City of Lincolnton
System Development Fee Study



WithersRavenel
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Introduction

WithersRavenel was commissioned by the City of Lincolnton (City) to prepare a written analysis calculating their maximum allowable water and sewer System Development Fees (SDFs) under the Public Water and Sewer System Development Fee Act (the Act), Article 8, Chapter 162A of the North Carolina General Statutes. The Act took effect October 1, 2017, and required that SDFs adopted by local governmental units prior to that date be conformed to the Act by July 1, 2018. SDFs represent financial assessments imposed on new customers to generate revenue for capital infrastructure projects necessitated by their development. These fees are one-time charges imposed at one of the following times depending upon the type of development, as outlined in NCGS 162A-213:

1. New development that involves subdivision of land, the later of:
   a. Application for a building permit, or
   b. When service for development is committed by local government.

2. All other development, the earlier of:
   a. Time of application for connection of individual unit to sewer service, or
   b. When service for development is committed by local government.

They are designed to recover all or a portion of the capital investment made by the City to provide sufficient capacity in its systems to serve new users. It should be emphasized that SDFs are charged to only new customers and consequently reduce the burden on existing users for substantial future capital costs "necessitated by and attributable to new development."

The following are notable SDF attributes according to the University of North Carolina Environmental Finance Center's latest survey (2024), which had 78 unique utility respondents:

- Between 50% and 60% of the respondents in North Carolina include SDFs in their water and sewer rate structures.

- 70% of residential and 74% of nonresidential SDFs either vary by meter size or are fixed. Fees based upon usage, acreage, square footage, number of bedrooms, or line size are uncommon in North Carolina.

- Most providers used either the combined method (46%) or the buy-in method (42%) to calculate their SDFs.

This report is for consideration by the City Council in adopting SDFs to be paid by the owners / developers of new development. Although the SDFs calculated by this analysis represent the maximum SDFs permissible under the Act, the City Council has full authority to adopt SDFs below that maximum. This report is one of many factors that may be considered by the City Council in striking the proper balance between the cost of capital water and sewer improvements necessitated by and attributable to new development, recouping costs of existing water and sewer facilities serving new development, and the City's ability to attract new development in comparison to other local governmental units with lower SDFs. Simply put, for fees below the maximum SDFs calculated in this report, the City Council has full authority to exercise legislative / public policy / political determinations in adopting SDFs which, all things considered, best meet the City's needs and objectives.

In evaluating this report, the City should consider the potential that, after adoption of SDFs, some of the anticipated new developments on which this analysis is based are not approved or constructed. This report relies on expected new development identified by the City's Capital Improvement Plan (CIP). If, following adoption of SDFs, that new development is not approved or constructed, the actual need for water and capital improvements should be less than the expected need utilized in this analysis, and the actual cost of those improvements less than the cost calculated by this report. Similarly, the City should consider that this analysis utilizes certain estimates discussed below. While those estimates are based upon generally accepted accounting, engineering, and planning methodologies, and are considered reasonable, by nature an estimate could differ from actual figures.

Methodologies

System Development Fees (SDFs) are financial charges applied to new customers connecting to water and sewer systems. These fees are designed to allocate the costs of expanding system capacity needed to support new development. Revenue from SDFs help fund capital improvements that accommodate growth, recovering the cost of existing infrastructure used by new customers, or achieving a combination of both.

It is important to distinguish SDFs from other routine charges. They do not include administrative fees, plan reviews or inspection costs, tap or connection fees, availability charges, or other development-related expenses unless a formal written agreement specifically provides for credits to offset such costs.

Providers may use one of three (3) primary methods to calculate SDFs: the Buy-In Method, the Incremental or Marginal Cost Method, or the Combined Method. Each method has its own applicability and procedures, which are discussed in the following sections.

Buy-In Method

The Buy-In Method is applied when a provider has adequate capacity to serve both current users and foreseeable future demand. It is also suitable for systems where core components are not projected to require significant expansion. This methodology is based on an equity-sharing principle. It recognizes the historical financial contributions of existing customers as built-in equity within the system. When new customers connect, they make proportional equity contributions that reflect their expected share of system usage. This contribution is calculated relative to the system's debt-free value, which represents the investment already made by existing customers. All revenue collected through the Buy-In Method is legally restricted by statute: it must be used solely for repairing or rehabilitating existing system assets or for recovering the cost of prior capital improvements that still have available capacity to serve new customers.

Incremental Cost Method

The Incremental Cost Method is applied when existing system facilities can adequately serve current users but lack capacity to accommodate new development, requiring expansions. It determines the incremental costs new development pays for the additional capacity it demands. This ensures that existing customers are protected from rate increases tied to growth-related infrastructure investments, including the debt service associated with financing those projects. This method requires a minimum 5-year and maximum 20-year capital improvement plan (CIP) to be utilized.

Under state statutes, the Incremental Cost Method must include a revenue credit. This credit serves as a mandatory deduction from the new development's calculated cost share. The deduction equals either the outstanding debt principal or the present value of the water and sewer revenues expected from the new development over the planning period, but no less than 25% of the aggregate cost of capital improvements. Consideration must also be given to the planned funding sources for the projects identified in the CIP. Projects that are funded from either grants or developer contributions are excluded from the SDF calculation as these are costs that are not incurred by the utility.

Combined Method

The Combined Method integrates components of both the Buy-In and Incremental Cost approaches. The calculation is the sum of the two (2) other methodologies. This approach is most suitable when the existing system retains some available capacity to accommodate new growth, yet the CIP also identifies specific projects required to fully serve the demands of future development. As a result, the SDF derived under the Combined Method reflects a balanced contribution of funding both from the use of existing, unutilized capacity and from the investment for upcoming infrastructure expansions necessary to support continued growth.

Considerations

Upon receiving SDF calculations, the City is required by the Act to adhere to the following procedures:

PUBLIC COMMENT & PUBLIC HEARING – the City must post the report on its website and allow for public comment on the analysis. The public comment period must allow the public to review the report for at least 45 days and solicit and furnish a means to submit written comments, which shall be considered by the preparer for modifications or revisions. The report must be prepared by a financial professional or a licensed professional engineer. After the minimum 45-day public comment period has expired, the City must conduct a public hearing prior to considering adoption of the analysis with any modifications or revisions. Certain costs may be subject to differing characterizations, and the City should evaluate differing characterizations and exercise its sound judgment. Subject to the maximum SDFs calculated by the report, the City Council has full authority to exercise legislative / public policy / political determinations in adopting SDFs which, all things considered, best meet the City's needs and objectives.

