

June 13, 2024

Janice Cole, Town Manager
Town of Hertford
114 W. Grubb Street, PO Box 32
Hertford, NC 27944

Subject: Water and Wastewater System Development Fee Study

Dear Ms. Cole,

WILLDAN FINANCIAL SERVICES (“Willdan”) is pleased to submit to the Town of Hertford, 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 various terms including impact fees, capacity fees, system expansion fees, capacity reservation charges, facility fees, capital connection charges or other such terminology. According to N.C.G.S. 162A-201(9) (2023), an SDF is a one-time charge imposed with respect to new development to fund costs of capital improvements necessitated by the development, to recoup costs of existing facilities which serve the new development and to recoup costs to purchase capacity in the facilities of other local governments. Such capital costs include the construction of facilities as well as engineering, surveys, land, financing, professional fees, and administrative costs. It has become customary practice for water and wastewater utility systems to implement SDFs (or other similar charges) to establish a 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 an SDF is to allocate, 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. 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 the property receives. SDFs are not 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

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 court rulings, the Rational Nexus Test requires that certain conditions be met to formulate 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 by reason 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 proportionately, uniformly, and equitably on all new development 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, all new developments are treated fairly in that they 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 Circuit, in 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 distinct factors influencing this decision, the result generated a significant amount of confusion and concern for governmental utility systems within the State.

House Bill 436

In 2017, the General Assembly of North Carolina 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 which 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, to recoup costs to purchase capacity in the facilities of other local governments 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 five 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 N.C.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.
10. Includes any purchased capacity in, or reserved capacity supplied by, capital improvements or facilities owned by another local government unit as part of the local government unit's overall capacity in capital improvements. (2017-138, S. L; 2018-34, s. 1(a); 2021-76, S. 2; S.L. 2023-55, § 2(b), eff. June 23, 2023.)

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 assess SDFs that meet the legal requirements set forth above to develop fees in accordance with Chapter 162A. The development of the proposed/calculated SDFs and applicable analysis assumptions are described throughout the remainder of the Report.

	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 potential 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 Impact Fees on new customers requiring water and/or wastewater utility service. The current fees are based on the size of the water meter. The current fees and fee structure are consistent with common industry standards and were developed and adopted in accordance with the Chapter 162A requirements. However, it is recommended that the Town’s current terminology of “Impact Fee” be changed to “System Development Fee” to become consistent with the terminology defined in Chapter 162A. The existing fees are provided in **Table 1**.

Description	Existing Fees By Meter Size		
	Water	Wastewater	Total
Meter Size:			
5/8 x 3/4 Inch	\$ 350	\$ 550	\$ 900
1.0 Inch	\$ 550	\$ 850	\$ 1,400
1.5 Inch	\$ 2,000	\$ 3,000	\$ 5,000
2.0 Inch	\$ 3,500	\$ 5,500	\$ 9,000
4.0 Inch	\$ 8,000	\$ 12,000	\$ 20,000
6.0 Inch	\$ 10,000	\$ 15,000	\$ 25,000
8.0 Inch	\$ 12,000	\$ 18,000	\$ 30,000
10.0 Inch	\$ 14,000	\$ 21,000	\$ 35,000
12.0 Inch	\$ 15,000	\$ 25,000	\$ 40,000

EXISTING TAP FEES

The Town currently imposes tap fees on new customers connecting to the water and wastewater systems. However, it is important to note that such connection-related fees are different than the SDFs developed and proposed herein. The distinguishing characteristic is that the 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 connection (i.e., materials, labor, equipment, and vehicles). SDFs, on the other hand, are established for the purpose of recovering the major capital costs incurred in making water and wastewater utility services available to the public. The SDFs calculated herein are intended to be in addition to the connection fees. As such, it is proposed that the existing tap fees continue to be imposed. It should be noted that, for the purpose of this Report, the existing connection-related fees are assumed to recover the costs



associated with actual physical connection to the system. 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 varying asset valuation methods, 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 diverse types of utility construction, including water systems. The index is commonly applied to wastewater systems as construction material and equipment are comparable to 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 replacement cost at prices prevailing at a certain date or to the present. While other construction cost indices are available, 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. The asset data and applicable recoverable cost allocations are provided in **Exhibit 1** at the end of this Report. The existing capital facilities and RCNLD calculations are summarized in **Table 2**.



TABLE 2
RCNLD OF EXISTING UTILITY ASSETS

Description	Original Cost	Replacement Cost New	Accumulated Depreciation	RCNLD
Total Utility Assets:				
Buildings	\$ 1,700	\$ 5,100	\$ (5,100)	\$ 0
Equipment	674,385	1,741,636	(1,519,658)	221,978
Improvements	23,268,610	49,795,644	(33,100,138)	16,695,506
Land	379,894	379,894	0	379,894
Vehicles	178,882	178,882	(123,334)	55,548
Total	\$ 24,503,471	\$ 52,101,156	\$(34,748,230)	\$ 17,352,926

For the purpose of the SDF analyses, the existing assets are categorized based on the major components of **Treatment** and **Transmission**. The treatment category includes any treatment plant facilities (water and/or 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 oftentimes contributed by developers or funded from other sources (i.e., assessments and direct customer payments), these facilities are not included for recovery through the SDFs. Additionally, a cost limit or threshold is set as a condition of inclusion of the asset items in the SDF calculation. Based on discussions with the Town’s staff, for the purposes of this analysis, the cost is set at \$100,000. 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. A final adjustment was made to exclude certain asset items that were identified as projects that only restored existing capacity rather than provided system upgrades or additional system capacity (e.g., equipment and vehicles). The existing recoverable water and wastewater capital asset cost allocations included in the analysis are summarized in **Table 3**.



