February 6, 2023

Mr. Bruce Oakley, Town Manager
Town of Carolina Beach
1121 N. Lake Park Blvd.
Carolina Beach, NC 28428

DRAFT 1

Subject: Water and Wastewater System Development Fee Study

Dear Mr. Oakley,

WILLDAN FINANCIAL SERVICES ("Willdan") is pleased to submit to the Town of Carolina Beach, North Carolina (the "Town") the Water and Wastewater System Development Fee Study report (the "Report") for your consideration. We have completed the analyses for the review and development of water and wastewater system development fees and have summarized the results herein.

GENERAL

System development fees ("SDF" or "SDFs") and other comparable charges are often referred to by numerous terms including impact fees, capacity fees, system expansion fees, availability fees, connection fees, capacity reservation charges, facility fees, capital connection charges or other such terminology. In general, an SDF is a one-time charge implemented to recover (in whole or part) the costs associated with capital investments made by a utility system to make service available to future users of the system. Such capital costs generally include the construction of facilities as well as engineering, surveys, land, financing, legal and administrative costs. It has become common practice for water and wastewater utility systems to implement SDF (or other similar charges) to establish a supplemental source of funding for future capital projects. This practice helps to mitigate the need for existing customers to pay for system expansions entirely through increased user rates.

CRITERIA FOR SYSTEM DEVELOPMENT FEES

The purpose of a SDF is to assign, to the extent practical, growth-related capital costs to those customers responsible for such additional costs. To the extent that new population growth imposes identifiable additional capital costs to municipal services, equity and prudent financial practice necessitate the assignment of such costs to those customers or system users responsible for the additional costs rather than the existing user base. Generally, this practice has been labeled as "growth paying for growth" without placing the full cost burden on existing users.

It is important to note that an SDF is different than an assessment or tax. A special assessment is predicated upon an estimated increment in value to the property assessed by virtue of the improvement being constructed in the vicinity of the property. Further, the assessment must be directly and reasonably related to the benefit of which the property receives. SDFs are not directly related to the value of the improvement to the property but rather to the usage of the facilities required by the property. Until the property is put to use (i.e., developed), there is no burden placed upon the servicing facilities and the land use may be entirely unrelated to the value of the assessment basis of the underlying land. With respect to a comparison to taxes, SDFs are distinguishable primarily in the direct relationship between the amount charged and the measurable quantity of public facilities required. In the case of taxation, there is no requirement that the payment be in proportion to the quantity of public services consumed, and funds received by a municipality from taxes can be expended for any legitimate public purpose.

LEGAL CONSIDERATIONS

Court Proceedings - General

Generally, courts throughout the United States have found that capacity-related fees associated with new customer connections to utility systems are legal provided they meet a Rational Nexus Test. In accordance with common court rulings, the rational nexus test requires that certain conditions be met to have a valid capacity-related fee. Typically, the court decisions have found that such fees are valid if the following standards are met:

1. The required payment should primarily benefit those who must pay it because they receive a special benefit or service as a result of improvements made with the proceeds.

2. Proceeds from the required SDF payments are dedicated solely to the capital improvement projects (i.e., proceeds are not placed in a general fund to be spent on ongoing expenses and maintenance, which characterizes a tax, but are set aside in a restricted reserve fund).

3. The revenue generated by the required payment should not exceed the cost of capital improvements to the system.

4. The required payments are imposed uniformly and equitably on all new customers based on their anticipated usage (i.e., a relationship between the fees paid and the benefits received).

In general, most courts have found that it is reasonable for utility systems to take steps to ensure that there are adequate funds for capital projects, and to set aside collected fees in a special account for that purpose. Additionally, new customers are treated alike in that all must pay a fee based on anticipated usage and/or potential demand. Finally, courts have reasoned that it is rational for a utility system to prepare to pay for future capital projects and, while imposing a capacity-related

fee may not be the only way to raise such funds, it is a reasonable and legitimate method of accruing funds.

Court Proceedings – North Carolina

In 1990, a precedent was set in the State of North Carolina in a decision by the United States Court of Appeals, Fourth District for the case of Shell Island Investment v. Town of Wrightsville Beach North Carolina (900 F.2d 255), regarding the right of the Town of Wrightsville Beach to impose utility system impact fees to fund the expansion of the water and sewer facilities. The Court of Appeals upheld the decision of the United States District Court for the Eastern District of North Carolina that the Town of Wrightsville Beach had "authority to impose impact and tap fees under the Public Enterprise statute and that no specific enabling legislation is necessary."

Pursuant to the ruling of the District Court and the Court of Appeals, it was concluded that "despite the absence of any express authorization in the Public Enterprise Statute for municipalities to establish or increase utility fees in order to offset future capital improvements to their sewer and water infrastructures, general authority to do so is implicit in relevant state law, limited only by the requirement that any discrimination among users be not based on arbitrary or unreasonable classifications."

Court Proceedings – Town of Carthage Case

On April 8, 2016, in the case of Quality Built Homes, Inc. v. Town of Carthage, (766 S.E. 2d 897) the North Carolina Court of Appeals held that the Town of Carthage possessed authority to charge "impact fees" for water and sewer services. However, on August 16, 2016, the North Carolina Supreme Court reversed the North Carolina Court of Appeals' decision and held that the Town did not possess authority to charge impact fees for water and sewer services. Although there were many different factors influencing this decision, the result generated a significant amount of confusion and concern for governmental utility systems within the State.

House Bill 436

The General Assembly of North Carolina recently enacted House Bill 436, which included a general statute under Section 1, Chapter 162A, Article 8 for the development of "System Development Fees" (herein referred to as "Chapter 162A") that impacts all governmental entities in North Carolina who currently assess fees for the recovery of capital costs associated with new development and system growth. As defined in Chapter 162A, a system development fee is a charge or assessment for service imposed with respect to new development to fund costs of capital improvements necessitated by and attributable to such new development, to recoup costs of existing facilities which serve such new development, or a combination of those costs. Based on requirements of Chapter 162A, the calculation of the SDFs, must employ generally accepted accounting, engineering, and planning methodologies. Defined methodologies include the buy-in method, incremental or marginal cost method, and combined cost method. A brief description of each of these methods as defined in American Water Works Association Manual M1 is provided below.

- *Buy-in Method.* Based on the value of the existing system's capacity. Under this method, new development "buys" a proportionate share of capacity at the cost (value) of the existing facilities.
- *Incremental/Marginal Cost Method*. Based on the value or cost to expand the existing system's capacity. This method assigns to new development the incremental cost of future system expansion needed to serve new development.
- *Combined Cost Method*. Based on blended value of both the existing and expanded system capacity. This method uses a combination of the buy-in and incremental/marginal cost methods.

Chapter 162A allows a governmental unit to utilize any of the three methods described above depending on the availability of information from the governmental unit, i.e., a detailed listing of asset data (buy-in method) or a ten to twenty-year capital improvement plan (incremental method). The combined method includes both existing assets and future capital projects required to serve growth.

Chapter 162A states that an SDF shall be calculated based on a written analysis, which may constitute or be included in a capital plan, that:

1. Is prepared by a financial professional or a licensed professional engineer qualified by experience and training or education to employ generally accepted accounting, engineering, and planning methodologies to calculate system development fees for public water and sewer systems.
2. Documents in reasonable detail the facts and data used in the analysis and their sufficiency and reliability.
3. Employs 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 as to the consideration and selection of a method appropriate to the circumstances and adapted as necessary to satisfy all requirements of this Article.
4. Documents and demonstrates 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.
5. Identifies all assumptions and limiting conditions affecting the analysis and demonstrates that they do not materially undermine the reliability of conclusions reached.
6. Calculates a final system development fee per service unit of new development and includes an equivalency or conversion table for use in determining the fees applicable for various categories of demand.
7. Covers a planning horizon of not less than 5 years nor more than 20 years.
8. Is adopted by resolution or ordinance of the local governmental unit in accordance with G.S. 162A-209.
9. Uses the gallons per day per service unit that the local governmental unit applies to its water or sewer system engineering or planning purposes for water or sewer, as appropriate, in calculating the system development fee. (2017-138, s. 1; 2018-34, s. 1(a); 2021-76, s. 2.)