ADOPTION - After consideration of comments and the required public hearing, the SDFs can be adopted by the governing board. The SDF must be adopted by resolution or ordinance and published in the City's annual budget ordinance.

USE - The Act prescribes specific uses for the funds collected through SDFs. They include the following:

1. Costs of constructing capital improvements including, and limited to, any of the following:
    a. Construction contract prices.
    b. Surveying and engineering fees.
    c. Land acquisition cost.
    d. Principal and interest on bonds, notes, or other obligations issued by or on behalf of the local governmental unit to finance any of the costs listed in 1a through 1c above.
2. Professional fees incurred by the local governmental unit for preparation of the system development fee analysis.
3. If no capital improvements are planned for construction within five (5) years or the foregoing costs are otherwise paid or provided for, then principal and interest on bonds, notes, or other obligations issued by or on behalf of a local governmental unit to finance the construction or acquisition of existing capital improvements.
4. Contractual obligations to another local government unit for capacity in such facilities owned by another local government unit.
5. Previously completed capital improvements for which capacity exists and for capital rehabilitation projects.

After reviewing the alternative SDF methodologies, the consensus with City staff was to pursue the Combined methodology as some capacity currently exists for new customers, but additional capacity is projected in the CIP to accommodate future planned growth. WithersRavenel's approach and conclusions are as follows.

Approach

In performing the analysis, the City provided a detailed listing of the current water and sewer system assets. The Book Asset Detail report contained the original cost, date placed in service, and the accumulated depreciation for each asset. Assets originally costing under $50,000 are removed from the analysis as it assumes that any asset that originally cost less than the limit amount is not a major facility that provides a system-wide benefit. WithersRavenel determined the value of all existing City assets by adjusting the original costs to current dollars using the Handy-Whitman Index of Public Utility Construction Costs for the South Atlantic Region. This index calculates the cost trends for utility systems, including water and sewer systems, and is commonly used to determine utility valuations for replacement cost methods. 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 depreciable value of each asset in today's dollars.

Water System

For the water SDF analyses, the existing assets are categorized based on the major components of Treatment and Transmission. The treatment category includes any treatment plant facilities, supply, and storage facilities. The transmission category consists of major water mains, tanks, and water pumping facilities. Any assets contributed by developers or funded from other sources including grants are not included for recovery through the SDFs. The existing recoverable water capital asset cost allocations included in the analysis are summarized in Table 1.

Table 1
Summary of Water System Asset Values

WATER	
Transmission	**14,667,453.37**
Steel Mains	13,758,632.87
Pumping Structures & Improvements	908,820.50
Treatment	**15,477,650.91**
Treatment Structures & Improvements	14,060,208.17
Pumping Structures & Improvements	1,157,558.47
Small Treatment Plant Equip.	259,884.27
Grand Total	**30,145,104.28**

Providers commonly finance major capital improvements and system expansions through debt. Typically, the associated debt service payments are recovered through monthly user rates and charges applied to all customers, supplemented by other available revenue sources. To prevent new customers from effectively paying twice for existing capital facilities, the SDF analysis incorporates a debt service credit for those facilities. The credit equals the outstanding principal balance on all utility-related debt. Its value is based on information provided by City staff regarding the specific capital projects financed through each debt. Table 2 presents a summary of the existing recoverable capital facilities, adjusted to reflect the applicable debt service credits.

Table 2
Water System Asset Values After Debt Reduction

Existing Facilities:	
Treatment Facilities	$ 15,477,651
Transmission Facilities	14,667,453
Subtotal	$ 30,145,104
Less Debt Service Principal:	
Treatment Facilities	$ 0
Transmission Facilities	0
Subtotal	$ 0
Net Recoverable Existing Facilities:	
Treatment Facilities	$ 15,477,651
Transmission Facilities	14,667,453
Total	$ 30,145,104

When recovering the City's future asset costs, new development is assigned the incremental cost of system expansions required to serve it. Under state statutes, this method requires a minimum five-year Capital Improvement Plan (CIP) that details both the costs associated with new capacity and the schedule for those expenditures. It is also essential to account for the planned funding sources of the CIP projects. Projects financed through grants or developer contributions are excluded from the SDF calculation, as these costs are not incurred by the City. The City provided a CIP identifying key strategic initiatives including the expansion of their water treatment for system operations and future growth. WithersRavenel worked with the City on evaluating individual projects, adjusted construction costs based upon current estimates, and adjusted for inflation for fiscal years 2027 through 2035. The updated CIP is summarized in Table 3.