**TABLE 3
 ALLOCATION OF EXISTING RECOVERABLE FACILITIES**

Description	RCNLD Included for Recovery		
	Water	Wastewater	Total
<u>Total Recoverable Assets:</u>			
Buildings	\$ 0	\$ 0	\$ 0
Equipment	0	0	0
Improvements	5,078,034	11,542,877	16,620,911
Land	189,947	189,947	379,894
Vehicles	0	0	0
Total	\$ 5,267,981	\$11,732,824	\$17,000,805
<u>Allocation of Recoverable Assets:</u>			
Treatment Facilities	\$ 5,009,323	\$10,663,964	\$15,673,287
Transmission Facilities	258,658	1,068,860	1,327,518
Total	\$ 5,267,981	\$11,732,824	\$17,000,805

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 5-year and maximum 20-year capital improvements program (“CIP”) that identifies the costs associated with new capacity and the timing of the expenditures. It is also important to 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 as these are costs that are not incurred by the utility.

The SDFs developed herein utilize the incremental cost method and therefore include future capital improvement projects and their applicable additions to system capacity. The Town has a CIP that provides a listing of individual projects and anticipated construction costs for the 10 fiscal years from FY 2025 through FY 2034. The 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. Also excluded from recovery are projects that are expected to be funded with grant proceeds. 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 4**.



TABLE 4
SUMMARY OF THE CIP & RECOVERABLE CAPITAL COSTS

Description	Total CIP	Excluded Capital	Recoverable Capital
<u>Water:</u>			
Treatment Facilities	\$ 0	\$ 0	\$ 0
Transmission Facilities	5,000,000	3,500,000	1,500,000
Other Facilities	1,920,000	1,920,000	0
Total	\$ 6,920,000	\$ 5,420,000	\$ 1,500,000
<u>Wastewater:</u>			
Treatment Facilities	\$ 3,605,000	\$ 2,110,000	\$ 1,495,000
Transmission Facilities	3,090,000	3,090,000	0
Other Facilities	1,920,000	1,920,000	0
Total	\$ 8,615,000	\$ 7,120,000	\$ 1,495,000
<u>Combined:</u>			
Treatment Facilities	\$ 3,605,000	\$ 2,110,000	\$ 1,495,000
Transmission Facilities	8,090,000	6,590,000	1,500,000
Other Facilities	3,840,000	3,840,000	0
Total	\$ 15,535,000	\$ 12,540,000	\$ 2,995,000

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 has capacity within the existing system sufficient to serve near-term growth but will require additional capacity to meet 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 5**.



**TABLE 5
SUMMARY OF COMBINED RECOVERABLE FACILITIES**

Description	Recoverable Facilities		
	Water	Wastewater	Total
Existing Facilities:			
Treatment Facilities	\$ 5,009,323	\$ 10,663,964	\$ 15,673,287
Transmission Facilities	258,658	1,068,860	1,327,518
Subtotal	\$ 5,267,981	\$ 11,732,824	\$ 17,000,805
Capital Improvement Program:			
Treatment Facilities	\$ 0	\$ 1,495,000	\$ 1,495,000
Transmission Facilities	1,500,000	0	1,500,000
Subtotal	\$ 1,500,000	\$ 1,495,000	\$ 2,995,000
Combined Recoverable Costs:			
Treatment Facilities	\$ 5,009,323	\$ 12,158,964	\$ 17,168,287
Transmission Facilities	1,758,658	1,068,860	2,827,518
Total	\$ 6,767,981	\$ 13,227,824	\$ 19,995,805

**SDF CALCULATION
CREDITS**

It is customary practice for utilities to fund major capital improvements and expansion projects with debt (e.g., bond issues). Typically, 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 mitigate the potential of new customers paying for capital facilities twice (i.e., paying an SDF for facilities that may have been debt funded, and then paying for debt service in their monthly user rates), the SDF analysis developed herein applies a debt service credit against the value of the existing facilities (buy-in method) to account for assets with outstanding debt liabilities. 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 applies a credit as required by statute to the planned future facilities provided in the CIP (incremental cost method). The credit for the future facilities is no less than 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 6**.



**TABLE 6
SUMMARY OF NET RECOVERABLE FACILITIES**

Description	Net Recoverable Facilities		
	Water	Wastewater	Total
Combined Recoverable Costs:			
Treatment Facilities	\$ 5,009,323	\$ 12,158,964	\$ 17,168,287
Transmission Facilities	1,758,658	1,068,860	2,827,518
Subtotal	\$ 6,767,981	\$ 13,227,824	\$ 19,995,805
Less Combined Credits:			
Treatment Facilities	\$ (1,820,935)	\$ (3,420,116)	\$ (5,241,051)
Transmission Facilities	(469,025)	(305,341)	(774,366)
Subtotal	\$ (2,289,960)	\$ (3,725,457)	\$ (6,015,417)
Net Capital Costs:			
Treatment Facilities	\$ 3,188,388	\$ 8,738,848	\$ 11,927,236
Transmission Facilities	1,289,633	763,519	2,053,152
Net Recoverable Costs	\$ 4,478,021	\$ 9,502,367	\$ 13,980,388

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 typically well documented. However, the volumetric capacity of the major transmission facilities is often 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, as well as assumptions based on industry standards.