Further, Chapter 162A includes certain other minimum requirements as follows:

1. A system development fee shall not exceed that calculated based on the system development fee analysis.
2. Credits must be included no matter which methodology is used. A more detailed discussion on the applicable credits will be included in later sections of this report.
3. A construction or contribution credit shall be given with respect to new development such that the governmental unit will credit the value of costs in excess of a development's proportionate share of connecting facilities required to be oversized for the use of others outside the development.

As such, this report is intended to address the legal requirements set forth above to develop fees in accordance with Chapter 162A.

ADOPTION AND PERIODIC REVIEW OF SDF ANALYSIS

Upon completion of the SDF analysis, Chapter 162A sets forth certain criteria regarding the adoption and periodic review of SDFs. These include the following:

1. For not less than 45 days prior to consideration for adoption of the SDF analysis, the governmental unit shall post the analysis on its website and solicit and furnish a means to submit written comments which shall be considered by the preparer for possible modifications or revisions to the analysis.
2. Following expiration of the 45 days posting period, the governing body shall conduct a public hearing prior to considering adopting the analysis with any modifications.
3. The governmental unit shall publish the SDFs in its annual budget, rate plan or ordinance. Further, the SDF analysis shall be updated at least every five years.

EXISTING SYSTEM DEVELOPMENT FEES

The Town currently imposes capital-related charges to new customers requiring water and/or wastewater utility service. The current fees are $2,470 and $2,710 per residential dwelling unit, for water and wastewater, respectively. To be consistent with the definitions provided in Chapter 162A, the capital cost recovery terminology utilized in this report will be System Development Fees. For new, nonresidential/commercial customers, the fee is based on the size of the water meter. The existing SDFs are provided in **Table 1**.

TABLE 1
EXISTING SYSTEM DEVELOPMENT FEES

Description	Water	Wastewater	Combined Fee
Meter Size:			
5/8 x 3/4 Inch	$ 2,470	$ 2,710	$ 5,180
1.0 Inch	$ 6,175	$ 6,775	$ 12,950
1.5 Inch	$ 12,350	$ 13,550	$ 25,900
2.0 Inch	$ 19,760	$ 21,680	$ 41,440
3.0 Inch	$ 39,520	$ 43,360	$ 82,880
4.0 Inch	$ 61,750	$ 67,750	$ 129,500
6.0 Inch	$ 123,500	$ 135,500	$ 259,000
8.0 Inch	$ 197,600	$ 216,800	$ 414,400

EXISTING TAP & CONNECTION FEES

The Town currently imposes tap and connection fees to new customers connecting to the water and wastewater systems. However, it is important to note that such tap-related fees are different than the SDFs developed and proposed herein. The distinguishing characteristic is that the tap and connection fees are established for the purpose of recovering the operating costs associated with performing the customer service act of physically making a new system tap/connection (i.e., labor and benefits, equipment, vehicles, materials, and supplies, etc.) SDFs, on the other hand, are established for the purpose of recovering the major capital costs incurred in making water and wastewater utility service available to the public. The proposed fees designed herein are intended to be in addition to the existing tap and connection fees. As such, it is proposed that the existing tap and connection fees continue to be imposed. It should be noted that, for the purpose of the Report, the existing tap and connection fees are assumed to recover the costs associated with these items. A review of these fees in relation to actual costs incurred is beyond the scope of this Report.

EXISTING & PROJECTED CAPITAL FACILITIES

Existing Facilities – Buy-In Method

In considering the recovery of existing asset costs under the buy-in method, the general concept is that new customers "buy" a proportionate share of system capacity at the value of the existing facilities. It is important to note that while this methodology is labeled as *buy-in*, payment of an

SDF does not transfer any ownership of the assets to the customer. Rather, such payment provides access to capacity at a status equal to that of existing customers of the system.

While there are different methods that can be used to establish a value to the existing facilities, a common approach is to value the existing assets at a replacement cost amount. According to the replacement cost method, the existing system components are valued at the estimated current cost of replacing the facilities. The analysis developed herein uses an approach referred to as Replacement Cost New Less Depreciation (RCNLD). Applying the RCNLD method, the original costs are escalated to current dollars using construction cost indices, and then the result is adjusted down for the accumulated depreciation, which is also adjusted by the construction cost indices. This approach results in a replacement cost valuation that reflects the remaining depreciable life of the facilities.

In performing the RCNLD analysis, the Town provided a detailed listing of the current water and wastewater system facilities (the "Asset Listing"). The Asset Listing contained the original cost, the date placed in service and the accumulated depreciation for each asset. The replacement cost of each asset is estimated by using construction cost indices information contained in the Handy-Whitman Index of Public Utility Construction Costs for the South Atlantic Region. The Handy-Whitman Index calculates the cost trends for different types of utility construction, including water systems. The published indices are used by regulatory bodies, operating entities, utility systems, service companies, valuation experts and insurance companies. The Handy-Whitman Index values are widely used to trend earlier valuations and original cost records to estimate reproduction cost at prices prevailing at a certain date or to the present. While other construction cost indexes are published, the Handy-Whitman Index is used in this analysis because it is specifically tailored to the utility industry.

After the replacement cost is calculated for each individual asset item, the adjusted accumulated depreciation is deducted for each asset item. The result is the RCNLD.

As provision for SDF analyses, the existing assets are categorized based on the major components of **Treatment** and **Transmission**. The treatment category includes the treatment plant facilities (water and wastewater) and accompanying supply and storage facilities (water only), as well as wastewater effluent disposal facilities. The transmission/collection category consists of major water mains, water pumping facilities, sewer lift stations and collection lines. Since the localized distribution and collection facilities are generally contributed by developers or funded from other sources (i.e., assessments, direct customer payments, etc.), these facilities are not included for recovery through the SDFs. Additionally, a cost limit or threshold has been set at $100,000 as a condition of inclusion of the asset items in the SDF calculation. The cost limit assumes that any asset item that costs less than the limit amount is not a major facility that provides a system-wide benefit. The asset data and applicable recoverable cost allocations are provided in **Exhibit 1** at the end of this Report. The existing recoverable water and wastewater capital asset cost allocations included in the analysis are summarized in **Table 2**.

TABLE 2
SUMMARY OF EXISTING RECOVERABLE FACILITIES

Description	RCNLD Included for Recovery		
	Water	Wastewater	Total
Total Recoverable Assets:			
Equipment	$ 0	$ 0	$ 0
Vehicles	0	0	0
Land	0	0	0
Water Fire Hydrants	0	0	0
Buildings/Improvements	10,303,675	16,650,252	26,953,927
Infrastructure	5,583,395	5,638,372	11,221,767
Total	$ 15,887,070	$ 22,288,624	$ 38,175,694

Capital Improvements Program – Incremental Cost Method

In considering the recovery of future asset costs under the incremental cost method, the general concept is to assign to new development the incremental cost of future system expansion needed to serve the new development. When using this method, Chapter 162A requires a minimum 10-year capital improvements program ("CIP") that identifies the costs associated with new capacity and the timing of the expenditures. It is also important consider the planned funding sources for the projects identified in the CIP. For example, projects that are funded from grants or developer contributions are excluded from the SDF calculation since these are costs that are not incurred by the utility.

The SDFs developed herein utilize the incremental cost method and therefore includes future capital improvement projects and their applicable additions to system capacity. The Town has prepared a CIP that provides a listing of individual projects and anticipated construction costs for fiscal years 2024 through 2033 (i.e., a 10-year CIP). The projected capital costs are provided in 2023 dollars. As such, the analysis developed herein applies an annual inflationary adjustment of 3.00% to capture the impact of assumed future cost increases. The inflation-adjusted CIP is provided in **Exhibit 2**. Like the rationale for excluding certain existing assets from recovery through SDFs, the CIP project costs included for capital recovery in the analysis consist of only those projects associated with system-wide upgrades or expansions. As such, projects related to general maintenance (i.e., renewal and replacement of existing facilities) or localized facilities that benefit only certain customers are excluded from recovery through the SDFs. The CIP and resulting identification of assumed growth-related projects (i.e., project costs recoverable from SDFs) are provided in **Exhibit 3**. The Exhibit also provides a summary allocation of the recoverable costs between the treatment and transmission components. The projected growth-related projects and capital costs included in the analysis are summarized in **Table 3**.

