

April 16, 2018

Mr. Eric Davis, Finance Director  
City of Kannapolis  
401 Laureate Way  
Kannapolis, NC 28081

**Subject: Water and Wastewater System Development Fee Study**

Dear Mr. Davis,

WILLDAN FINANCIAL SERVICES (“Willdan”) is pleased to submit to the City of Kannapolis, North Carolina (the "City") 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.

	<b>GENERAL</b>
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System development fees (“SDF” or “SDFs”) and other comparable charges are often referred to by a number of different 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) in order 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 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 as long as they meet a Rational Nexus Test. In accordance with common court rulings, the rational nexus test requires that certain conditions be met in order 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; and

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 10 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.

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 CAPACITY-RELATED FEES**

The City currently imposes capacity-related charges to new customers requiring water and/or wastewater utility service. The current charges are identified by the City as Connection Fees and are incremented by meter size such that the larger the meter the higher the fee. However, the current fee structure is not exactly consistent with meter equivalency factors established by the American Water Works Association (AWWA). As will be addressed later in this Report, the proposed fees will utilize a structure that applies the AWWA meter equivalency factors for connections larger than the standard 5/8x3/4-inch meter size. Also, as previously addressed, the term connection fee is consistent with industry terminology commonly used by other utility

systems for similar charges. However, to be consistent with the definitions provided in Chapter 162A, the capital cost recovery terminology utilized in this Report will be System Development Fees.

## EXISTING TAP FEES

The City currently imposes tap 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 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 recovering the major capital costs incurred in making water and wastewater utility service available to the general public. The proposed fees designed herein are intended to be in addition to the existing tap fees. As such, it is proposed that the existing tap fees continue to be imposed. It should be noted that, for the purpose of the Report, the existing tap 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 City 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 many general 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.

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 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 is based on the assumption 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 1**.

Description	RCNLD Included For Recovery		
	Water	Wastewater	Total
<b>Utility Assets:</b>			
Water Treatment	\$ 19,047,516	\$ 0	\$ 19,047,516
Public Works Center Land	0	0	0
Buildings	0	0	0
Meter Exchange Program	0	0	0
Distribution-Water	49,451,437	0	49,451,437
Sewer Collection	0	43,898,737	43,898,737
Heavy Equipment (HE)	0	0	0
Infrastructure	720,198	0	720,198
Major Equipment (Vehicles)	0	0	0
<b>Total</b>	<b>\$ 69,219,151</b>	<b>\$ 43,898,737</b>	<b>\$113,117,888</b>

*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 City has prepared a CIP that provides a listing of individual projects and anticipated construction costs for fiscal years 2018 through 2027 (i.e. a 10-year CIP). The CIP is provided in **Exhibit 2**. Similar to 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 growth-related projects (i.e. project costs recoverable from SDFs) are provided in **Exhibit 3**. The growth-related percentages were provided by City staff. The Exhibit also provides a summary allocation of the recoverable costs between the treatment and transmission components. It should be noted that the City’s wastewater flows are treated by the Water and Sewer Authority of Cabarrus County (WSACC). As such, there are no treatment-related capital costs included in the capital plan for the wastewater system. Additionally, the City’s CIP did not include any treatment-related capital items for the water system in the 10-year CIP provided. The projected growth-related projects and capital costs included in the analysis are summarized in **Table 2**.



**TABLE 2  
 SUMMARY OF CIP**

Description	Recoverable Capital	Excluded Capital	Total CIP
<b><u>Water Summary:</u></b>			
Treatment Projects	\$ 0	\$ 0	\$ 0
Transmission Projects	14,570,000	18,229,000	32,799,000
Other Projects	0	0	0
Subtotal	\$ 14,570,000	\$ 18,229,000	\$ 32,799,000
<b><u>Wastewater Summary:</u></b>			
Treatment Projects	\$ 0	\$ 0	\$ 0
Transmission Projects	14,422,000	22,543,000	36,965,000
Other Projects	0	0	0
Subtotal	\$ 14,422,000	\$ 22,543,000	\$ 36,965,000
<b><u>Combined Summary:</u></b>			
Treatment Projects	\$ 0	\$ 0	\$ 0
Transmission Projects	28,992,000	40,772,000	69,764,000
Other Projects	0	0	0
Total	\$ 28,992,000	\$ 40,772,000	\$ 69,764,000