Water Treatment

The Town owns and operates the Hertford Water Treatment Plant, which has a treatment capacity of 0.500 MGD (million gallons per day). In accordance with industry standards, the water flow



capacity is provided in terms of the maximum daily flow. However, 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. In accordance with industry standards and discussions with staff, it is assumed herein that the rated MDF is approximately 1.5 times the available capacity on an ADF basis. Applying this factor to the rated capacity for the water treatment facilities results in an average daily flow capacity of 0.333 MGD. An additional adjustment is made for the assumed amount of lost water (i.e., system flushing and backwashing, testing, line loss) caused by normal operations. The lost water reduces the amount of capacity available to existing and future customers. Based on discussions with staff, the analysis performed herein assumes an average loss of 15.0% to adjust for the lost water flows. This adjustment results in an estimated average daily treatment plant capacity of 0.283 MGD (see **Exhibit 4**).

Water Transmission

As previously addressed, the capacity of major transmission facilities can be difficult to determine and quantify. Such transmission capacity estimates are oftentimes not even developed in engineering documents such as master plans or Consulting Engineer's Reports. Based on discussions with staff, it is assumed that the existing transmission facilities can provide water flow at least equal to 1.50 times the projected max-day treatment capacity, resulting in 0.750 MGD. As with the methodology utilized for water treatment, a 15.0% loss adjustment is made to the transmission facilities resulting in an estimated transmission capacity of 0.638 MGD (see **Exhibit 4**).

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 owns and operates the Hertford Wastewater Treatment Plant, which has a wastewater treatment capacity of 0.750 MGD, as well as a 3rd clarifier plant expansion project in the CIP adding an additional capacity of 0.250 MGD. As such, the analysis developed herein utilizes a total wastewater treatment capacity of 1.000 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 lost flows in the water system, wastewater systems are impacted by inflow and infiltration (I&I) into the wastewater collection facilities. 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 20.0%, resulting in an adjusted average daily treatment capacity of 0.800 MGD (see **Exhibit 5**).

Wastewater Transmission

Like the discussion provided above for the determination of water transmission capacity, it is difficult to determine the capacity of the wastewater collection facilities. Based on discussions with Town staff, it is assumed that the wastewater trunk lines, and pumping facilities are designed



to provide capacity at least equal to 1.33 times the permitted plant flow, or 1.330 MGD. Like the adjustment for treatment, a 20.0% I&I adjustment is made to the transmission facilities resulting in a combined adjusted capacity of 1.064 MGD (see **Exhibit 5**).

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 \$13.29 per gallon of water capacity (combined treatment and transmission). Additionally, it is estimated that the wastewater facility costs \$11.64 per gallon of wastewater capacity. The calculated costs per gallon of capacity are summarized in **Table 7**.

TABLE 7 COST PER GALLON OF CAPACITY		
Description	Cost Per Gallon of Capacity	
	Water	Wastewater
Net Recoverable Facilities:		
Treatment Facilities	\$ 3,188,388	\$ 8,738,848
Transmission Facilities	1,289,633	763,520
Total	\$ 4,478,021	\$ 9,502,368
Estimated Capacity (MGD):		
Treatment Facilities	0.283	0.800
Transmission Facilities	0.638	1.064
Cost Per Gallon:		
Treatment Facilities	\$ 11.27	\$ 10.92
Transmission Facilities	2.02	0.72
Total	\$ 13.29	\$ 11.64

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 5/8 x 3/4-inch metered connection and discharging normal domestic-strength wastewater through a comparably sized sewer connection. Based on industry standards for the development and application of capacity-related charges, a typical residential water connection is widely assumed to require average service availability in the range of 350 to 450 gallons per day (gpd) of system capacity. The State of North Carolina (the “State”) has



established flow standards 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 gpd. For this analysis, it is assumed that the State’s number is based on a maximum day requirement. As such, as with the ADF adjustment previously addressed, a 1.50 times factor adjustment is made resulting in 267 gpd of water system capacity as the standard level of service requirement for 1 ERU.

Like the water system, the SDFs for wastewater are to be applied on an ERU basis such that 1 ERU is equal to the estimated capacity requirements for a typical single family residential connection with a 5/8 x 3/4-inch water meter. In accordance with wastewater flow design standards adopted by the State and defined by 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. In accordance with the Town’s existing methodology, the analysis developed herein assumes that the standard is three bedrooms. The resulting standard LOS is 360 gpd of wastewater system capacity per ERU.

Applying the average day LOS amounts to the estimated unit costs per gallon of capacity results in the calculated water and wastewater SDFs of \$3,530 and \$4,180, respectively, as rounded down, for a typical single-family residential connection (i.e., per ERU). The development of the water and wastewater SDFs are detailed in **Exhibits 4** and **5**, respectively. A summary of the existing and calculated SDFs for a new residential connection is provided in **Table 8**.

Description	System Development Fee Per ERU		
	Existing	Calculated	Difference
System Development Fees:			
Water	\$ 350	\$ 3,530	\$ 3,180
Wastewater	550	4,180	3,630
Total	\$ 900	\$ 7,710	\$ 6,810

APPLICATION OF SDFs

For developing SDFs, the average daily flow number is established as one 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. As previously addressed, one ERU is equal to the average flow capacity 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 Town’s existing methodology increases the SDFs for larger connection sizes based on the size of the water meter. However, the current differentials for increasing the fee are not consistent with standardized demand criteria established by the American Water Works Association (AWWA) pursuant to the size of the water meter. As such, it is recommended that the Town utilize the AWWA meter size demand criteria for calculating the fee amounts for larger meters. 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. Since wastewater flow is customarily 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. Applying this methodology, the calculated water and wastewater SDFs for the various water meter sizes are developed in **Exhibit 6** and provided in **Table 9**.