Table 3
Water Capital Improvements Plan

Increase Capacity?	PROJECT LOCATION	TOTAL COST	Percentage Allocated			Amount Allocated			System	Functional Allocation
			Expansion / Upgrade	R&R	Other	Expansion / Upgrade	R&R	Other		
WATER IMPROVEMENTS										
N	Remote Disconnect Meters & Installation (100)	86,000	0%	100%	0%	$ -	$ 86,000	$ -	Water	Transmission
N	Courthouse Area Water Main Improvements	420,000	0%	100%	0%	$ -	$ 420,000	$ -	Water	Transmission
N	Downtown Water Line and Valve Replacement	7,294,000	0%	100%	0%	$ -	$ 7,294,000	$ -	Water	Transmission
N	System Wide Hydraulic Model Development	236,000	0%	100%	0%	$ -	$ 236,000	$ -	Water	Transmission
Y	Country Club Rd Pump Station and Generator	586,250	0%	100%	0%	$ -	$ 586,250	$ -	Water	Transmission
Y	E. Pine Street WM Replacement (N. Aspen St. to N. Poplar St.) Apprx. 1,000-LF of 4" & 6" CIP to 8" PVC	236,250	75%	25%	0%	$ 177,188	$ 59,063	$ -	Water	Transmission
Y	N. Academy St. WM Replacement (N. Academy St. between E.Main St. & E. Pine St.) Apprx. 550' of 4" CIP replaced with 8" PVC	129,938	75%	25%	0%	$ 97,453	$ 32,484	$ -	Water	Transmission
Y	S. & N. Flint 4" WM Replacement to an 8" DIP WM (between 600 N. Flint to E. Water St.) Apprx. 2700-LF; Bores will be needed under NC-	1,034,250	75%	25%	0%	$ 775,688	$ 258,563	$ -	Water	Transmission
Y	E. Pine St. 4" WM Replacement Phase II (between N. Cedar St. & N. Flint St.) Apprx. 1400-LF of 4" CIP replace with 8" PVC	330,750	75%	25%	0%	$ 248,063	$ 82,688	$ -	Water	Transmission
Y	1" WM Upgrade to 6" WM & FHs (D Street, and Lincoln St. between S. Laurel St. & Edwards St); 1300-LF along Lincoln Street and 1000-I	507,150	75%	25%	0%	$ 380,363	$ 126,788	$ -	Water	Transmission
Y	N. Oak Street from E. Main St. to Liberty St. 4" WM upgrade to 8" WM PVC; approximately 2500-LF	590,625	75%	25%	0%	$ 442,969	$ 147,656	$ -	Water	Transmission
Y	Jennings St. WM replacement 1" GV to 6" PVC between E. Park Drive & S. Poplar Street; 400-LF	88,200	75%	25%	0%	$ 66,150	$ 22,050	$ -	Water	Transmission
Y	S. Cedar St. WM replacement 1" GV to 6" PVC between Jennings St. & 816 S. Cedar St.; 700-LF	154,350	75%	25%	0%	$ 115,763	$ 38,588	$ -	Water	Transmission
Y	E Carter St. WM Replacement 1" GV to 6" PVC between E. Park Dr. & S. Cedar St.; 1,000-LF	220,500	75%	25%	0%	$ 165,375	$ 55,125	$ -	Water	Transmission
Y	Timberlane Dr. WM Replacement 2" to 6" PVC; 1,000-LF	220,500	75%	25%	0%	$ 165,375	$ 55,125	$ -	Water	Transmission
Y	Victor Woods LN WM Replacement 2" to 6" PVC; 1,200-LF	264,600	75%	25%	0%	$ 198,450	$ 66,150	$ -	Water	Transmission
Y	Rhyneland Rd WM Replacement 1" to 6" PVC; 2,000-LF	441,000	75%	25%	0%	$ 330,750	$ 110,250	$ -	Water	Transmission
Y	Springs RD WM Replacement 2" to 6" PVC; 800-LF	176,400	75%	25%	0%	$ 132,300	$ 44,100	$ -	Water	Transmission
Y	Lake St. WM Replacement 2" to 6" PVC between Salem Ch. Rd & Red St.; 700-LF	154,350	75%	25%	0%	$ 115,763	$ 38,588	$ -	Water	Transmission
Y	Putman St. WM Replacement 2" to 6" PVC between Huss St. to Little St.; 450-LF	99,225	75%	25%	0%	$ 74,419	$ 24,806	$ -	Water	Transmission
Y	Proctor St. WM Replacement 1-1/4" to 6" PVC between Huss St. to Arney St.; 750-LF	165,375	75%	25%	0%	$ 124,031	$ 41,344	$ -	Water	Transmission
Y	Huss St. WM Replacement 3" GV to 8" PVC between NC-27 to Proctor St.; 1100-LF	259,875	75%	25%	0%	$ 194,906	$ 64,969	$ -	Water	Transmission
Y	300 BLK of Green St. WM Replacement 2" GV to 6" PVC to Huss St.; 800-LF	176,400	75%	25%	0%	$ 132,300	$ 44,100	$ -	Water	Transmission
Y	Reid St. & Turner St. WM Replacement 3/4" & 1" GV to 6" PVC; 2100-LF	463,050	75%	25%	0%	$ 347,288	$ 115,763	$ -	Water	Transmission
Y	Curve View Rd WM Replacement 1-1/4" to 6" & 2" PVC; 700-LF of 6" PVC & 500-LF of 2" PVC	219,975	75%	25%	0%	$ 164,981	$ 54,994	$ -	Water	Transmission
Y	Story St. WM Replacement 2" GV & 6" AC to 8" PVC from Salem Church to Culdesac & up to Catawba Heights Rd; 2700-LF	637,875	75%	25%	0%	$ 478,406	$ 159,469	$ -	Water	Transmission
Y	Rose St. WM Replacement 2" GV to 8" PVC from Buffalo Shoals to NC-27; 1200-LF	283,500	75%	25%	0%	$ 212,625	$ 70,875	$ -	Water	Transmission
N	McAlister Rd 2" GV WM Abandonment and services transfer to Buffalo Shoals Rd WM 6-8 Houses;	9,240	0%	100%	0%	$ -	$ 9,240	$ -	Water	Transmission
Y	Eastwood Dr & Lithia Springs @ Buffalo Shoals WM Replacement 6"AC & 2" GV to 8" PVC; 3200-LF	756,000	75%	25%	0%	$ 567,000	$ 189,000	$ -	Water	Transmission
Y	Shady LN WM Replacement 2" to 8" PVC from Buffalo Shoals to Lithia Springs Rd; 1500-LF	354,375	75%	25%	0%	$ 265,781	$ 88,594	$ -	Water	Transmission
Y	Bost St. WM Replacement 6" AC to 8" PVC; 2300-LF	543,375	50%	50%	0%	$ 271,688	$ 271,688	$ -	Water	Transmission
Y	Sugar Maple LN WM Replacement 1" GV to 2" PVC; 300-LF	39,375	75%	25%	0%	$ 29,531	$ 9,844	$ -	Water	Transmission
Y	Walnut St. WM Replacement 1" to 2" PVC; 300-LF	39,375	75%	25%	0%	$ 29,531	$ 9,844	$ -	Water	Transmission
Y	Beechnut St. WM Replacement 2" GV to 8" PVC; 500-LF	118,125	75%	25%	0%	$ 88,594	$ 29,531	$ -	Water	Transmission
Y	Pruitt Houser St. WM Replacement 6" AC to 8" PVC; 850-LF	200,813	50%	50%	0%	$ 100,406	$ 100,406	$ -	Water	Transmission
Y	Boggs St. WM Replacement 2" PVC to 6" PVC; 750-LF	165,375	75%	25%	0%	$ 124,031	$ 41,344	$ -	Water	Transmission
Y	Auton St. WM Replacement 1"PVC to 6" PVC; 400-LF	88,200	75%	25%	0%	$ 66,150	$ 22,050	$ -	Water	Transmission
N	Shell St. WM Replacement 2" GV to 2" PVC; 150-LF	19,688	0%	100%	0%	$ -	$ 19,688	$ -	Water	Transmission
Y	Lawing St. WM Replacement 6" AC to 8" PVC from E. Main to deadend; 1500-LF	354,375	50%	50%	0%	$ 177,188	$ 177,188	$ -	Water	Transmission
Y	Willow Dr. WM Replacement 2" to 8" PVC from Heavner Rd to Rhyneland Rd; 1000-LF	236,250	75%	25%	0%	$ 177,188	$ 59,063	$ -	Water	Transmission