TABLE 3
SUMMARY OF THE CIP

Description	Recoverable Capital	Excluded Capital	Total CIP
Recoverable Assets - Water:			
Treatment Facilities	$ 14,080,051	$ 0	$ 14,080,051
Transmission Facilities	16,103,522	11,337,561	27,441,083
Other Facilities	0	0	0
Total	$ 30,183,573	$ 11,337,561	$ 41,521,134
Recoverable Assets - Wastewater:			
Treatment Facilities	$ 4,917,735	$ 0	$ 4,917,735
Transmission Facilities	3,666,381	14,665,531	18,331,912
Other Facilities	0	0	0
Total	$ 8,584,116	$ 14,665,531	$ 23,249,647
Recoverable Assets - Combined:			
Treatment Facilities	$ 18,997,786	$ 0	$ 18,997,786
Transmission Facilities	19,769,903	26,003,092	45,772,995
Other Facilities	0	0	0
Total	$ 38,767,689	$ 26,003,092	$ 64,770,781

Total Facilities – Combined Method

The analysis developed herein for calculation of the SDFs proposes the combined method. As the name implies, the combined method includes the cost/value of both the existing facilities currently providing service, as well as the planned facilities required to perpetuate or expand service. This method assumes that the utility capacity within the existing system is sufficient to serve near-term growth but will require additional capacity to serve future growth needs. Using this method, new customers pay an SDF that reflects the value of both existing and planned capacity. The combined system costs included for recovery are summarized in **Table 4**.

TABLE 4
SUMMARY OF COMBINED RECOVERABLE FACILITIES

Description	Recoverable Facilities		
	Water	Wastewater	Total
Existing Facilities:			
Treatment Facilities	$ 5,281,785	$ 4,629,144	$ 9,910,929
Transmission Facilities	10,605,285	17,659,480	28,264,765
Subtotal	$ 15,887,070	$ 22,288,624	$ 38,175,694
Capital Improvement Program:			
Treatment Facilities	$ 14,080,051	$ 4,917,735	$ 18,997,786
Transmission Facilities	16,103,522	3,666,381	19,769,903
Subtotal	$ 30,183,573	$ 8,584,116	$ 38,767,689
Combined:			
Treatment Facilities	$ 19,361,836	$ 9,546,879	$ 28,908,715
Transmission Facilities	26,708,807	21,325,861	48,034,668
Total	$ 46,070,643	$ 30,872,740	$ 76,943,383

SDF CALCULATION CREDITS

It is common practice for utilities to fund major capital improvements and expansion projects with debt (i.e., bond issues). Generally, debt service payments associated with bond issues are recovered through the monthly user rates and charges applied to all system customers, as well as from other available revenue sources (including SDFs). To reduce the potential for new customers to pay twice for capital facilities (i.e., paying an SDF and then paying for debt service on expansion projects in their monthly user rates), the SDF analysis developed herein includes a debt service credit to the existing facilities (buy-in method). The credit on the existing facilities is equal to the outstanding principal remaining on all utility related debt. The debt service credit amount for the existing facilities is allocated between water and wastewater based on information provided by staff related to the capital projects that were funded from proceeds of each individual debt instrument.

In addition to the credit on the existing facilities, the analysis developed herein also applies a credit to the planned future facilities provided in the CIP (incremental cost method). The credit for the future facilities is equal to 25% of the recoverable CIP, which meets the requirements of Chapter 162A. A summary of the combined recoverable capital facilities as adjusted for the applicable credits is provided in **Table 5**.

TABLE 5
SUMMARY OF NET RECOVERABLE FACILITIES

Description	Net Recoverable Facilities		
	Water	Wastewater	Total
Combined Facilities:			
Treatment Facilities	$ 19,361,836	$ 9,546,879	$ 28,908,715
Transmission Facilities	26,708,807	21,325,861	48,034,668
Subtotal	$ 46,070,643	$ 30,872,740	$ 76,943,383
Less Combined Credits			
Treatment Facilities	$ (6,035,885)	$ (2,396,489)	$ (8,432,374)
Transmission Facilities	(9,077,496)	(5,368,730)	(14,446,226)
Subtotal	$ (15,113,381)	$ (7,765,219)	$ (22,878,600)
Net Capital Costs:			
Treatment Facilities	$ 13,325,951	$ 7,150,390	$ 20,476,341
Transmission Facilities	17,631,311	15,957,131	33,588,442
Net Recoverable Costs	$ 30,957,262	$ 23,107,521	$ 54,064,783

SYSTEM CAPACITIES

As previously addressed, the purpose of the SDF is to have new customers pay for their proportionate share of system capacity. This concept implies that the fee is based on a unit cost of capacity. To apply a fee based on the unit cost of capacity, it is necessary to identify the capacities of the facilities for which cost recovery is assigned. As such, the methodology applied herein relies upon identifying the water and wastewater treatment capacities as well as estimating the capacities of the major transmission facilities. Due to the regulatory and design requirements for water and wastewater treatment plants, the capacity of treatment facilities is generally well documented. However, the volumetric capacity of the major transmission facilities is often more difficult to determine. For this reason, in performing an analysis of this nature, the assumed capacity of the transmission facilities is commonly based on a factor of the associated treatment capacities. In developing the estimated amount of capacity for each respective category, the analysis relies on information provided by the Town and included in master planning documents, as well as assumptions based on common industry standards.

Water Treatment

The Town currently has two water treatment plants consisting of the Cape Fear Water Plant 1 and Alabama Water Plant 2. Each plant has a treatment capacity of 2.40 million gallons per day ("MGD"). In addition to the existing water treatment capacity, the CIP has a project (New Water Treatment Plant #3) that will provide additional system capacity. Based on discussions with staff,

the new plant will have the same amount of capacity as each of the existing plants (i.e. 2.40 MGD). As such, the analysis developed herein utilizes a total water treatment capacity of 7.20 MGD.

While the permitted flow capacity is provided in terms of the maximum daily flow amount, the development and application of SDFs are based on average flow requirements. As such, it is necessary to convert the maximum daily flow (MDF) capacity to an estimated average daily flow (ADF) capacity. Pursuant to general industry standards and discussions with staff, it is assumed herein that the rated MDF is approximately 1.50 times the available capacity on an ADF basis. Applying this factor to the rated capacity for the water treatment plants results in an average daily flow capacity of 4.80 MGD. An additional adjustment is made based on the assumed amount of unaccounted-for water (i.e., system flushing and backwashing, testing, line loss, etc.). The unaccounted-for water reduces the amount of capacity available to existing and future customers. The analysis performed herein assumes a loss factor of 20.0% to adjust for the unaccounted-for water flows at the treatment plant. This final adjustment results in an assumed average daily treatment plant capacity of 3.84 MGD.

Water Transmission

Unlike the treatment facilities, the capacity information for major transmission facilities is very difficult to determine and quantify. Such transmission capacity estimates are typically not even developed in engineering documents such as master plans or Consulting Engineer's Reports. Based on discussions with Town staff, it is assumed that the transmission facilities can provide average water flow at least equal to the maximum flow amount of 7.20 MGD permitted for the combined water treatment plants. In addition, like the methodology utilized for water treatment, an adjustment is made for unaccounted-for water assuming losses of 20.0%. Applying these assumptions result in an estimated average daily water transmission capacity of 5.76 MGD.

Wastewater Treatment

The wastewater treatment facilities are designed and permitted in accordance with published hydraulic standards adopted by Section 15A NCAC 02T .0114 of the North Carolina Administrative Code regulations. The Town currently owns and operates a wastewater treatment plant with a permitted capacity of 3.00 MGD.

Unlike the application for water, the wastewater treatment capacity is permitted at average daily flow levels. As such, it is not necessary to convert the capacity. However, as with the line loss in the water system, the wastewater system is impacted by inflow and infiltration (I&I) into the wastewater collection facilities. In essence, the impact of I&I reduces the level of capacity that is available for use by existing and future system customers. Pursuant to discussions with staff, the wastewater treatment capacity is adjusted for an assumed I&I impact of 20.00%, resulting in an adjusted average daily capacity of 2.40 MGD.

Wastewater Transmission

Similar to the discussion provided above for the determination of water transmission capacity, it is difficult to identify the capacity of the wastewater transmission facilities. Although an exact

capacity number is difficult to determine, for the purpose of this analysis it is assumed that the wastewater trunk lines and pumping facilities are designed to provide capacity at least equal to the permitted plant flow amount of 3.00 MGD.