Description	Meter Factor ⁽¹⁾	Proposed/Calculated Fees By Meter Size		
		Water	Wastewater	Total
Meter Size:				
5/8 x 3/4 Inch	1.00	\$ 3,530	\$ 4,180	\$ 7,710
1.0 Inch	2.50	\$ 8,825	\$ 10,450	\$ 19,275
1.5 Inch	5.00	\$ 17,650	\$ 20,900	\$ 38,550
2.0 Inch	8.00	\$ 28,240	\$ 33,440	\$ 61,680
3.0 Inch	16.00	\$ 56,480	\$ 66,880	\$ 123,360
4.0 Inch	25.00	\$ 88,250	\$ 104,500	\$ 192,750
6.0 Inch	50.00	\$ 176,500	\$ 209,000	\$ 385,500
8.0 Inch	80.00	\$ 282,400	\$ 334,400	\$ 616,800
10.0 Inch	115.00	\$ 405,950	\$ 480,700	\$ 886,650
12.0 Inch	215.00	\$ 758,950	\$ 898,700	\$ 1,657,650

(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 by the Town’s Public Utilities Department. 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 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.

COMPARISON WITH NEIGHBORING UTILITIES

In order to provide the Town with additional insight regarding the development and application of the SDFs, a comparison is included to show the level of such fees as imposed by several other utility systems in North Carolina, including neighboring governments. The comparison shows 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. A comparison of the Town's existing and proposed SDF's to those currently in place for various other North Carolina utility systems is included in **Exhibit 7**.

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, 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 establish 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 is common 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 developed herein are calculated in accordance with the requirements of Chapter 162A and utilize methodologies that are consistent with industry standards.
5. The calculated SDFs are based on a listing of existing system assets as provided by the Town, as well as the 10-year capital improvement plan adopted by the Town. After considering the calculation options addressed herein, the Town selected the Combined Method. The selected methodology is common for public utility systems in North Carolina and is consistent with common industry standards.
6. The water and wastewater LOS standards proposed herein for establishing an ERU basis are based on standards applied by the State of North Carolina and are consistent with common industry practice.
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 impact on the level or application methodology for these other connection-related charges.



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 calculated SDFs and application methodology as developed in this Report, or other such SDF amounts as determined appropriate by the Town but not to exceed the fee amounts calculated herein.
2. Enact the new SDFs to become effective on August 1, 2024, or other such date as determined appropriate by the Town Council; and
3. Readdress the SDF study at least 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.

We appreciate 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 collaborating with you on future projects and continuing a successful professional relationship.

Respectfully Yours,

WILLDAN FINANCIAL SERVICES.

A handwritten signature in blue ink that reads "Daryll B. Parker".

Daryll B. Parker
Principal Consultant

EXHIBITS 1 - 7

SUPPORTING OUTPUT FOR THE WATER & WASTEWATER SDF STUDY



**WATER & WASTEWATER SDF STUDY FOR THE
TOWN OF HERTFORD, 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					
Water Assets by Category:					
1	Buildings	\$ 0	\$ 0	\$ 0	\$ 0
2	Equipment	320,669	892,375	(808,244)	84,131
3	Improvements	8,208,400	19,299,144	(14,200,462)	5,098,682
4	Land	189,947	189,947	0	189,947
5	Vehicles	89,441	89,441	(61,667)	27,774
6	Total	\$ 8,808,457	\$ 20,470,907	\$ (15,070,373)	\$ 5,400,534
Adjusted For Assumed Cost Limit (\$):					
7	Buildings	\$ 0	\$ 0	\$ 0	\$ 0
8	Equipment	116,535	457,983	(457,983)	0
9	Improvements	7,947,844	18,353,850	(13,275,816)	5,078,034
10	Land	189,947	189,947	0	189,947
11	Vehicles	64,000	64,000	(36,226)	27,774
12	Total	\$ 8,318,326	\$ 19,065,780	\$ (13,770,025)	\$ 5,295,755
WASTEWATER ASSETS					
Wastewater Assets by Category:					
13	Buildings	\$ 1,700	\$ 5,100	\$ (5,100)	\$ 0
14	Equipment	353,716	849,261	(711,414)	137,847
15	Improvements	15,060,210	30,496,500	(18,899,676)	11,596,824
16	Land	189,947	189,947	0	189,947
17	Vehicles	89,441	89,441	(61,667)	27,774
18	Total	\$ 15,695,014	\$ 31,630,249	\$ (19,677,857)	\$ 11,952,392
Adjusted For Assumed Cost Limit (\$):					
19	Buildings	\$ 0	\$ 0	\$ 0	\$ 0
20	Equipment	116,535	457,983	(457,983)	0
21	Improvements	14,765,093	29,481,084	(17,938,207)	11,542,877
22	Land	189,947	189,947	0	189,947
23	Vehicles	64,000	64,000	(36,226)	27,774
24	Total	\$ 15,135,575	\$ 30,193,014	\$ (18,432,416)	\$ 11,760,598

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
TOTAL ASSETS					
Total Assets by Category:					
25	Buildings	\$ 1,700	\$ 5,100	\$ (5,100)	\$ 0
26	Equipment	674,385	1,741,636	(1,519,658)	221,978
27	Improvements	23,268,610	49,795,644	(33,100,138)	16,695,506
28	Land	379,894	379,894	0	379,894
29	Vehicles	178,882	178,882	(123,334)	55,548
30	Total	<u>\$ 24,503,471</u>	<u>\$ 52,101,156</u>	<u>\$ (34,748,230)</u>	<u>\$ 17,352,926</u>
Adjusted For Assumed Cost Limit (\$):					
31	Buildings	\$ 0	\$ 0	\$ 0	\$ 0
32	Equipment	233,070	915,966	(915,966)	0
33	Improvements	22,712,937	47,834,934	(31,214,023)	16,620,911
34	Land	379,894	379,894	0	379,894
35	Vehicles	128,000	128,000	(72,452)	55,548
36	Total	<u>\$ 23,453,901</u>	<u>\$ 49,258,794</u>	<u>\$ (32,202,441)</u>	<u>\$ 17,056,353</u>
Recoverable Allocation - Water (%):					
37	Buildings				100%
38	Equipment				0%
39	Improvements				100%
40	Land				100%
41	Vehicles				0%
Recoverable Allocation - Wastewater (%):					
42	Buildings				100%
43	Equipment				0%
44	Improvements				100%
45	Land				100%
46	Vehicles				0%