Y	Charlesvoix Ave. WM Replacement 1" GV to 6" PVC from S Govt St. to S. High St.; 500-LF	110,250	75%	25%	0%	$ 82,688	$ 27,563	$ -		Water	Transmission
Y	W. Sycamore St. WM Replacement 1" GV to 8" PVC from N. Govt to N. Grove St; 1200-LF	283,500	75%	25%	0%	$ 212,625	$ 70,875	$ -		Water	Transmission
Y	N. Gov't St. WM Replacement 6" CIP to 8" PVC from Bonview Ave to W. Church St.; 2000-LF	472,500	50%	50%	0%	$ 236,250	$ 236,250	$ -		Water	Transmission
Y	Forney Ave & W. Sycamore St. WM Replacement 1" GV to 8" PVC; 850-LF	200,813	75%	25%	0%	$ 150,609	$ 50,203	$ -		Water	Transmission
Y	W. Pine St. WM Replacement 6" CIP to 8" PVC from N Grove St to Bonview Ave; 1400-LF	330,750	50%	50%	0%	$ 165,375	$ 165,375	$ -		Water	Transmission
Y	Bonview Ave. WM Replacement 6" CIP to 8" PVC from N. Grove St. to W. Main Ext; 1800-LF	425,250	50%	50%	0%	$ 212,625	$ 212,625	$ -		Water	Transmission
Y	Victor St. & Grovedale Dr. & Brookside Dr. WM Replacements 6" CIP & 2" GV & 1-1/4" GV to 8" PVC; 2700-LF	637,875	75%	25%	0%	$ 478,406	$ 159,469	$ -		Water	Transmission
N	N. Grove St. 4" WM Abandonment & service transfers from W Main St. to Bonview Ave.; 1100-LF	94,500	0%	100%	0%	$ -	$ 94,500	$ -		Water	Transmission
Y	Forney Ave. WM Replacement from Bonview Ave to W. Pine St. 2"PVC to 6" PVC; 500-LF	110,250	75%	25%	0%	$ 82,688	$ 27,563	$ -		Water	Transmission
Y	Norman Fair Ave. WM Replacement from Bonview Ave. to Battleground Rd 1" GV to 10" PVC; 800-LF connect to 16" on Battleground & 1	213,150	100%	0%	0%	$ 213,150	$ -	$ -		Water	Transmission
Y	Sherrill Ave. WM Replacement from Sumner St. to 810 Sherrill Ave. 1" GV & 6" CIP to 6" PVC; 1700-LF	374,850	50%	50%	0%	$ 187,425	$ 187,425	$ -		Water	Transmission
Y	Abernethy St. WM Replacement 6" CIP to 8" PVC from E Main St to E Pine St; 700-LF	165,375	50%	50%	0%	$ 82,688	$ 82,688	$ -		Water	Transmission
Y	Carolina Mill Cir WM Replacment 2" GV to 8" PVC @ S. Grove St.; 1700-LF	420,750	75%	25%	0%	$ 315,563	$ 105,188	$ -		Water	Transmission
Y	White St & Green Hill Ln & Clay St. WM Replacement 2" PVC to 8" PVC; 1300-LF	321,750	75%	25%	0%	$ 241,313	$ 80,438	$ -		Water	Transmission
Y	Roseland Dr. WM from Petes Rd to S. Grove St. 2" GV to 8" PVC; 850-LF	210,375	75%	25%	0%	$ 157,781	$ 52,594	$ -		Water	Transmission
Y	Bel-Air Dr & Myra Ln WM Replacement & FHs 2" PVC to 8" PVC; 1700-LF	420,750	75%	25%	0%	$ 315,563	$ 105,188	$ -		Water	Transmission
Y	Shady Pine LN WM Replacement & FHs 3/4" GV to 8" PVC & 2" PVC; 500-LF	123,750	75%	25%	0%	$ 92,813	$ 30,938	$ -		Water	Transmission
Y	Fran Ave. WM Replacement 2" PVC to 8" PVC from NC-150 to Boyd Ave. & Abby Park LN 6"; 900-LF of 8"PVC on Fran and 450-LF of 2" P	310,500	75%	25%	0%	$ 232,875	$ 77,625	$ -		Water	Transmission
Y	S. Gov't Street WM Replacement from Motz Ave to W. Congress St. 1" GV to 8" PVC; 2500-LF	675,000	75%	25%	0%	$ 506,250	$ 168,750	$ -		Water	Transmission
Y	Little St. (300 BLK to Putman St.) WM Replacement 2" GV to 6" PVC; 500-LF	126,000	75%	25%	0%	$ 94,500	$ 31,500	$ -		Water	Transmission
Y	Sherrill Ave. 1" GV WM Replacement (between E. Pine St. & McBee St.); 1" GV to 8" PVC; 500-LF	135,000	75%	25%	0%	$ 101,250	$ 33,750	$ -		Water	Transmission
Y	Drum St. & Moline Dr. WM Replacements; 3"GV & 6" AC to 6" PVC; 765-LF of 3" GV and 465-LF of 6" AC; 1250' total	315,000	50%	50%	0%	$ 157,500	$ 157,500	$ -		Water	Transmission
Y	300 Green St. WM Replacement to Huss St.; 2" GV to 6" PVC; 800-LF	201,600	75%	25%	0%	$ 151,200	$ 50,400	$ -		Water	Transmission
Y	Barkley Ave/Ridge St/ Valley Ave WM Replacement @ Sigmon Rd; replace 800-LF of 1" GV with 1900-LF of 2" PVC	285,000	75%	25%	0%	$ 213,750	$ 71,250	$ -		Water	Transmission
N	Lee Avenue Tank Exterior Painting	400,000	0%	0%	100%	$ -	$ -	$ 400,000		Water	Transmission
N	Ross Street Tank Exterior Painting	400,000	0%	0%	100%	$ -	$ -	$ 400,000		Water	Transmission
N	Highway 150 Tank Painting	400,000	0%	0%	100%	$ -	$ -	$ 400,000		Water	Transmission
N	McAlister Tank Painting INT/EXT	400,000	0%	0%	100%	$ -	$ -	$ 400,000		Water	Transmission
N	Hwy 321 Tank Exterior Painting	0	0%	0%	100%	$ -	$ -	$ -		Water	Transmission
Y	Galvanized Line Replacement (2025-D-1)	3,024,378	0%	100%	0%	$ -	$ 3,024,378	$ -		Water	Transmission
N	Replace/Reline Cast Iron Water Line Pipe (?) 2025-D-2	4,526,280	0%	100%	0%	$ -	$ 4,526,280	$ -		Water	Transmission
n	Looping Waterlines (To Be Evaluated in Future for Project Costs)	400,000	0%	100%	0%	$ -	$ 400,000	$ -		Water	Transmission
N	Evaluate System for Lead Components AIA (2025-D-5)	469,106	0%	100%	0%	$ -	$ 469,106	$ -		Water	Transmission
N	Highway 321 Water Booster Pumping Station New Generator	157,500	0%	100%	0%	$ -	$ 157,500	$ -		Water	Transmission
N	Replace/Reline Cast Iron Water Line Pipe P2 (2025-D-8)	502,920	0%	100%	0%	$ -	$ 502,920	$ -		Water	Transmission
N	Replace/Reline Cast Iron Water Line Pipe P3 (2025-D-9)	502,920	0%	100%	0%	$ -	$ 502,920	$ -		Water	Transmission
N	Replace/Reline Cast Iron Water Line Pipe P4 (2025-D-10)	502,920	0%	100%	0%	$ -	$ 502,920	$ -		Water	Transmission
N	Replace/Reline Cast Iron Water Line Pipe P5 (2025-D-11)	502,920	0%	100%	0%	$ -	$ 502,920	$ -		Water	Transmission
N	Replace/Reline Cast Iron Water Line Pipe P6 (2025-D-12)	502,920	0%	100%	0%	$ -	$ 502,920	$ -		Water	Transmission
N	Replace/Reline Cast Iron Water Line Pipe P7 (2025-D-13)	502,920	0%	100%	0%	$ -	$ 502,920	$ -		Water	Transmission
N	Replace/Reline Cast Iron Water Line Pipe P8 (2025-D-14)	502,920	0%	100%	0%	$ -	$ 502,920	$ -		Water	Transmission
N	Replace/Reline Cast Iron Water Line Pipe P9 (2025-D-15)	502,920	0%	100%	0%	$ -	$ 502,920	$ -		Water	Transmission
N	Replace/Reline Cast Iron Water Line Pipe P10 (2025-D-16)	0	0%	100%	0%	$ -	$ -	$ -		Water	Transmission
Y	Water resiliency project to connect dead-end mains along Clark Creek Road; provides a third feed and improves fire flow; 2500-LF 8"	646,875	0%	100%	0%	$ -	$ 646,875	$ -		Water	Transmission
N	Skid Steer - Utilities specific	95,000	0%	0%	100%	$ -	$ -	$ 95,000		Water	Transmission
	WATER TREATMENT										
N	Gas to Liquid Chlorine Conversion	355,000	0%	100%	0%	$ -	$ 355,000	$ -		Water	Treatment
N	Pond Liner curtain at WTP	74,000	0%	100%	0%	$ -	$ 74,000	$ -		Water	Treatment
N	Generators (2)	2,767,000	0%	100%	0%	$ -	$ 2,767,000	$ -		Water	Treatment
N	Evaluation of PFAS Chemicals in System and Supply AIA	15,000	0%	100%	0%	$ -	$ 15,000	$ -		Water	Treatment
N	Water Plant Improvements (no capacity increase) 2025-D-7	2,161,195	0%	100%	0%	$ -	$ 2,161,195	$ -		Water	Treatment
WATER IMPROVEMENTS SUBTOTAL		45,680,184				$ 11,722,575	$ 32,262,609	$ 1,695,000			