DEVELOPMENT OF SDFs

The methodology utilized herein for developing the water and wastewater SDFs relies upon the cost of major system facilities as well as the existing and expanded system capacities to calculate an estimated cost per unit (gallon) of capacity. Based on this methodology, it is estimated that the water facility costs are $6.53 per gallon of water capacity (combined treatment and transmission). Additionally, it is estimated that the wastewater facility costs are $8.30 per gallon of wastewater capacity.

In developing the SDFs, the unit costs per gallon of capacity are applied to a common Level of Service (LOS) standard to establish the applicable fee per Equivalent Residential Unit (ERU). For purposes of applying the LOS, an ERU is representative of a single-family residential dwelling unit receiving water service from a 5/8x3/4-inch metered connection and discharging normal domestic-strength wastewater through a comparably sized sewer connection. Based on common industry standards for the development and application of capacity-related charges, a typical residential water connection is generally assumed to require average service availability in the range of 350 to 450 gallons per day (gpd) of system capacity. To establish an applicable LOS for system capacity, this analysis relies upon flow standards established by the State of North Carolina (the "State") for purposes of planning and engineering design. In accordance with daily water flow capacity design standards defined in the North Carolina Administrative Codes (15A NCAC 18C .0409), the level of service requirement for a residential connection is 400 gallons per day (gpd). Applying the NCAC flow standard, it is assumed that 1 ERU requires a standard level of service of 400 gpd of water system capacity.

Similar to the water system, the SDFs for wastewater are to be applied on an equivalent residential unit (ERU) basis such that 1 ERU is equal to the estimated capacity requirements for a typical single family residential connection with a 5/8-inch X 3/4-inch water meter. In accordance with wastewater flow design standards adopted by the State and defined the North Carolina Administrative Codes (15A NCAC 02T .0114), the level of service requirement is based on 120 gallons of capacity per day per bedroom for a residential home. This analysis assumes an average of 3 bedrooms per new home constructed. Applying the State's flow standard to the average number of bedrooms, it is assumed that 1 ERU requires a standard level of service of 360 gpd of wastewater system capacity.

Applying the average day LOS amounts to the estimated unit costs per gallon of capacity and adjusting for the applicable credits results in the proposed water and wastewater SDFs of $2,600 and $2,980, respectively, as rounded down, for a typical single-family residential connection (i.e., per ERU). The development of the proposed water and wastewater SDFs is detailed in **Exhibits**

4 and 5, respectively. A summary of the existing and proposed SDFs for a typical new residential connection is provided in **Table 6**.

TABLE 6
COMPARISON OF FEES PER ERU

Description	Fee Per ERU		
	Existing	Proposed	Difference
Combined Fees:			
Water	$ 2,470	$ 2,600	130
Wastewater	2,710	2,980	270
Total	$ 5,180	$ 5,580	$ 400

APPLICATION OF SDFs

For the purpose of developing SDFs, the average daily flow number is established as one equivalent residential unit (ERU). An ERU provides a standard unit of measure such that fees for connections with larger than average demand requirements can be calculated on an equivalency basis. One ERU is equal to the average anticipated flow for a single-family dwelling unit with a standard 5/8 x 3/4-inch water meter. New connections with larger water meters have the potential of placing more demand on the system (i.e. require more capacity) and are assessed ERU factors accordingly. The proposed methodology for incrementing the fees for larger connection sizes is based on standardized demand criteria established by the American Water Works Association (AWWA) pursuant to the size of the water meter. Utilizing the AWWA demand criteria, the applicable ERU factors for larger water meters are based on the incremental increase in potential demand as compared to the standard meter size. As such, the proposed fees developed herein utilize the AWWA meter equivalency methodology. Since wastewater flow is generally a direct function of water flow, applying the water and wastewater SDFs based upon the size of the water meter is equitable, administratively efficient and consistent with industry standards. The proposed water and wastewater SDFs for the various meter sizes are developed in **Exhibit 6** and summarized in **Table 7**.

TABLE 7
PROPOSED SYSTEM DEVELOPMENT FEES

Description	Meter Factor (1)	Proposed Fees By Meter Size		
		Water	Wastewater	Total
Meter Size:				
5/8 x 3/4 Inch	1.00	$ 2,600	$ 2,980	$ 5,580
1.0 Inch	2.50	$ 6,500	$ 7,450	$ 13,950
1.5 Inch	5.00	$ 13,000	$ 14,900	$ 27,900
2.0 Inch	8.00	$ 20,800	$ 23,840	$ 44,640
3.0 Inch	16.00	$ 41,600	$ 47,680	$ 89,280
4.0 Inch	25.00	$ 65,000	$ 74,500	$ 139,500
6.0 Inch	50.00	$ 130,000	$ 149,000	$ 279,000
8.0 Inch	80.00	$ 208,000	$ 238,400	$ 446,400

(1) Meter-size equivalency factors established by the AWWA and identified in AWWA Standards C700, M1 and M22. Such factors are commonly applied consistently for both water and wastewater fee calculations.

In situations where the application of the meter-based fees will result in the collection of fees significantly different than the potential demand requirement of a new customer requesting service, a special calculation methodology may be applied at the discretion of the Town's Utilities Director. For such situations, it is important for the utility to have the flexibility to utilize an ERU methodology for individual accounts based on specific capacity requirements. This alternative methodology is to apply the calculated unit costs per gallon of capacity as provided in **Exhibit 6** times the capacity requirement for the particular customer. This type of situation will be uncommon and will typically only involve larger commercial and industrial connections. It is anticipated that, in such situations, the Town will require certified engineering documentation defining the capacity utilization needs for the new customer.

As another example of utilizing a flexible methodology, the Town sometimes has new master-metered multi-family connections whereby multiple residential dwelling units receive service through a single, common connection. Such connections generally consist of apartment complexes, patio homes, condominiums, duplexes, triplexes, townhouses, etc. Since the usage characteristics for individual dwelling units within multi-family structures are generally consistent with those of individually metered single-family households, it is common industry practice for such connections to be represented on a per-unit basis regardless of the size of the master-metered connection. As such, the SDFs for new multi-family connections can be applied based on the number of permitted dwelling units (or a lesser equivalency factor thereof). For example, if it is determined that a new master-metered multi-family development requires less capacity per dwelling unit than a typical residential house, the utility can apply a factor of less than 1 ERU per unit (e.g. 0.80 ERUs per dwelling unit). The resulting number of equivalent units is then multiplied times the SDF per ERU to calculate the total fees to be collected.

COMPARISON WITH NEIGHBORING UTILITIES

To provide the Town with additional insight regarding the development and application of the SDFs, a comparison is often included to show the level of such fees as imposed by several other utility systems in North Carolina. The comparison would typically show the capacity-related fees for a new residential water and wastewater connection that receives service (from the subject utility or other local provider) through a standard residential-sized water meter (representative of 1 ERU) calculated under the existing and proposed fees of the Town, and those of the other utility systems. However, given the current timing requirements of Chapter 162A, and the fact that numerous utility systems in the State are in the process of performing fee studies comparable to the one addressed in this Report, including a neighboring utility comparison at this time will provide somewhat meaningless information. If the Town would like to get a better idea of how its SDFs compare to other systems, it is suggested that such a comparison be performed after July 1, 2023.

GENERAL ASSUMPTIONS AND CONSIDERATIONS

In the preparation of this Report, certain information has been used and relied upon that was provided to Willdan by other entities. Such information includes, but is not limited to, audited financial statements, annual operating budgets, capital information, asset listings, cost data, system capacities, fee schedules for other utilities, and other information provided during the study. While the sources and applicable information are believed to be reliable, no independent verification of the information has been made and no assurances are offered with respect to the accuracy of the applicable information. To the extent that information used to develop the assumptions applied in the Report differs from actual results, the analyses developed herein could be impacted accordingly.

CONCLUSIONS

This study has found a need for the Town to maintain a mechanism for recovering the capital costs associated with system growth and expansion. Based on the reviews, analyses and assumptions provided herein, it is concluded that:

1. The application of capital recovery fees for new system connections has become common practice for public utility systems in North Carolina. As growth continues to impact the region, and as state and federal funding programs are reduced or eliminated, it is prudent management practice to adopt mechanisms to recover capital costs incurred by the utility for making service available to future customers.

2. Through Chapter 162A, the North Carolina legislature has found that it is prudent to require new customers to bear a portion of the costs of current capacity and future expansions their presence will demand. It should be noted that Willdan is not attempting to issue a legal opinion regarding Chapter 162A or any court proceedings leading to the enactment of Chapter 162A. The summary discussion of the bill and any prior court rulings is intended for informational purposes only. Any questions regarding the legal consideration provided herein should be directed to the Town's legal counsel.