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 (\$):					
47	Buildings			\$	0
48	Equipment				0
49	Improvements				5,078,034
50	Land				189,947
51	Vehicles				0
52	Total			\$	5,267,981
System Allocation - Wastewater (\$):					
53	Buildings			\$	0
54	Equipment				0
55	Improvements				11,542,877
56	Land				189,947
57	Vehicles				0
58	Total			\$	11,732,824
59	Grand Total Recoverable Assets			\$	17,000,805

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
COMPONENT ALLOCATION					
Total Recoverable Water Facilities:					
60	Treatment Facilities			95.09%	\$ 5,009,323
61	Transmission Facilities			4.91%	258,658
62	Subtotal			100.00%	\$ 5,267,981
Total Recoverable Wastewater Facilities:					
63	Treatment Facilities			90.89%	\$ 10,663,964
64	Transmission Facilities			9.11%	1,068,860
65	Subtotal			100.00%	\$ 11,732,824
Combined Recoverable Facilities:					
66	Treatment Facilities			92.19%	\$ 15,673,287
67	Transmission Facilities			7.81%	1,327,518
68	Total			100.00%	\$ 17,000,805
COMPARISON TO TOTAL					
69	Total Utility Assets				\$ 17,352,926
70	Combined Recoverable Assets				\$ 17,000,805
Difference (Assets Excluded From Recovery):					
71	Excluded From Recovery (\$)				\$ 352,121
72	Excluded From Recovery (%)				2.03%
DEBT SERVICE CREDIT					
73	Outstanding Debt Principal				\$ 5,266,667
Allocation Percentage:					
74	Water				36.36%
75	Wastewater				63.64%
Allocated Debt Service Credit:					
76	Water				\$ 1,914,960
77	Wastewater				3,351,707
78	Total				\$ 5,266,667
Component Allocation - Water:					
79	Treatment Facilities			95.09%	\$ 1,820,935
80	Transmission Facilities			4.91%	94,025
81	Total			100.00%	\$ 1,914,960
Component Allocation - Wastewater:					
82	Treatment Facilities			90.89%	\$ 3,046,366
83	Transmission Facilities			9.11%	305,341
84	Total			100.00%	\$ 3,351,707

EXHIBIT 2
SYSTEM DEVELOPMENT FEE ANALYSIS
CURRENT CAPITAL IMPROVEMENT PROGRAM FROM 2025 TO 2034
WATER & WASTEWATER SYSTEMS

Line	Description	Total	Projected for Fiscal Years Ending June 30,									
			2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Water & Sewer Capital Projects												
1	New Public Works Building Build Out/Fit Out	\$ 400,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
2	New Public Works Garage Structure	300,000	300,000	0	0	0	0	0	0	0	0	0
3	New Public Works Compound Fencing, Lighting, and Security	220,000	0	0	0	25,000	195,000	0	0	0	0	0
4	Utilities Construction Commerce Park	2,920,000	0	0	120,000	200,000	2,600,000	0	0	0	0	0
5	Replacement of Existing Water Lines	500,000	125,000	125,000	125,000	125,000	0	0	0	0	0	0
6	Smart Water Meters	500,000	100,000	100,000	100,000	100,000	100,000	0	0	0	0	0
7	Replace W. Grubb St Force Main	4,000,000	500,000	1,750,000	1,750,000	0	0	0	0	0	0	0
8	Sewer Line Clean Outs	1,575,000	0	175,000	175,000	175,000	175,000	175,000	175,000	175,000	175,000	175,000
9	Replace/Upgrade Feed and Seed Pump Station	275,000	275,000	0	0	0	0	0	0	0	0	0
10	Replace/Upgrade Cemetary Pump Station	510,000	510,000	0	0	0	0	0	0	0	0	0
11	Replace/Upgrade Willow Pump Station	410,000	410,000	0	0	0	0	0	0	0	0	0
12	Sewer Line Replacements	320,000	80,000	80,000	80,000	80,000	0	0	0	0	0	0
13	Waste water Mechanical Operations Structure	50,000	50,000	0	0	0	0	0	0	0	0	0
14	WWTP Operational Controls and Monitoring Repairs	720,000	35,000	0	100,000	100,000	485,000	0	0	0	0	0
15	3rd Clarifier Plant Expansion	1,495,000	495,000	1,000,000	0	0	0	0	0	0	0	0
16	WWTP Operations Recovery Rehabilitation	500,000	0	0	0	100,000	100,000	100,000	100,000	100,000	0	0
17	WWTP Conversion of Gas to Solid Chlorination System	340,000	340,000	0	0	0	0	0	0	0	0	0
18	WWTP Effluent System Recovery	500,000	0	0	0	0	0	100,000	100,000	100,000	100,000	100,000
19	Total Water & Sewer Capital Projects	\$ 15,535,000	\$ 3,320,000	\$ 3,330,000	\$ 2,550,000	\$ 1,005,000	\$ 3,655,000	\$ 375,000	\$ 375,000	\$ 375,000	\$ 275,000	\$ 275,000