Consistent with the exclusion of non-capacity assets from the City's asset register, the capital costs from the CIP are limited to projects that provide system-wide capacity expansions; therefore, maintenance and replacement projects are excluded from SDF recovery. Like the debt credit applied to existing facilities, a credit is also applied to future CIP projects, which equals 25% of the City's recoverable CIP cost, as per the requirements of Chapter 162A. Table 4 presents a summary of the CIP values adjusted to reflect the 25% credit applied to eligible projects.

Table 4
Value of Future Water Facilities

Capital Improvement Program:				
Treatment Facilities				$ 0
Transmission Facilities				11,722,575
Subtotal				$ 11,722,575
Less 25% CIP Adjustment:				
Treatment Facilities	25%			$ 0
Transmission Facilities	25%			(2,930,644)
Subtotal				$ (2,930,644)
Net Recoverable CIP:				
Treatment Facilities				$ 0
Transmission Facilities				8,791,931
Total				$ 8,791,931

When existing facilities and future facilities are combined, the total combined value is $38.937 million, as shown in Table 5.

Table 5
Combined Values of Existing and Future Water Facilities

Net Capital Costs:				
Treatment Facilities				$ 15,477,651
Transmission Facilities				23,459,384
Net Recoverable Costs				**$ 38,937,035**

The SDF methodology identifies the water treatment plant capacity and estimates the capacity of transmission facilities. Because water treatment plants are subject to regulatory oversight, their rated capacities are usually known. However, determining the volumetric capacity of transmission infrastructure is more challenging; therefore, industry practice often estimates transmission capacity as a factor of the associated treatment plant capacity. The capacity estimates used in this analysis are based on discussions with the City and supplemented with standard engineering assumptions. The City currently owns and operates a 12 million gallons per day (MGD) water treatment plant. Future facilities, as projected by City staff, are expected to not increase total treatment capacity. Although plant capacity is expressed in terms of maximum daily flow, SDF calculations are based on average daily flow, representing typical usage conditions. As per staff input, the rated maximum daily flow is assumed to be approximately 1.22 times the average daily flow. An additional adjustment accounts for unaccounted-for water by applying a staff calculated average 21% loss factor, reducing the effective capacity available for customer use. After applying these adjustments, the resulting average daily treatment capacity is 7.77 MGD, as summarized in Table 6.

Table 6
Water Treatment Capacity

Existing Treatment Capacity:		
Water Treatment Plant		12.000
Additional CIP Capacity		0.000
Total Capacity of Treatment Facilities (MGD)		**12.000**
Average Day Capacity Adjustment:		
Treatment Capacity Based on Max/Avg Day Factor	1.22	9.836
Unaccounted-For Water Capacity Adjustment	21.0%	
Estimated Treatment Capacity		**7.770**

Based on discussions with City staff, it is assumed that the existing transmission facilities can provide water flow at least equal to two (2) times the existing treatment capacity, resulting in 24 MGD. City staff state that the CIP will increase transmission capacity by 50% or an additional 12 MGD to total 36 MGD. Like the adjustment for treatment, a 21% loss factor is made to the transmission facilities resulting in an adjusted capacity of 28.44 MGD, as shown in Table 7.

Table 7
Water Transmission Capacity

Estimated Transmission System Capacity:		
Existing Max Day Treatment Capacity		12.000
Transmission-to-Treatment Capacity Factor	2.00	
Assumed Existing Transmission Capacity		**24.000**
Additional CIP Transmission Capacity		12.000
Total Transmission Capacity With CIP		**36.000**
Unaccounted-For Water Capacity Adjustment	21.0%	
Estimated Transmission Capacity		**28.440**

The methodology utilized for developing the water SDF uses the value of major existing system facilities as well as the existing system capacities to calculate an estimated cost per gallon of capacity. Based on this methodology, the water facility costs are $2.81 per gallon of water capacity as shown in Table 8.