3. The SDFs developed herein are equitable and provide for reasonable recovery of the capital costs associated with providing service to new customers.

4. The SDFs proposed herein are calculated in accordance with the requirements of Chapter 162A and utilize methodologies that are consistent with industry standards.

5. The proposed SDFs are based on a listing of existing system assets as provided by the Town, as well as the 10-year capital improvement plan prepared by the Town. The projected capital costs are provided in 2023 dollars. As such, the analysis developed herein applies an annual inflationary adjustment of 3.00% to capture the impact of assumed future cost increases.

6. The water and wastewater LOS standards proposed herein for establishing an ERU basis are based on flow standards utilized by the State as defined in the North Carolina Administrative Code and are consistent with common industry standards.

7. The Town currently imposes tap fees and other related operational charges for new customer connections. Since these other charges are intended to recover operating costs for providing incident-specific services, the SDFs developed herein will have no effect on the level or application methodology for these other connection-related fees.

RECOMMENDATIONS

Based on the reviews, analyses and assumptions discussed herein, as well as the resulting conclusions provided above, it is respectfully recommended that the Town:

1. Adopt the proposed SDFs and application methodology as developed in this Report;

2. Enact the proposed SDFs to become effective on July 1, 2023, or other such date as determined appropriate by the Town Council; and

3. Readdress the SDF study within the next 5 years, or at such times as future capital budgets are developed and additional capital costs are incurred that may result in material adjustments to the SDF as adopted.

Willdan appreciates the opportunity to be of service to the Town in this matter. In addition, we would like to thank you and the other members of the Town staff for the valuable assistance and cooperation provided during the preparation of the Report. We look forward to working with you on future projects and continuing a successful professional relationship.

Respectfully Yours,

WILLDAN FINANCIAL SERVICES.

Daryll B. Parker
Principal

EXHIBITS 1 - 6

SUPPORTING OUTPUT FOR THE WATER & WASTEWATER SDF STUDY

WATER & WASTEWATER SDF STUDY FOR THE TOWN OF CAROLINA BEACH, NORTH CAROLINA

Prepared by Willdan Financial Services

EXHIBIT 1
SYSTEM DEVELOPMENT FEE ANALYSIS
EXISTING CAPITAL COSTS RECOVERABLE FROM SDFS
WATER & WASTEWATER SYSTEMS

Line	Description	Original Cost	Replacement Cost New	Accumulated Depreciation	RCNLD
	WATER ASSETS				
	Total Assets by Category:				
1	Equipment	$ 1,436,339	$ 2,382,271	$ (1,282,275)	$ 1,099,996
2	Vehicles	323,585	323,585	(296,173)	27,412
3	Land	293,771	293,771	(293,771)	0
4	Water Fire Hydrants	108,375	304,029	(304,029)	0
5	Buildings/Improvements	10,762,392	31,890,878	(19,964,918)	11,925,960
6	Infrastructure	9,771,617	20,015,586	(5,847,199)	14,168,387
7	Total	$ 22,696,079	$ 55,210,120	$ (27,988,365)	$ 27,221,755
	Adjusted For Assumed Cost Limit ($):				
8	Equipment	$ 150,239	$ 414,660	$ (153,462)	$ 261,198
9	Vehicles	106,185	106,185	(81,573)	24,612
10	Land	120,000	120,000	(120,000)	0
11	Water Fire Hydrants	0	0	0	0
12	Buildings/Improvements	8,525,165	22,883,628	(12,579,953)	10,303,675
13	Infrastructure	2,601,464	9,021,041	(3,437,646)	5,583,395
14	Total	$ 11,503,053	$ 32,545,514	$ (16,372,634)	$ 16,172,880
	WASTEWATER ASSETS				
	Total Assets by Category:				
15	Equipment	$ 1,414,181	$ 1,832,896	$ (1,331,140)	$ 501,756
16	Vehicles	964,093	964,093	(788,174)	175,919
17	Land	182,186	182,186	(182,186)	0
18	Water Fire Hydrants	0	0	0	0
19	Buildings/Improvements	18,172,810	57,198,607	(37,392,913)	19,805,694
20	Infrastructure	13,176,120	23,642,767	(8,176,900)	15,465,867
21	Total	$ 33,909,390	$ 83,820,549	$ (47,871,313)	$ 35,949,236
	Adjusted For Assumed Cost Limit ($):				
22	Equipment	$ 241,660	$ 307,730	$ (256,089)	$ 51,641
23	Vehicles	315,527	315,527	(315,527)	0
24	Land	134,163	134,163	(134,163)	0
25	Water Fire Hydrants	0	0	0	0
26	Buildings/Improvements	14,291,348	44,928,139	(28,277,887)	16,650,252
27	Infrastructure	4,954,279	12,744,919	(7,106,547)	5,638,372
28	Total	$ 19,936,977	$ 58,430,478	$ (36,090,213)	$ 22,340,265

EXHIBIT 1
SYSTEM DEVELOPMENT FEE ANALYSIS
EXISTING CAPITAL COSTS RECOVERABLE FROM SDFS
WATER & WASTEWATER SYSTEMS

Line	Description	Original Cost	Replacement Cost New	Accumulated Depreciation	RCNLD
	COMBINED ASSETS				
	Total Assets by Category:				
27	Equipment	$ 2,850,520	$ 4,215,167	$ (2,613,415)	$ 1,601,752
28	Vehicles	1,287,678	1,287,678	(1,084,347)	203,331
29	Land	475,957	475,957	(475,957)	0
30	Water Fire Hydrants	108,375	304,029	(304,029)	0
31	Buildings/Improvements	28,935,202	89,089,485	(57,357,831)	31,731,654
32	Infrastructure	22,947,737	43,658,353	(14,024,099)	29,634,254
33	Total	$ 56,605,469	$ 139,030,669	$ (75,859,678)	$ 63,170,991
	Adjusted For Assumed Cost Limit ($):				
34	Equipment	$ 391,899	$ 722,390	$ (409,551)	$ 312,839
35	Vehicles	421,712	421,712	(397,100)	24,612
36	Land	254,163	254,163	(254,163)	0
37	Water Fire Hydrants	0	0	0	0
38	Buildings/Improvements	22,816,513	67,811,767	(40,857,840)	26,953,927
39	Infrastructure	7,555,743	21,765,960	(10,544,193)	11,221,767
40	Total	$ 31,440,030	$ 90,975,992	$ (52,462,847)	$ 38,513,145
	Recoverable Allocation - Water (%):				
41	Equipment				**0%**
42	Vehicles				**0%**
43	Land				**100%**
44	Water Fire Hydrants				**0%**
45	Buildings/Improvements				**100%**
46	Infrastructure				**100%**
	Recoverable Allocation - Wastewater (%):				
47	Equipment				**0%**
48	Vehicles				**0%**
49	Land				**100%**
50	Water Fire Hydrants				**0%**
51	Buildings/Improvements				**100%**
52	Infrastructure				**100%**

EXHIBIT 1
SYSTEM DEVELOPMENT FEE ANALYSIS
EXISTING CAPITAL COSTS RECOVERABLE FROM SDFS
WATER & WASTEWATER SYSTEMS

Line	Description	Original Cost	Replacement Cost New	Accumulated Depreciation	RCNLD
	System Allocation - Water ($):				
53	Equipment				$ 0
54	Vehicles				0
55	Land				0
56	Water Fire Hydrants				0
57	Buildings/Improvements				10,303,675
58	Infrastructure				5,583,395
59	Total				$ 15,887,070
	System Allocation - Wastewater ($):				
60	Equipment				$ 0
61	Vehicles				0
62	Land				0
63	Water Fire Hydrants				0
64	Buildings/Improvements				16,650,252
65	Infrastructure				5,638,372
66	Total				$ 22,288,624
67	**Grand Total Recoverable Assets**				**$ 38,175,694**

COMPONENT ALLOCATION

	Total Recoverable Water Facilities:		
68	Treatment Facilities	33.25%	$ 5,281,785
69	Transmission Facilities	66.75%	10,605,285
70	**Total**	100.00%	$ 15,887,070
	Total Recoverable Wastewater Facilities:		
71	Treatment Facilities	20.77%	$ 4,629,144
72	Transmission Facilities	79.23%	17,659,480
73	**Total**	100.00%	$ 22,288,624
	Combined Recoverable Facilities:		
74	Treatment Facilities	25.96%	$ 9,910,929
75	Transmission Facilities	74.04%	28,264,765
	Total	100.00%	$ 38,175,694