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 & Sewer Capital Projects								
1	New Public Works Building Build Out/Fit Out	\$ 400,000	0.00%	0.00%	100.00%	\$ 0	\$ 0	\$ 400,000
2	New Public Works Garage Structure	300,000	0.00%	0.00%	100.00%	0	0	300,000
3	New Public Works Compound Fencing, Lighting, and Security	220,000	0.00%	0.00%	100.00%	0	0	220,000
4	Utilities Construction Commerce Park	2,920,000	0.00%	0.00%	100.00%	0	0	2,920,000
5	Replacement of Existing Water Lines	500,000	0.00%	100.00%	0.00%	0	500,000	0
6	Smart Water Meters	500,000	100.00%	0.00%	0.00%	500,000	0	0
7	Replace W. Grubb St Force Main	4,000,000	25.00%	75.00%	0.00%	1,000,000	3,000,000	0
8	Sewer Line Clean Outs	1,575,000	0.00%	100.00%	0.00%	0	1,575,000	0
9	Replace/Upgrade Feed and Seed Pump Station	275,000	0.00%	100.00%	0.00%	0	275,000	0
10	Replace/Upgrade Cemetary Pump Station	510,000	0.00%	100.00%	0.00%	0	510,000	0
11	Replace/Upgrade Willow Pump Station	410,000	0.00%	100.00%	0.00%	0	410,000	0
12	Sewer Line Replacements	320,000	0.00%	100.00%	0.00%	0	320,000	0
13	Waste water Mechanical Operations Structure	50,000	0.00%	0.00%	100.00%	0	0	50,000
14	WWTP Operational Controls and Monitoring Repairs	720,000	0.00%	100.00%	0.00%	0	720,000	0
15	3rd Clarifier Plant Expansion	1,495,000	100.00%	0.00%	0.00%	1,495,000	0	0
16	WWTP Operations Recovery Rehabilitation	500,000	0.00%	100.00%	0.00%	0	500,000	0
17	WWTP Conversion of Gas to Solid Chlorination System	340,000	0.00%	0.00%	100.00%	0	0	340,000
18	WWTP Effluent System Recovery	500,000	0.00%	100.00%	0.00%	0	500,000	0
19	Total - All Capital Projects	\$15,535,000				\$ 2,995,000	\$ 8,310,000	\$ 4,230,000

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:								
20	Treatment Projects	\$ 0				\$ 0	\$ 0	\$ 0
21	Transmission Projects	5,000,000				1,500,000	3,500,000	0
22	Other Projects	1,920,000				0	0	1,920,000
23	Total Water	<u>\$ 6,920,000</u>				<u>\$ 1,500,000</u>	<u>\$ 3,500,000</u>	<u>\$ 1,920,000</u>
Wastewater:								
24	Treatment Projects	\$ 3,605,000				\$ 1,495,000	\$ 1,720,000	\$ 390,000
25	Transmission Projects	3,090,000				0	3,090,000	0
26	Other Projects	1,920,000				0	0	1,920,000
27	Total Wastewater	<u>\$ 8,615,000</u>				<u>\$ 1,495,000</u>	<u>\$ 4,810,000</u>	<u>\$ 2,310,000</u>
Combined:								
28	Treatment Projects	\$ 3,605,000				\$ 1,495,000	\$ 1,720,000	\$ 390,000
29	Transmission Projects	8,090,000				1,500,000	6,590,000	0
30	Other Projects	3,840,000				0	0	3,840,000
31	Grand Total	<u>\$15,535,000</u>				<u>\$ 2,995,000</u>	<u>\$ 8,310,000</u>	<u>\$ 4,230,000</u>

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	\$ 5,009,323
2	Transmission Facilities	258,658
3	Subtotal	\$ 5,267,981 ⁽¹⁾
Less Debt Service Principal:		
4	Treatment Facilities	\$ (1,820,935)
5	Transmission Facilities	(94,025)
6	Subtotal	\$ (1,914,960) ⁽²⁾
Net Recoverable Existing Facilities:		
7	Treatment Facilities	\$ 3,188,388
8	Transmission Facilities	164,633
9	Total	\$ 3,353,021
Capital Improvement Program:		
10	Treatment Facilities	\$ 0
11	Transmission Facilities	1,500,000
12	Subtotal	\$ 1,500,000
Less 25% CIP Adjustment:		
13	Treatment Facilities 25%	\$ 0
14	Transmission Facilities 25%	(375,000)
15	Subtotal	\$ (375,000) ⁽³⁾
Net Recoverable CIP:		
16	Treatment Facilities	\$ 0
17	Transmission Facilities	1,125,000
18	Total	\$ 1,125,000
Net Capital Costs:		
19	Treatment Facilities	\$ 3,188,388
20	Transmission Facilities	1,289,633
21	Net Recoverable Costs	\$ 4,478,021

Exhibit 4
System Development Fee Analysis
Calculation of System Development Fee Per ERU
Water System

Line	Description		Total
Available System Capacity (MGD)			
<u>Treatment Capacity:</u>			
22	Hertford Water Treatment Plant		0.500
23	Additional CIP Capacity		0.000
24	Total Treatment Capacity		0.500
<u>Average Day Capacity Adjustment:</u>			
25	Treatment Capacity Based on Max/Avg Day Factor	1.50	0.333
26	Unaccounted-For Water Capacity Adjustment	15.0%	(4)
27	Estimated Treatment Capacity		0.283
<u>Estimated Transmission System Capacity:</u>			
28	Total Treatment Capacity		0.500
29	Transmission-to-Treatment Capacity Factor	1.50	
30	Assumed Existing Transmission Capacity		0.750 (5)
31	Unaccounted-For Water Capacity Adjustment	15.0%	
32	Estimated Transmission Capacity		0.638 (5)
Estimated Cost Per Gallon of Capacity			
<u>Estimated Cost Per Gallon of Capacity:</u>			
33	Treatment (\$/Gallon)		\$ 11.27
34	Transmission (\$/Gallon)		2.02
35	Total Cost Per Gallon of Capacity		\$ 13.29
36	Assumed Standard Level of Service Per ERU (GPD of Capacity)		400 (6)
37	Max/Avg Day Adjustment Factor	1.50	
38	Assumed Standard Level of Service Per ERU (GPD of Capacity)		267