Table 8
Cost of Water Capacity

Estimated Cost Per Gallon of Capacity:		
Treatment ($/Gallon)	$	1.99
Transmission ($/Gallon)		0.82
Total Cost Per Gallon of Capacity	**$**	**2.81**

In further developing the water SDF, the unit cost per gallon of system capacity is applied to a typical single-family residential dwelling served by a 5/8 and/or 3/4-inch water meter. According to City staff, the average residential flow is 225 gallons per day (gpd). Applying this factor to the calculated unit cost per gallon of capacity results in a maximum allowable SDF of $620 when rounded for a standard single-family residential connection, as summarized in Table 9.

Table 9
Maximum Single Family Residential Water System Development Fee

Estimated Cost Per Gallon of Capacity:		
Treatment ($/Gallon)	$	1.99
Transmission ($/Gallon)		0.82
Total Cost Per Gallon of Capacity	**$**	**2.81**
Assumed Standard Level of Service Per ERU (GPD of Capacity)		225
Calculation of SDF Per ERU:		
Treatment Facilities	$	447
Transmission Facilities		184
Combined Cost	**$**	**631**
Adjusted Fee - Treatment:		
Calculated Fee Per ERU	$	447
Less Rounding Adjustment		(7)
Adjusted Fee	$	440
Credit Adjusted Fee - Transmission:		
Calculated Fee Per ERU	$	184
Less Rounding Adjustment		(4)
Adjusted Fee	$	180
Proposed SDF Per ERU (Rounded):		
Treatment Facilities	$	440
Transmission Facilities		180
Combined Cost	**$**	**620**

New connections equipped with larger water meters have the potential to place greater demand on the system and therefore require proportionally more capacity. To account for this, SDFs for larger meter sizes are scaled using maximum meter flow rates. These factors are determined by the American Water Works Association (AWWA). Based on their criteria, the applicable multipliers for larger meter sizes reflect their incremental increase in potential demand relative to the standard residential meter. The resulting maximum allowable water SDFs for each meter size are presented in Table 10.

Table 10
Maximum Water System Development Fees per Meter Size

Meter Size	Flow Factor	Max Fee
3/4 Inch	1.00	$ 620
1.0 Inch	1.67	$ 1,033
1.5 Inch	3.33	$ 2,067
2.0 Inch	5.33	$ 3,307
3.0 Inch	10.67	$ 6,613
4.0 Inch	16.67	$ 10,333
6.0 Inch	33.33	$ 20,667
8.0 Inch	53.33	$ 33,067
10.0 Inch	76.67	$ 47,533

Sewer System

For the sewer SDF analyses, the existing assets are categorized based on the major components of Treatment and Collection. The treatment category includes any treatment related facilities. The collection category consists of assets including major sewer mains and lift station facilities. Like the water SDF calculations, any assets contributed by developers or funded from other sources including grants are not included for recovery through the sewer SDFs. The existing recoverable sewer capital asset cost allocations included in the analysis are summarized in Table 11.

Table 11
Summary of Sewer System Asset Values

SEWER	
Transmission	**13,849,512.58**
Steel Mains	12,428,239.98
Pumping Structures & Improvements	1,394,668.22
Electric Pumping Equipment	26,604.38
Treatment	**5,127,037.39**
Treatment Structures & Improvements	4,836,334.60
Pumping Structures & Improvements	52,328.39
Small Treatment Plant Equip.	227,341.28
Large Treatment Plant Equip.	11,033.12
Grand Total	**18,976,549.97**

Providers commonly finance major capital improvements and system expansions through debt. Typically, the associated debt service payments are recovered through monthly user rates and charges applied to all customers, supplemented by other available revenue sources. To prevent new customers from effectively paying twice for existing capital facilities, the sewer analysis also incorporates a debt service credit for those facilities. The credit equals the outstanding principal balance on all utility-related debt. Its value is based on information provided by City staff regarding the specific capital projects financed through each debt. Table 12 presents a summary of the existing recoverable sewer capital facilities, adjusted to reflect the applicable debt service credits.

Table 12
Sewer System Asset Values After Debt Reduction

Existing Facilities:	
Treatment Facilities	$ 5,127,037
Collection Facilities	13,849,513
Subtotal	$ 18,976,550
Less Debt Service Principal:	
Treatment Facilities	$ 0
Collection Facilities	0
Subtotal	$ 0
Net Recoverable Existing Facilities:	
Treatment Facilities	$ 5,127,037
Collection Facilities	13,849,513
Total	$ 18,976,550

When recovering the City's future asset costs, new development is assigned the incremental cost of system expansions required to serve it. Under state statutes, this method requires a minimum five-year Capital Improvement Plan (CIP) that details both the costs associated with new capacity and the schedule for those expenditures. It is also essential to account for the planned funding sources of the CIP projects. Projects financed through grants or developer contributions are excluded from the SDF calculation, as these costs are not incurred by the City. The City provided a CIP identifying key strategic initiatives including the expansion of their wastewater treatment and disposal for system operations and future growth. WithersRavenel worked with the City on evaluating individual projects, adjusted construction costs based upon current estimates, and adjusted for inflation for fiscal years 2027 through 2035. The updated CIP is summarized in Table 13.