EXHIBIT 1
SYSTEM DEVELOPMENT FEE ANALYSIS
EXISTING CAPITAL COSTS RECOVERABLE FROM SDFS
WATER & WASTEWATER SYSTEMS

Line	Description	Original Cost	Replacement Cost New	Accumulated Depreciation	RCNLD
	COMPARISON TO TOTAL				
76	**Total Utility Assets**				$ 63,170,991
77	**Combined Recoverable Assets**				$ 38,175,694
	Difference (Assets Excluded From Recovery):				
78	Excluded From Recovery ($)				$ 24,995,297
79	Excluded From Recovery (%)				39.57%
	DEBT SERVICE CREDIT				
80	**Outstanding Debt Principal**				$ 13,186,677
	Allocation Percentage:				
81	Water				57.39%
82	Wastewater				42.61%
	Allocated Debt Service Credit:				
83	Water				$ 7,567,487
84	Wastewater				5,619,190
85	Total				$ 13,186,677
	Component Allocation - Water:				
86	Treatment Facilities			33.25%	$ 2,515,872
87	Transmission Facilities			66.75%	5,051,615
88	Total			100.00%	$ 7,567,487
	Component Allocation - Wastewater:				
89	Treatment Facilities			20.77%	$ 1,167,055
90	Transmission Facilities			79.23%	4,452,135
91	Total			100.00%	$ 5,619,190

EXHIBIT 2
SYSTEM DEVELOPMENT FEE ANALYSIS
CURRENT CAPITAL IMPROVEMENT PROGRAM FOR FY 2024 - FY 2033
WATER & WASTEWATER SYSTEMS

Line	Description	Total	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
	Water											
1	Water Line Replacement Phase C	$ 3,685,694	$ 0	$ 0	$ 0	$ 0	$ 3,685,694	$ 0	$ 0	$ 0	$ 0	$ 0
2	Water Line Replacement Phase C	2,102,268	0	0	0	0	2,102,268	0	0	0	0	0
3	Water Line Replacement Phase D	3,353,342	0	0	0	0	0	0	0	3,353,342	0	0
4	Water Line Replacement Phase E	3,636,062	0	0	0	0	0	0	0	0	0	3,636,062
5	Replace Automated Meter Integration System (AMI)	1,092,830	0	1,092,830	0	0	0	0	0	0	0	0
6	Water Treatment Plant # 1 Upgrades	248,472	0	0	0	0	248,472	0	0	0	0	0
7	Water Treatment Plant # 2 Upgrades	248,472	0	0	0	0	248,472	0	0	0	0	0
8	New Water Treatment Plant # 3	6,089,139	0	0	0	0	0	0	0	6,089,139	0	0
9	Decomission Tank # 1	646,680	0	0	0	0	0	0	0	646,680	0	0
10	Add Filtration vessel at Alabama and Raw Water Lines	3,278,490	0	3,278,490	0	0	0	0	0	0	0	0
11	New 1 million GPM Tank	5,027,237	0	5,027,237	0	0	0	0	0	0	0	0
12	New 1 million GPM Tank	7,243,075	0	0	0	0	0	0	0	7,243,075	0	0
13	New Well 15H and Raw Water Lines	504,887	0	504,887	0	0	0	0	0	0	0	0
14	New Well 15A and Raw Water Lines	1,522,285	0	0	0	0	0	0	0	1,522,285	0	0
15	New Well 15B and Raw Water Lines	1,095,476	0	0	0	0	0	0	0	1,095,476	0	0
16	North End Water Repairs	1,746,725	0	0	0	0	0	0	0	0	0	1,746,725
17	**Total Water**	$ 41,521,134	$ 0	$ 9,903,444	$ 0	$ 0	$ 6,284,906	$ 0	$ 0	$ 19,949,997	$ 0	$ 5,382,787
	Wastewater											
18	North End Sewer Repairs	$ 2,274,136	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 2,274,136
19	Sewer Line Replacement Phase C	3,759,407	0	0	0	0	3,759,407	0	0	0	0	0
20	Sewer Line Replacement Phase C	1,667,247	0	0	0	0	1,667,247	0	0	0	0	0
21	WWTP Digester Repair and Rebuild	3,278,490	0	3,278,490	0	0	0	0	0	0	0	0
22	Replace Lift Station 5 and 6 (package Stations)	363,228	0	363,228	0	0	0	0	0	0	0	0
23	Sewer Line Replacement Phase D	3,353,342	0	0	0	0	0	0	0	3,353,342	0	0
24	Sewer Line Replacement Phase E	3,636,062	0	0	0	0	0	0	0	0	0	3,636,062
25	WWTP Headworks	4,917,735	0	4,917,735	0	0	0	0	0	0	0	0
26	**Total Wastewater**	$ 23,249,647	$ 0	$ 8,559,453	$ 0	$ 0	$ 5,426,654	$ 0	$ 0	$ 3,353,342	$ 0	$ 5,910,198
27	**Total Water & Wastewater CIP**	**$ 64,770,781**	**$ 0**	**$ 18,462,897**	**$ 0**	**$ 0**	**$ 11,711,560**	**$ 0**	**$ 0**	**$ 23,303,339**	**$ 0**	**$ 11,292,985**

EXHIBIT 3
SYSTEM DEVELOPMENT FEE ANALYSIS
ALLOCATION OF CAPITAL IMPROVEMENTS PROGRAM
WATER AND WASTEWATER SYSTEMS

Line	Description	Total	Percentage Allocation [1]			Allocation Amount		
			Expand/Upgrade	R&R	Other	Expand/Upgrade	R&R	Other
	WATER PROJECTS							
1	Water Line Replacement Phase C	$ 3,685,694	30.00%	70.00%	0.00%	$ 1,105,708	$ 2,579,986	$ 0
2	Water Line Replacement Phase C	2,102,268	30.00%	70.00%	0.00%	630,680	1,471,588	0
3	Water Line Replacement Phase D	3,353,342	30.00%	70.00%	0.00%	1,006,003	2,347,339	0
4	Water Line Replacement Phase E	3,636,062	30.00%	70.00%	0.00%	1,090,819	2,545,243	0
5	Replace Automated Meter Integration System (AMI)	1,092,830	100.00%	0.00%	0.00%	1,092,830	0	0
6	Water Treatment Plant # 1 Upgrades	248,472	100.00%	0.00%	0.00%	248,472	0	0
7	Water Treatment Plant # 2 Upgrades	248,472	100.00%	0.00%	0.00%	248,472	0	0
8	New Water Treatment Plant # 3	6,089,139	100.00%	0.00%	0.00%	6,089,139	0	0
9	Decomission Tank # 1	646,680	0.00%	100.00%	0.00%	0	646,680	0
10	Add Filtration vessel at Alabama and Raw Water Lines.	3,278,490	100.00%	0.00%	0.00%	3,278,490	0	0
11	New 1 million GPM Tank	5,027,237	100.00%	0.00%	0.00%	5,027,237	0	0
12	New 1 million GPM Tank	7,243,075	100.00%	0.00%	0.00%	7,243,075	0	0
13	New Well 15H and Raw Water Lines	504,887	100.00%	0.00%	0.00%	504,887	0	0
14	New Well 15A and Raw Water Lines	1,522,285	100.00%	0.00%	0.00%	1,522,285	0	0
15	New Well 15B and Raw Water Lines	1,095,476	100.00%	0.00%	0.00%	1,095,476	0	0
16	North End Water Repairs	1,746,725	0.00%	100.00%	0.00%	0	1,746,725	0
17	Subtotal	$ 41,521,134				$ 30,183,573	$ 11,337,561	$ 0
	WASTEWATER PROJECTS							
18	North End Sewer Repairs	$ 2,274,136	20.00%	80.00%	0.00%	$ 454,827	$ 1,819,309	$ 0
19	Sewer Line Replacement Phase C	3,759,407	20.00%	80.00%	0.00%	751,881	3,007,526	0
20	Sewer Line Replacement Phase C	1,667,247	20.00%	80.00%	0.00%	333,449	1,333,798	0
21	WWTP Digester Repair and Rebuild	3,278,490	20.00%	80.00%	0.00%	655,698	2,622,792	0
22	Replace Lift Station 5 and 6 (package Stations)	363,228	20.00%	80.00%	0.00%	72,646	290,582	0
23	Sewer Line Replacement Phase D	3,353,342	20.00%	80.00%	0.00%	670,668	2,682,674	0
24	Sewer Line Replacement Phase E	3,636,062	20.00%	80.00%	0.00%	727,212	2,908,850	0
25	WWTP Headworks	4,917,735	100.00%	0.00%	0.00%	4,917,735	0	0
26	Subtotal	$ 23,249,647				$ 8,584,116	$ 14,665,531	$ 0
27	**Total - All Capital Projects**	**$ 64,770,781**				**$ 38,767,689**	**$ 26,003,092**	**$ 0**

