitting flow reduction authorized by NCDEQ in accordance with 15A NCAC 02T .0114(f). This sewer permitting capacity amount per household is specified in the Town of Apex's current design manual.[3]

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.

[2] Service Area Planning Forecast Technical Memorandum; Long Range Water Resources Plan, HDR, October 2022

[3] Section 800 of Standard Specifications and Standard Details, Town of Apex, April 12, 2022.

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

Description	Amount
Water System:	
Net System Value	$90,038,989
System Capacity (MGD)	12.88
Unit Cost of Capacity ($ / gallon per day)	$6.99
Capacity Required for 1 ERU (gallons per day	256.0
System Development Fee per ERU	**$1,788**
Sewer System:	
Net System Value	$93,333,351
System Capacity (MGD)	8.92
Unit Cost of Capacity ($ / gallon, per day)	$10.46
Capacity Required for 1 ERU (gallons per day)	300.0
System Development Fee per ERU	**$3,139**

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.[4]

Table 6. 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
10”	4200	140.0
12”	5,300	176.67

gpm = Gallons per minute

[4] 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.

System Development Fee Calculation – Combined Cost Approach for Sewer System

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

The Town's 10-year capital improvement plan identifies growth related projects that will assist the Town in serving new sewer customers. While the Town's CIP identifies additional treatment capacity in the expansion of the WWRWRF beyond FY 2028, this project was not included in the Combined Cost Approach since the additional capacity from this expansion is not needed over the next five years to serve new sewer customers. Instead, the calculation only includes growth related projects that will be completed over the next five years, the majority of which relate to the Big Branch 2 pump station and force main. This is one of two large pump stations needed to serve growth in the Big Branch basin. The cost of the sewer projects that will facilitate growth in the next five years is $36.72 million, which is added to the net asset value under the Buy-In approach, and shown in Table 7.

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".* As mentioned earlier, the Town uses its system development fees towards capital projects that facilitate growth. Therefore, to satisfy this requirement under the Combined Approach, an additional debt credit of approximately $2.5 million is needed, as shown in Table 7.

Step 2 – Calculate the Unit Cost of System Capacity

The Big Branch 2 pump station will provide additional pumping capacity of 1.44 MGD but will not add any additional treatment plant capacity. Because the Combined Approach is based on total treatment capacity of the Town's sewer system, the total capacity used for the Combined Approach remains at 8.92 MGD. The cost per unit of system capacity 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 Combined Approach was calculated to be $14.30 per gallon, per day ($127.5 million ÷ 8.92 MGD)

Table 7. Calculation of Sewer System Development Fees for One ERU – Combined Approach

Description	Amount
Net Sewer System Value from Buy-In Approach (which includes outstanding debt credit)	**$93,333,351**
Sewer System Value of Growth-Related Projects over next 5 years:	
Big Branch 2 Pump Station & Force Main	$35,240,000
Little Beaver Creek Gravity Sewer Extension	$1,200,000
Abbington Gravity Sewer Extension	280,000
Subtotal:	**$36,720,000**
Less: Additional Debt Credit to Satisfy Section 207	-$2,526,321
Net Sewer System Value	**$127,527,030**
Total Sewer Treatment Capacity (MGD)	8.92
Unit Cost of Capacity ($ / gallon per day)	$14.30
Capacity Required for 1 ERU (gallons per day)	300.0
Sewer System Development Fee per ERU	**$4,290**

Maximum Cost Justified System Development Fees by Meter Size

The calculated water system development fee under the Buy-In Approach is $1,788.00 and the calculated sewer system development fee under the Combined Approach is $4,290.00. 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 8 represent the maximum cost justified level of system development fees that can be assessed by the Town of Apex per Article 8. If the Town 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 8. Water and Sewer System Development Fees by Meter Size

Meter Size	Water Fee	Sewer Fee
3/4”	$1,788	$4,290
1”	$2,980	$7,150
1-1/2	$5,960	$14,300
2”	$9,536	$22,880
3”	$19,072	$45,760
4”	$29,800	$71,500
6”	$59,600	$143,000
8”	$95,360	$228,800
10”	$250,320	$600,600
12”	$315,880	$757,900

We appreciate the opportunity to assist the Town of Apex 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 704-936-4436.

Sincerely,

RAFTELIS FINANCIAL CONSULTANTS, INC.

Elaine Conti,
Executive Vice President