Table 13
Sewer Capital Improvements Plan

Increase Capacity?	PROJECT LOCATION	TOTAL COST	Percentage Allocated			Amount Allocated			System	Functional Allocation
			Expansion / Upgrade	R&R	Other	Expansion / Upgrade	R&R	Other		
SEWER IMPROVEMENTS										
N	Pump Rebuilds	528,000	0%	100%	0%	$ -	$ 528,000	$ -	Sewer	Collection
N	Inflow and Infiltration Reduction	1,981,000	0%	100%	0%	$ -	$ 1,981,000	$ -	Sewer	Collection
N	Pump Station Various Improvements Rehab Project Excl. Betty Ross and Clark Creek (2025-WW-1)	0	0%	100%	0%	$ -	$ -	$ -	Sewer	Collection
N	Reline 70,300 linear feet of 6", 8" and 12" Vitrified Clay Pipe (2025-WW-2)	0	0%	100%	0%	$ -	$ -	$ -	Sewer	Collection
N	Reline Brick Manholes (2025-WW-3)	0	0%	100%	0%	$ -	$ -	$ -	Sewer	Collection
N	Collection System Spot Repairs (As identified by 2022 AIA Project) 2025-WW-4	0	0%	100%	0%	$ -	$ -	$ -	Sewer	Collection
N	CCTV & Assessment of Sanitary Sewer Pipe (not previously assessed with CCTV) 2025-WW-5	0	0%	100%	0%	$ -	$ -	$ -	Sewer	Collection
N	Smoke Testing (where not previously completed) 2025-WW-6	0	0%	100%	0%	$ -	$ -	$ -	Sewer	Collection
N	Flow Equilization Basin and New Headworks at the Wastewater Treatment Plant (2025-WW-7)	0	0%	100%	0%	$ -	$ -	$ -	Sewer	Treatment
N	Rehabilitation of Sludge Drying Beds (2025-WW-9)	0	0%	100%	0%	$ -	$ -	$ -	Sewer	Treatment
Y	Boger City Line Replacement (2025-WW-10) Upgrade existing 4" to 8" PVC lines (2025-WW-10)	1,445,038	75%	25%	0%	$ 1,083,778	$ 361,259	$ -	Sewer	Collection
Y	Betty Ross PS Capacity Upgrade and Improvements (2025-WW-11)	11,961,813	100%	0%	0%	$ 11,961,813	$ -	$ -	Sewer	Collection
Y	Clarks Creek PS Capacity Upgrade and Improvements (2025-WW-12)	7,494,207	100%	0%	0%	$ 7,494,207	$ -	$ -	Sewer	Collection
N	Clarks Creek 12" Outfall Upgrade SM & MH; 12" VCP to 18" PVC; 5500-LF	3,044,800	50%	50%	0%	$ 1,522,400	$ 1,522,400	$ -	Sewer	Collection
N	Scada System Upgrade	1,219,200	0%	100%	0%	$ -	$ 1,219,200	$ -	Sewer	Collection
Y	WWTP Emergency Generators Upgrade and Capacity Expansion (2025-WW-14)	4,267,200	0%	100%	0%	$ -	$ 4,267,200	$ -	Sewer	Treatment
Y	15" VCP Brady Branch/Jonas Dr to 321 Business-Sewer Trunk Line & MH Rehab Project; 4,000-LF	2,500,000	100%	0%	0%	$ 2,500,000	$ -	$ -	Sewer	Collection
Y	8" Gravity Main Replacement @ 200 Kennedy Dr. to Buff St. & S. Poplar St.; 8" VCP to 12" PVC & 3-MH replacements; 500-LF	192,625	50%	50%	0%	$ 96,313	$ 96,313	$ -	Sewer	Collection
Y	800 Blk of S. Cedar St. Gravity Sewer Main & MH Replacement 6" VCP to 8" PVC/350-LF & 2 MHs	192,625	50%	50%	0%	$ 96,313	$ 96,313	$ -	Sewer	Collection
Y	Buff St. Gravity Sewer Main & MH Replacement 4" VCP to 8" VCP to 8" PVC/400-LF & 3 MHs	192,625	75%	25%	0%	$ 144,469	$ 48,156	$ -	Sewer	Collection
Y	600 S. Cedar St. to Jennings St. Sewer Main & MH Replacement 6" VCP to 8" PVC/275-LF & 2 MHs	192,625	50%	50%	0%	$ 96,313	$ 96,313	$ -	Sewer	Collection
Y	400 Jennings St. to 18" trunk line Sewer Main & MH Replacement 4" to 8" PVC/200-LF & 2 MHs	192,625	75%	25%	0%	$ 144,469	$ 48,156	$ -	Sewer	Collection
Y	334 N Poplar St to E Pine St. Sewer Main & MH Replacement 6" VCP to 8" PVC; 475-LF	192,625	50%	50%	0%	$ 96,313	$ 96,313	$ -	Sewer	Collection
Y	114 S Poplar St to E Pine and E Sycamore St. between N Cedar & N Poplar St; SM & MH Replacement 6" VCP to 8" PVC; 1400-LF	450,000	50%	50%	0%	$ 225,000	$ 225,000	$ -	Sewer	Collection
Y	526 E Main St. to N Cedar St. SM & MH Replacement 6" VCP to 8" PVC; 1000-LF	318,750	50%	50%	0%	$ 159,375	$ 159,375	$ -	Sewer	Collection
Y	200-326 Blk E Water St. SM & MH Replacement 6" VCP to 8" PVC; 500-LF	159,375	50%	50%	0%	$ 79,688	$ 79,688	$ -	Sewer	Collection
Y	100-220 BLK E Water St. SM & MH Replacement 6" VCP to 8" PVC; 250-LF	89,063	50%	50%	0%	$ 44,531	$ 44,531	$ -	Sewer	Collection
Y	200-619 BLK E. Sycamore St. SM & MH Replacement 6" VCP to 8" PVC; 625-LF	192,625	50%	50%	0%	$ 96,313	$ 96,313	$ -	Sewer	Collection
Y	812 N Academy St. to N Aspen St. SM & MH Replacement 6" VCP to 8" PVC; 750-LF	248,438	50%	50%	0%	$ 124,219	$ 124,219	$ -	Sewer	Collection
Y	420-528 N Laurel St. SM & MJH Replacement 6" VCP to 8" PVC; 650-LF	192,625	50%	50%	0%	$ 96,313	$ 96,313	$ -	Sewer	Collection
Y	N Gov't @ Sycamore to Bonview SM & MH Replacement 6" VCP to 8" PVC; 1200-LF	192,625	50%	50%	0%	$ 96,313	$ 96,313	$ -	Sewer	Collection
Y	N High St. SM & MH Replacement 4"VCP to 8" VCP; 400-LF	192,625	75%	25%	0%	$ 144,469	$ 48,156	$ -	Sewer	Collection
Y	300 BLK Bonview SM & MH Replacement 4" to 8" VCP; 1000-LF	192,625	75%	25%	0%	$ 144,469	$ 48,156	$ -	Sewer	Collection
Y	E Water St. (Oak St. to Flint St.) SM & MH Repl. 6" VCP to 8" PVC; 475-LF	192,625	50%	50%	0%	$ 96,313	$ 96,313	$ -	Sewer	Collection
Y	6"VCP to 8" PVC SM & MH Repl. between MH 1644 & 1648 & along 520 Liberty St.; 575-LF	192,625	50%	50%	0%	$ 96,313	$ 96,313	$ -	Sewer	Collection
Y	800-950 BLK McBee St. SM & MH Repl. 6" VCP to 8" PVC; 575-LF	192,625	50%	50%	0%	$ 96,313	$ 96,313	$ -	Sewer	Collection
Y	Sumner St. SM & MH Replacement 6" VCP to 8" PVC; 450-LF	192,625	50%	50%	0%	$ 96,313	$ 96,313	$ -	Sewer	Collection
Y	Rhyne St. & W Congress St. & 2nd St. SM & MH Repl. 6" VCP to 8" PVC; 600-LF	192,625	50%	50%	0%	$ 96,313	$ 96,313	$ -	Sewer	Collection
	WASTEWATER EQUIPMENT									
N	Jetter Trailer	89,000	0%	0%	100%	$ -	$ -	$ 89,000	Sewer	Collection
N	Crane Truck	210,000	0%	0%	100%	$ -	$ -	$ 210,000	Sewer	Collection
N	Off-street Easement Machine	0	0%	0%	100%	$ -	$ -	$ -	Sewer	Collection
N	Argo off-street UTV	0	0%	0%	100%	$ -	$ -	$ -	Sewer	Collection
	WASTEWATER TREATMENT									
N	Pump Rebuilds	103,000	0%	100%	0%	$ -	$ 103,000	$ -	Sewer	Treatment
N	2 Generators (1500KW & 1250KW) 2025-WW-14	4,533,900	0%	100%	0%	$ -	$ 4,533,900	$ -	Sewer	Treatment
SEWER IMPROVEMENTS SUBTOTAL		43,724,782				$ 26,928,635	$ 16,497,147	$ 299,000		