EXHIBIT 3
SYSTEM DEVELOPMENT FEE ANALYSIS
ALLOCATION OF CAPITAL IMPROVEMENTS PROGRAM
WATER AND WASTEWATER SYSTEMS

Line	Description	Total	Percentage Allocation (1)			Allocation Amount		
			Expand/Upgrade	R&R	Other	Expand/Upgrade	R&R	Other
	ALLOCATION OF CAPITAL PROJECTS							
	Water:							
28	Treatment Projects	$ 14,080,051				$ 14,080,051	$ 0	$ 0
29	Transmission Projects	27,441,083				16,103,522	11,337,561	0
30	Other Projects	0				0	0	0
31	Subtotal	$ 41,521,134				$ 30,183,573	$ 11,337,561	$ 0
	Wastewater:							
32	Treatment Projects	$ 4,917,735				$ 4,917,735	$ 0	$ 0
33	Transmission Projects	18,331,912				3,666,381	14,665,531	0
34	Other Projects	0				0	0	0
35	Subtotal	$ 23,249,647				$ 8,584,116	$ 14,665,531	$ 0
	Combined:							
36	Treatment Projects	$ 18,997,786				$ 18,997,786	$ 0	$ 0
37	Transmission Projects	45,772,995				19,769,903	26,003,092	0
38	Other Projects	0				0	0	0
39	**Grand Total**	**$ 64,770,781**				**$ 38,767,689**	**$ 26,003,092**	**$ 0**

Notes:

(1) The capital costs are allocated in order to determine the costs that are recoverable from a capacity-related fee. The costs allocated as expansion and/or upgrade projects are assumed to be recoverable from such fees. All other capital costs are assumed to either be maintenance-related (R&R) projects or localized projects that do not provide system-wide capacity benefits.

EXHIBIT 4
SYSTEM DEVELOPMENT FEE ANALYSIS
CALCULATION OF SYSTEM DEVELOPMENT FEE PER ERU
WATER SYSTEM

Line	Description		Total	
	Recoverable Capital Facilities			
	Existing Facilities:			
1	Treatment Facilities		$ 5,281,785	
2	Transmission Facilities		10,605,285	
3	**Subtotal**		$ 15,887,070	(1)
	Less Debt Service Principal:			
4	Treatment Facilities		$ (2,515,872)	
5	Transmission Facilities		(5,051,615)	
6	**Total**		$ (7,567,487)	(2)
	Net Recoverable Existing Facilities:			
7	Treatment Facilities		$ 2,765,913	
8	Transmission Facilities		5,553,670	
9	**Total**		$ 8,319,583	
	Capital Improvement Program:			
10	Treatment Facilities		$ 14,080,051	
11	Transmission Facilities		16,103,522	
12	**Subtotal**		$ 30,183,573	
	Less 25% CIP Adjustment:			
13	Treatment Facilities	25%	$ (3,520,013)	
14	Transmission Facilities	25%	(4,025,881)	
15	**Subtotal**		$ (7,545,894)	(3)
	Net Recoverable CIP:			
16	Treatment Facilities		$ 10,560,038	
17	Transmission Facilities		12,077,641	
18	**Total**		$ 22,637,679	
	Net Capital Costs:			
19	Treatment Facilities		$ 13,325,951	
20	Transmission Facilities		17,631,311	
21	**Net Recoverable Costs**		**$ 30,957,262**	

EXHIBIT 4
SYSTEM DEVELOPMENT FEE ANALYSIS
CALCULATION OF SYSTEM DEVELOPMENT FEE PER ERU
WATER SYSTEM

Line	Description			Total	
	Available System Capacity (MGD)				
	Maximum Daily Treatment Capacity:				(4)
22	Cape Fear Water Plant 1			2.40	
23	Alabama Water Plant 2			2.40	
24	Existing Treatment Capacity			4.80	
25	Added CIP Capacity - New WTP # 3			2.40	
26	Combined Capacity of Water Treatment Facilities (MGD)			**7.20**	
	Average Day Capacity Adjustment:				
27	Treatment Capacity Based on Max/Avg Day Factor	1.50		4.80	
28	Unaccounted-For Water Capacity Adjustment	20.0%			
29	Estimated Treatment Capacity			**3.84**	(5)
	Estimated Transmission System Capacity:				
30	Maximum Daily Treatment Capacity			7.20	
31	Unaccounted-For Water Capacity Adjustment	20.0%			
32	Estimated Transmission Capacity			**5.76**	(6)
	Estimated Cost Per Gallon of Capacity				
	Estimated Cost Per Gallon of Capacity:				
33	Treatment ($/Gallon)		$	3.47	
34	Transmission ($/Gallon)			3.06	
35	**Total Cost Per Gallon of Capacity**		**$**	**6.53**	
36	Assumed Standard Level of Service Per ERU (GPD of Capacity)			400	(7)

EXHIBIT 4
SYSTEM DEVELOPMENT FEE ANALYSIS
CALCULATION OF SYSTEM DEVELOPMENT FEE PER ERU
WATER SYSTEM

Line	Description		Total
	Calculation of Proposed Fee Per ERU		
	Calculation of SDF Per ERU:		
37	Treatment Facilities	$	1,388
38	Transmission Facilities		1,224
39	Combined Cost	**$**	**2,612**
	Adjusted Fee - Treatment:		
40	Calculated Fee Per ERU	$	1,388
41	Less Rounding Adjustment		(8)
42	Adjusted Fee	$	1,380
	Credit Adjusted Fee - Transmission:		
43	Calculated Fee Per ERU	$	1,224
44	Less Rounding Adjustment		(4)
45	Adjusted Fee	$	1,220
	Proposed SDF Per ERU (Rounded):		
46	Treatment Facilities	$	1,380
47	Transmission Facilities		1,220
48	**Combined Cost**	**$**	**2,600**

EXHIBIT 4
SYSTEM DEVELOPMENT FEE ANALYSIS
CALCULATION OF SYSTEM DEVELOPMENT FEE PER ERU
WATER SYSTEM

Line	Description	Total

Notes:

(1) See **Exhibit 1** for the development of existing asset costs identified for capital recovery.

(2) Based upon discussions with Utility staff, most of the facilities included for cost recovery in this analysis were funded with debt. In an effort to account for the facility costs that may be recovered from user rates as part of the normal budgetary process, a debt service credit is applied to the applicable fee calculation. The credit is equal to outstanding principal amount on existing utility-related debt as reported in the most recent audited financial report. The principal balance is allocated between water and wastewater as provided in **Exhibit 1**.

(3) This adjustment is made in accordance with House Bill 436, § 162A-207. Minimum

(4) Based on rated maximum daily plant capacity information as provided by staff.

(5) The estimated average daily flow capacity assumes an MDF-to-ADF ratio of 1.50 times. An additional adjustment is made for assumed unaccounted-for water flows (e.g. line losses) in the system. For the purpose of this analysis, the line-loss factor is assumed to be 20%.

(6) It is assumed that the transmission facilities are capable of providing average water flow at least equal to the maximum flow amount of 7.20 MGD permitted for the combined water treatment plants. In addition, similar to the methodology utilized for water treatment, an adjustment is made for unaccounted-for water assuming losses of 20.0%.

(7) The system development charges are to be applied on an equivalent residential unit (ERU) basis such that 1 ERU is equal to the estimated capacity requirements for a typical single family residential connection with a 5/8-inch X 3/4-inch water meter. In accordance with daily water flow capacity design standards adopted by the State of North Carolina and defined the North Carolina Administrative Codes (15A NCAC 18C .0409), the level of service requirement for a residential connection is 400 gallons per day (gpd). Applying the NCAC flow standard, it is assumed that 1 ERU requires a standard level of service of 400 gpd of water system capacity.