Exhibit 4
System Development Fee Analysis
Calculation of System Development Fee Per ERU
Water System

Line	Description	Total
Calculation of Fee Per ERU		
<u>Calculation of SDF Per ERU:</u>		
39	Treatment Facilities	\$ 3,009
40	Transmission Facilities	539
41	Combined Cost	\$ 3,548
<u>Adjusted Fee - Treatment:</u>		
42	Calculated Fee Per ERU	\$ 3,009
43	Less Rounding Adjustment	(9)
44	Adjusted Fee	\$ 3,000
<u>Credit Adjusted Fee - Transmission:</u>		
45	Calculated Fee Per ERU	\$ 539
46	Less Rounding Adjustment	(9)
47	Adjusted Fee	\$ 530
<u>Proposed SDF Per ERU (Rounded):</u>		
48	Treatment Facilities	\$ 3,000
49	Transmission Facilities	530
50	Combined Cost	\$ 3,530

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) 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. 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 requirements.
- (4) 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. Based on information provided by staff, this analysis assumes losses of 15.0%.
- (5) It is assumed that the existing transmission facilities are capable of providing average water flow at least 1.50-times the permitted treatment capacity. In addition, similar to the methodology utilized for water treatment, an adjustment is made for unaccounted-for water. Based on information provided by staff, this analysis assumes losses of 15.0%.
- (6) 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). Although the Codes do not specifically indicate whether 400 gpd is max-day or average-day, for the purpose of this analysis, it is assumed to be a max-day flow amount.

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	\$ 10,663,964
2	Transmission Facilities	1,068,860
3	Subtotal	\$ 11,732,824 ⁽¹⁾
Less Debt Service Principal:		
4	Treatment Facilities	\$ (3,046,366)
5	Transmission Facilities	(305,341)
6	Subtotal	\$ (3,351,707) ⁽²⁾
Net Recoverable Existing Facilities:		
7	Treatment Facilities	\$ 7,617,598
8	Transmission Facilities	763,519
9	Total	\$ 8,381,117
Capital Improvement Program:		
10	Treatment Facilities	\$ 1,495,000
11	Transmission Facilities	0
12	Subtotal	\$ 1,495,000
Less 25% CIP Adjustment:		
13	Treatment Facilities	25% \$ (373,750)
14	Transmission Facilities	25% 0
15	Subtotal	\$ (373,750) ⁽³⁾
Net Recoverable CIP:		
16	Treatment Facilities	\$ 1,121,250
17	Transmission Facilities	0
18	Total	\$ 1,121,250
Net Capital Costs:		
19	Treatment Facilities	\$ 8,738,848
20	Transmission Facilities	763,519
21	Net Recoverable Costs	\$ 9,502,367

Exhibit 5
System Development Fee Analysis
Calculation of System Development Fee Per ERU
Wastewater System

Line	Description	Total
Available System Capacity (MGD)		
<u>Treatment Capacity:</u>		
22	Hertford Wastewater Treatment Plant	0.750
23	Additional CIP Capacity	0.250
24	Total Existing Treatment Capacity	1.000
<u>Treatment Capacity:</u>		
25	Average Day Treatment Capacity (MGD)	1.000
26	I&I Capacity Adjustment	20.0%
27	Adjusted Average Day Treatment Capacity	0.800 ⁽⁴⁾
<u>Estimated Transmission System Capacity:</u>		
28	Total Treatment Capacity	1.000
29	Transmission-to-Treatment Capacity Factor	1.33
30	Assumed Gross Transmission Capacity	1.330 ⁽⁵⁾
31	I&I Capacity Adjustment	20.0%
32	Estimated Transmission Capacity	1.064 ⁽⁵⁾
Calculation of Fee Per ERU		
<u>Calculation of SDF Per ERU:</u>		
33	Treatment Facilities	\$ 10.92
34	Transmission Facilities	0.72
35	Combined Cost	\$ 11.64
36	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 Fee Per ERU		
<u>Calculation of SDF Per ERU:</u>		
37	Treatment Facilities	\$ 3,931
38	Transmission Facilities	259
39	Combined Cost	\$ 4,190
<u>Adjusted Fee - Treatment:</u>		
40	Calculated Fee Per ERU	\$ 3,931
41	Less Rounding Adjustment	(1)
42	Adjusted Fee	\$ 3,930
<u>Credit Adjusted Fee - Transmission:</u>		
43	Calculated Fee Per ERU	\$ 259
44	Less Rounding Adjustment	(9)
45	Adjusted Fee	\$ 250
<u>Proposed SDF Per ERU (Rounded):</u>		
46	Treatment Facilities	\$ 3,930
47	Transmission Facilities	250
48	Combined Cost	\$ 4,180

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) 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. 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 requirements.
- (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 1.33-times the treatment capacity as afurther adjusted for I&I.
- (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.