**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 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 3**.

Description	Combined Recoverable Facilities		
	Water	Wastewater	Total
<b>Existing Facilities:</b>			
Treatment Facilities	\$ 19,047,516	\$ 0	\$ 19,047,516
Transmission Facilities	50,171,635	43,898,737	94,070,372
<b>Subtotal</b>	\$ 69,219,151	\$ 43,898,737	\$113,117,888
<b>Capital Improvement Program:</b>			
Treatment Facilities	\$ 0	\$ 0	\$ 0
Transmission Facilities	14,570,000	14,422,000	28,992,000
<b>Subtotal</b>	\$ 14,570,000	\$ 14,422,000	\$ 28,992,000
<b>Combined Facilities:</b>			
Treatment Facilities	\$ 19,047,516	\$ 0	\$ 19,047,516
Transmission Facilities	64,741,635	58,320,737	123,062,372
<b>Total</b>	\$ 83,789,151	\$ 58,320,737	\$142,109,888

	<b>DEBT SERVICE CREDIT</b>
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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). In order 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. This credit is equal to the outstanding principal remaining on all utility-related debt. The debt credit amount 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 component. The debt service credit meets the requirements of Chapter 162A and is utilized in the development of the proposed SDFs as discussed in the following section. A summary of the combined recoverable facilities as adjusted for the debt service credit is provided in **Table 4**.

Total	Net Recoverable Facilities		
	Water	Wastewater	Total
<b>Combined Facilities:</b>			
Treatment Facilities	\$ 19,047,516	\$ 0	\$ 19,047,516
Transmission Facilities	64,741,635	58,320,737	123,062,372
<b>Subtotal</b>	\$ 83,789,151	\$ 58,320,737	\$142,109,888
<b>Less Debt Service Principal:</b>			
Treatment Facilities	\$ (9,273,824)	\$ 0	\$ (9,273,824)
Transmission Facilities	(24,427,485)	(17,368,306)	(41,795,790)
<b>Subtotal</b>	\$ (33,701,309)	\$ (17,368,306)	\$ (51,069,614)
<b>Net Existing Facilities:</b>			
Treatment Facilities	\$ 9,773,692	\$ 0	\$ 9,773,692
Transmission Facilities	40,314,150	40,952,431	81,266,582
<b>Net Recoverable Facilities</b>	\$ 50,087,842	\$ 40,952,431	\$ 91,040,274

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. In order 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 can rely on information provided by the City and included in master planning documents, as well as assumptions based on common industry standards.

### ***Water Treatment***

The City currently owns and operates a water treatment plant with a maximum day design capacity of 15.0 MGD (million gallons per day). However, due to inter-basin transfer requirements imposed by the State of North Carolina, the source supply of water available to the plant is limited. The City also has inter-local water purchase contracts with Salisbury, Albemarle (4.0 MGD) and Concord (1.5 MGD), although the Salisbury connection is for emergencies only and therefore has been excluded from available capacity in the fee calculation. Between the treatment plant and the purchase contracts, the City has a total water capacity of 20.5 MGD. However, a capacity adjustment is made herein to acknowledge that the design capacity of the City's water treatment plant is limited by the raw water source and the State's inter-basin transfer requirements. As such, the total maximum day capacity of all water sources, as adjusted, is 13.0 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 1.5 times the available capacity on an ADF basis. Applying this factor to the rated capacity for the water treatment plant (as adjusted) and other water supply sources results in an average daily flow capacity of 8.67 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 an average line-loss factor of 15.0% 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 7.37 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 staff, it is assumed that the transmission facilities are capable of providing water flow at least equal to the unadjusted treatment flow amount of 20.5 MGD. As with the treatment capacity, the transmission capacity is adjusted for a line loss factor of 15.0%, resulting in an average daily capacity of 17.43 MGD.

### ***Wastewater Transmission***

As previously addressed, the City currently has no wastewater treatment facilities. Rather, as a participating member and wholesale customer, the City discharges its sewer to the Water and Sewer Authority of Cabarrus County (WSACC) for treatment and disposal. As such, in developing the wastewater fees proposed herein, the analysis only includes a transmission

component. WSACC applies its own fees to new customers for the recovery of wastewater treatment capacity costs.

Based on information provided by staff, the City has available treatment capacity of 6.09 MGD from WSACC. 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 capable of providing capacity equal to 2 times the available WSACC capacity, adjusted for an infiltration and inflow (I&I) factor of 20%. As with the line loss in the water system, the wastewater system is impacted by inflow and infiltration (I&I) into the wastewater collection system. In essence, the impact of I&I reduces the level of capacity that is available for use by existing and future system customers. The resulting transmission capacity amount is 9.74 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 \$3.47 per gallon of water capacity (combined treatment and transmission). Additionally, it is estimated that the wastewater facility costs are \$3.90 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 in order 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. In order 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 3.0 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.