EXHIBIT 5
SYSTEM DEVELOPMENT FEE ANALYSIS
CALCULATION OF SYSTEM DEVELOPMENT FEE PER ERU
WASTEWATER SYSTEM

Line	Description		Total	
	Recoverable Capital Facilities			
	Existing Facilities:			
1	Treatment Facilities		$ 4,629,144	
2	Transmission Facilities		17,659,480	
3	**Subtotal**		$ 22,288,624	(1)
	Less Debt Service Principal:			
4	Treatment Facilities		$ (1,167,055)	
5	Transmission Facilities		(4,452,135)	
6	**Total**		$ (5,619,190)	(2)
	Net Recoverable Existing Facilities:			
7	Treatment Facilities		$ 3,462,089	
8	Transmission Facilities		13,207,345	
9	**Total**		$ 16,669,434	
	Capital Improvement Program:			
10	Treatment Facilities		$ 4,917,735	
11	Transmission Facilities		3,666,381	
12	**Subtotal**		$ 8,584,116	
	Less 25% CIP Adjustment:			
13	Treatment Facilities	25%	$ (1,229,434)	
14	Transmission Facilities	25%	(916,595)	
15	**Subtotal**		$ (2,146,029)	(3)
	Net Recoverable CIP:			
16	Treatment Facilities		$ 3,688,301	
17	Transmission Facilities		2,749,786	
18	**Total**		$ 6,438,087	
	Net Capital Costs:			
19	Treatment Facilities		$ 7,150,390	
20	Transmission Facilities		15,957,131	
21	**Net Recoverable Costs**		**$ 23,107,521**	

EXHIBIT 5
SYSTEM DEVELOPMENT FEE ANALYSIS
CALCULATION OF SYSTEM DEVELOPMENT FEE PER ERU
WASTEWATER SYSTEM

Line	Description			Total	
	Available System Capacity (MGD)				
	Daily Treatment Capacity (MGD):				
22	Town of Carolina Beach Wastewater Treatment Plant			3.00	
	Treatment Capacity:				
23	Average Day Treatment Capacity (MGD)			3.00	
24	I&I Capacity Adjustment	20.0%			
25	Adjusted Average Day Treatment Capacity			**2.40**	(4)
	Estimated Transmission System Capacity:				
26	Transmission-to-Treatment Capacity Factor	1.00			
27	Estimated Transmission Capacity			**3.00**	(5)
	Estimated Cost Per Gallon of Capacity				
	Estimated Cost Per Gallon of Capacity:				
28	Treatment ($/Gallon)		$	2.98	
29	Transmission ($/Gallon)			5.32	
30	**Total Cost Per Gallon of Capacity**		**$**	**8.30**	
31	Assumed Standard Level of Service Per ERU (GPD of Capacity)			360	(6)

EXHIBIT 5
SYSTEM DEVELOPMENT FEE ANALYSIS
CALCULATION OF SYSTEM DEVELOPMENT FEE PER ERU
WASTEWATER SYSTEM

Line	Description	Total
	Calculation of Proposed Fee Per ERU	
	Calculation of SDF Per ERU:	
32	Treatment Facilities	$ 1,073
33	Transmission Facilities	1,915
34	Combined Cost	$ 2,988
	Adjusted Fee - Treatment:	
35	Calculated Fee Per ERU	$ 1,073
36	Less Rounding Adjustment	(3)
37	Adjusted Fee	$ 1,070
	Credit Adjusted Fee - Transmission:	
38	Calculated Fee Per ERU	$ 1,915
39	Less Rounding Adjustment	(5)
40	Adjusted Fee	$ 1,910
	Proposed SDF Per ERU (Rounded):	
41	Treatment Facilities	$ 1,070
42	Transmission Facilities	1,910
43	Combined Cost	**$ 2,980**

EXHIBIT 5
SYSTEM DEVELOPMENT FEE ANALYSIS
CALCULATION OF SYSTEM DEVELOPMENT FEE PER ERU
WASTEWATER SYSTEM

Line	Description	Total

Notes:

(1) See Exhibit 1 for the development of existing asset costs identified for capital recovery.

(2) Based upon discussions with Utility staff, most of the facilities included for cost recovery in this analysis were funded with debt. In an effort to account for the facility costs that may be recovered from user rates as part of the normal budgetary process, a debt service credit is applied to the applicable fee calculation. The credit is equal to outstanding principal amount on existing utility-related debt as reported in the most recent audited financial report. The principal balance is allocated between water and wastewater as provided in Exhibit 1.

(3) This adjustment is made in accordance with House Bill 436, § 162A-207. Minimum

(4) Similar to the line loss adjustment for water, the wastewater system capacity is reduced by the impacts of system inflow and infiltration (I&I). The assumed I&I adjustment is based on discussions with staff.

(5) It is assumed that the wastewater trunk lines and pumping facilities are designed to provide capacity at least equal to the permitted plant flow amount of 3.00 MGD.

(6) Similar to the water system, the system development charges for wastewater are to be applied on an equivalent residential unit (ERU) basis such that 1 ERU is equal to the estimated capacity requirements for a typical single family residential connection with a 5/8-inch X 3/4-inch water meter. In accordance with wastewater flow design standards adopted by the State of North Carolina and defined the North Carolina Administrative Codes (15A NCAC 02T .0114), the level of service requirement is based on 120 gallons of capacity per day per bedroom for a residential home. This analysis assumes an average of 3.0 bedrooms per new home constructed. Applying the State's flow standard to the average number of bedrooms, it is assumed that 1 ERU requires a standard level of service of 360 gpd of wastewater system capacity. Therefore, it is assumed that 1 ERU requires a standard level of service of 360 gpd of wastewater system capacity.

EXHIBIT 6
SYSTEM DEVELOPMENT FEE ANALYSIS
SUMMARY OF PROPOSED SYSTEM DEVELOPMENT FEES
WATER & WASTEWATER SYSTEMS

Line	Description	Meter-Based ERU Factor	Fees by System		Combined Fee
			Water	Sewer	
	EXISTING FEES				
	Meter Size:				
1	5/8 x 3/4 Inch	1.00	$ 2,470	$ 2,710	$ 5,180
2	1.0 Inch	2.50	$ 6,175	$ 6,775	$ 12,950
3	1.5 Inch	5.00	$ 12,350	$ 13,550	$ 25,900
4	2.0 Inch	8.00	$ 19,760	$ 21,680	$ 41,440
5	3.0 Inch	16.00	$ 39,520	$ 43,360	$ 82,880
6	4.0 Inch	25.00	$ 61,750	$ 67,750	$ 129,500
7	6.0 Inch	50.00	$ 123,500	$ 135,500	$ 259,000
8	8.0 Inch	80.00	$ 197,600	$ 216,800	$ 414,400
	PROPOSED FEES (1)				
	Meter Size:				
9	5/8 x 3/4 Inch	1.00	$ 2,600	$ 2,980	$ 5,580
10	1.0 Inch	2.50	$ 6,500	$ 7,450	$ 13,950
11	1.5 Inch	5.00	$ 13,000	$ 14,900	$ 27,900
12	2.0 Inch	8.00	$ 20,800	$ 23,840	$ 44,640
13	3.0 Inch	16.00	$ 41,600	$ 47,680	$ 89,280
14	4.0 Inch	25.00	$ 65,000	$ 74,500	$ 139,500
15	6.0 Inch	50.00	$ 130,000	$ 149,000	$ 279,000
16	8.0 Inch	80.00	$ 208,000	$ 238,400	$ 446,400
	OPTIONAL ACTUAL FLOW BASIS (2)				
	Charge Per Gallon of Capacity (GPD):				
17	Treatment Facilities		$ 3.47	$ 2.98	$ 3.47
18	Transmission Facilities		3.06	5.32	8.38
19	Cost Per GPD		$ 6.53	$ 8.30	$ 11.85

Notes:

(1) The proposed capacity fees are based on the calculated fee per ERU as applied to the respective ERU factor. The proposed ERU factors for the capacity fees are based on meter equivalency factors established by the AWWA.

(2) In situations where the application of the meter-based fees will result in the collection of fees significantly different than the potential demand requirement, a special fee calculation methodology may be applied based on the unit cost of capacity and the estimated daily capacity needs of the new service connection. The estimated capacity needs will be based on the amount determined by the utility's engineering staff to be appropriate.