Exhibit 6
System Development Fee Analysis
Summary of Proposed System Development Fees
Water & Wastewater Systems

Line	Description	ERU Factor	Fees by System		Combined Fee
			Water	Wastewater	
FEE COMPARISON					
<u>Residential (per Dwelling Unit):</u>					
1	Existing	1.00	\$ 350	\$ 550	\$ 900
2	Proposed/Calculated	1.00	\$ 3,530	\$ 4,180	\$ 7,710
3	Difference		\$ 3,180	\$ 3,630	\$ 6,810
FEE BY METER SIZE - EXISTING					
<u>Meter Size:</u>					
4	5/8 x 3/4 Inch		\$ 350	\$ 550	\$ 900
5	1.0 Inch		\$ 550	\$ 850	\$ 1,400
6	1.5 Inch		\$ 2,000	\$ 3,000	\$ 5,000
7	2.0 Inch		\$ 3,500	\$ 5,500	\$ 9,000
8	4.0 Inch		\$ 8,000	\$ 12,000	\$ 20,000
9	6.0 Inch		\$ 10,000	\$ 15,000	\$ 25,000
10	8.0 Inch		\$ 12,000	\$ 18,000	\$ 30,000
11	10.0 Inch		\$ 14,000	\$ 21,000	\$ 35,000
12	12.0 Inch		\$ 15,000	\$ 25,000	\$ 40,000
FEE BY METER SIZE - PROPOSED ⁽¹⁾					
<u>Meter Size:</u>					
13	5/8 x 3/4 Inch	1.00	\$ 3,530	\$ 4,180	\$ 7,710
14	1.0 Inch	2.50	\$ 8,825	\$ 10,450	\$ 19,275
15	1.5 Inch	5.00	\$ 17,650	\$ 20,900	\$ 38,550
16	2.0 Inch	8.00	\$ 28,240	\$ 33,440	\$ 61,680
17	3.0 Inch	16.00	\$ 56,480	\$ 66,880	\$ 123,360
18	4.0 Inch	25.00	\$ 88,250	\$ 104,500	\$ 192,750
19	6.0 Inch	50.00	\$ 176,500	\$ 209,000	\$ 385,500
20	8.0 Inch	80.00	\$ 282,400	\$ 334,400	\$ 616,800
21	10.0 Inch	115.00	\$ 405,950	\$ 480,700	\$ 886,650
22	12.0 Inch	215.00	\$ 758,950	\$ 898,700	\$ 1,657,650

Exhibit 6
System Development Fee Analysis
Summary of Proposed System Development Fees
Water & Wastewater Systems

Line	Description	ERU Factor	Fees by System		Combined Fee
			Water	Wastewater	
OPTIONAL ACTUAL FLOW BASIS ⁽²⁾					
<u>Charge Per Gallon of Capacity (GPD):</u>					
23	Treatment (\$/Gallon)		\$ 11.27	\$ 10.92	\$ 22.19
24	Transmission (\$/Gallon)		2.02	0.72	2.74
25	Cost Per GPD		<u>\$ 13.29</u>	<u>\$ 11.64</u>	<u>\$ 24.93</u>

Notes:

- (1) The proposed system development 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 and WEF.
- (2) In situations where 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 connection. The estimated capacity needs will be based on the amount determined by the utility's engineering staff to be appropriate.

Exhibit 7
System Development Fee Analysis
Comparison With Other Utility Systems
Water & Wastewater Systems

Line	Description	Water	Wastewater	Combined
<u>Town of Hertford:</u>				
1	Existing Fee Per ERU	\$ 350	\$ 550	\$ 900
2	Proposed Fee Per ERU	\$ 3,530	\$ 4,180	\$ 7,710
<u>Other Utilities - Existing Fees:</u> ⁽¹⁾				
3	City of Raleigh, NC	\$ 1,447	\$ 2,223	\$ 3,670
4	Lincoln County, NC	\$ 3,102	\$ 1,621	\$ 4,723
5	Orange Water & Sewer Authority ⁽²⁾	\$ 1,855	\$ 2,976	\$ 4,831
6	Town of Cary, NC ⁽²⁾	\$ 2,038	\$ 2,865	\$ 4,903
7	Town of Mooresville, NC	\$ 2,270	\$ 3,150	\$ 5,420
8	Cape Fear Public Utilities Authority	\$ 2,270	\$ 3,290	\$ 5,560
9	City of Durham, NC	\$ 2,591	\$ 3,028	\$ 5,619
10	Mount Holly, NC	\$ 1,230	\$ 4,665	\$ 5,895
11	Town of Harrisburg, NC	\$ 4,080	\$ 2,830	\$ 6,910
12	Harnett Regional Water	\$ 3,000	\$ 4,000	\$ 7,000
13	Onslow Water & Sewer Authority	\$ 2,983	\$ 4,823	\$ 7,806
14	Union County, NC	\$ 1,678	\$ 6,412	\$ 8,090
15	Brunswick Regional Water & Sewer	\$ 3,200	\$ 5,200	\$ 8,400
16	Durham County, NC ⁽³⁾	\$ 2,591	\$ 6,000	\$ 8,591
17	Camden County, NC	\$ 2,500	\$ 7,400	\$ 9,900
18	Johnston County Public Utilities	\$ 6,550	\$ 4,020	\$ 10,570
19	Average of Other Utilities	\$ 2,712	\$ 4,031	\$ 6,743

Notes:

- (1) Developed from fee information made available by the other utilities included. This study has attempted to ensure that fees included for comparison are applicable to capital recovery fees consistent with the intent of the proposed fees developed herein. However, due to differences in terminology, fee structure and method of applying fees, such a direct comparison is often difficult to establish.
- (2) Assumes a home in the 2,401-3,100 square foot range.
- (3) Water services are provided by the City of Durham.