Applying the average day LOS amounts to the estimated unit costs per gallon of capacity, and adjusting for the applicable debt service credits results in the proposed City water and wastewater SDFs of \$1,380 and \$1,400, respectively, 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 5**.

Description	Fee Per ERU		
	Existing	Proposed	Difference
<b>Combined Fees:</b>			
Water	\$ 1,350	\$ 1,450	\$ 100
Wastewater	800	1,510	710
City Total	\$ 2,150	\$ 2,960	\$ 810
WASACC (Sewer)	1,397	1,397	0
<b>Total</b>	<b>\$ 3,547</b>	<b>\$ 4,357</b>	<b>\$ 810</b>

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 City’s existing methodology for incrementing the fees for larger connection sizes is appropriate but not based on standardized demand criteria established by the 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. In addition to the proposed transmission SDF for wastewater, a new wastewater customer will also be assessed a fee from WSACC for the treatment component as shown in **Table 6** and **Exhibit 6**. The proposed water and wastewater SDFs for the various meter sizes are developed in **Exhibit 6** and summarized in **Table 6**.

**TABLE 6  
PROPOSED SYSTEM DEVELOPMENT FEES**

Description	Meter Factor <sup>(1)</sup>	Proposed City Fees		WASCC Fees	Total
		Water	Wastewater		
<b>Meter Size:</b>					
3/4 Inch	1.00	\$ 1,450	\$ 1,510	\$ 1,397	\$ 4,357
1.0 Inch	2.50	\$ 3,625	\$ 3,775	\$ 3,492	\$ 10,892
1.5 Inch	5.00	\$ 7,250	\$ 7,550	\$ 6,985	\$ 21,785
2.0 Inch	8.00	\$ 11,600	\$ 12,080	\$ 11,176	\$ 34,856
3.0 Inch	16.00	\$ 23,200	\$ 24,160	\$ 22,352	\$ 69,712
4.0 Inch	25.00	\$ 36,250	\$ 37,750	\$ 34,925	\$ 108,925
6.0 Inch	50.00	\$ 72,500	\$ 75,500	\$ 69,850	\$ 217,850
8.0 Inch	80.00	\$ 116,000	\$ 120,800	\$ 111,760	\$ 348,560
10.0 Inch	215.00	\$ 166,750	\$ 173,650	\$ 160,655	\$ 501,055

(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 City’s Director of Public Works. 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 City will require certified engineering documentation defining the capacity utilization needs for the new customer.

As another example of utilizing a flexible methodology, the City 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 home, 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

In order to provide the City 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 City, 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 City 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, 2018. This is the deadline for meeting all of the requirements needed for utility systems to have legally supported SDFs in accordance with Chapter 162A.

## 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 City to adopt 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 becoming more 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 City'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 developed 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 City, as well as the 10-year capital improvement plan prepared by the City.
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 City currently imposes tap fees and other related charges 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.
8. The City's monthly user rates and charges for water and wastewater utility service include a surcharge for customers located outside the incorporated limits of the City. However, no such surcharge is proposed for purposes of applying the SDFs. The rationale for this proposal is that, while operating costs may increase for providing service outside of the City limits, the capital costs per gallon of capacity for constructing major system facilities do not typically differ based on the location of the customer.
9. The discussions developed herein utilize the terminology of "System Development Fees" to be consistent with the terminology as defined in Chapter 162A.

## RECOMMENDATIONS

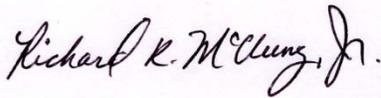
Based on the reviews, analyses and assumptions discussed herein, as well as the resulting conclusions provided above, it is respectfully recommended that the City:

1. Adopt the proposed SDFs and application methodology as developed in this Report;
2. Enact the proposed SDFs to become effective on July 1, 2018 or other such date as determined appropriate by the City 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.

We appreciate the opportunity to be of service to the City in this matter. In addition, we would like to thank you and the other members of the City 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.



Richard K. McClung, Jr.  
Principal Consultant



Daryll B. Parker  
Principal Consultant

**Members of the Public – If you have any questions or comments regarding this report please email: [aprivettekeller@kannapolisnc.gov](mailto:aprivettekeller@kannapolisnc.gov)**

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