Consistent with the exclusion of non-capacity assets from the City's asset register, the capital costs from the CIP are limited to projects that provide system-wide capacity expansions; therefore, maintenance and replacement projects are excluded from SDF recovery. Like the debt credit applied to existing facilities, a credit is also applied to future CIP projects, which equals 25% of the City's recoverable CIP cost, as per the requirements of Chapter 162A. Table 14 presents a summary of the CIP values adjusted to reflect the 25% credit applied to eligible projects.

Table 14
Value of Future Sewer Facilities

Capital Improvement Program:				
Treatment Facilities				$ 0
Collection Facilities				26,928,635
Subtotal				$ 26,928,635
Less 25% CIP Adjustment:				
Treatment Facilities	25%			$ 0
Collection Facilities	25%			(6,732,159)
Subtotal				$ (6,732,159)
Net Recoverable CIP:				
Treatment Facilities				$ 0
Collection Facilities				20,196,476
Total				$ 20,196,476

When existing sewer facilities and future facilities are combined, the total combined value of existing and future sewer facilities is $39.143 million, as shown in Table 15.

Table 15
Combined Values of Existing and Future Sewer Facilities

Net Capital Costs:				
Treatment Facilities				$ 5,127,037
Collection Facilities				34,045,988
Net Recoverable Costs				**$ 39,173,026**

The SDF methodology identifies the sewer treatment plant capacity and estimates the capacity of collection facilities. Because sewer treatment plants are subject to regulatory oversight, their rated capacities are usually known. However, determining the volumetric capacity of collection infrastructure is more challenging; therefore, industry practice often estimates collection capacity as a factor of the associated treatment plant capacity. The capacity estimates used in this analysis are based on discussions with the City and supplemented with standard engineering assumptions. The City currently owns and operates a 6 million gallons per day (MGD) water treatment plant. Future facilities, as projected by City staff, are not expected to increase total treatment capacity. Although plant capacity is expressed in terms of maximum daily flow, SDF calculations are based on average daily flow, representing typical usage conditions. According to staff, the rated maximum daily flow is assumed to be approximately 1.22 times the average daily flow. An additional adjustment accounts for Infiltration and Inflow by applying an average 21% factor, reducing the effective capacity available for customer use. After applying these adjustments, the resulting average daily treatment capacity is 3.885 MGD, as summarized in Table 16.

Table 16
Sewer Treatment Capacity

Existing Treatment Capacity:		
Wastewater Treatment Plant		6.000
Additional CIP Capacity		0.000
Total Capacity of Treatment Facilities (MGD)		**6.000**
Average Day Capacity Adjustment:		
Treatment Capacity Based on Max/Avg Day Factor	1.22	4.918
Infiltration and Inflow Sewer Capacity Adjustment	21.0%	
Estimated Treatment Capacity		**3.885**

Based on discussions with City staff, it is assumed that the existing collection facilities can provide sewer flow at least equal to two (2)times the existing treatment capacity, resulting in 12 MGD. City staff state that the CIP will increase collection capacity by 25% or an additional 3 MGD to total 15 MGD. Like the adjustment for treatment, a 21% factor is made to the collection facilities resulting in an adjusted capacity of 11.85 MGD, as shown in Table 17.

Table 17
Sewer Collection Capacity

Estimated Collection System Capacity:		
Existing Max Day Treatment Capacity		6.000
Transmission-to-Treatment Capacity Factor	2.00	
Assumed Existing Collection Capacity		**12.000**
Additional CIP Collection Capacity		3.000
Total Collection Capacity With CIP		**15.000**
Infiltration and Inflow Sewer Capacity Adjustment	21.0%	
Estimated Collection Capacity		**11.850**

The methodology utilized for developing the sewer SDF also uses the value of major existing system facilities as well as the existing system capacities to calculate an estimated cost per gallon of capacity. Based on this methodology, the sewer facility costs are $4.19 per gallon of sewer capacity as shown in Table 18.

Table 18
Cost of Sewer Capacity

Estimated Cost Per Gallon of Capacity:	
Treatment ($/Gallon)	$ 1.32
Collection ($/Gallon)	2.87
Total Cost Per Gallon of Capacity	**$ 4.19**

In further developing the sewer SDF, the unit cost per gallon of system capacity is applied to a typical single-family residential dwelling served by a 5/8 and/or 3/4-inch water meter. According to City staff, the average residential flow is 225 gpd. Applying this factor to the calculated unit cost per gallon of capacity results in a maximum allowable SDF of $930 when rounded for a standard single-family residential connection, as summarized in Table 19.

Table 19
Maximum Single Family Residential Sewer System Development Fee

Estimated Cost Per Gallon of Capacity:		
Treatment ($/Gallon)	$	1.32
Collection ($/Gallon)		2.87
Total Cost Per Gallon of Capacity	**$**	**4.19**
Assumed Standard Level of Service Per ERU (GPD of Capacity)		225
Calculation of SDF Per ERU:		
Treatment Facilities	$	297
Collection Facilities		645
Combined Cost	**$**	**942**
Adjusted Fee - Treatment:		
Calculated Fee Per ERU	$	297
Less Rounding Adjustment		(7)
Adjusted Fee	$	290
Credit Adjusted Fee - Collection:		
Calculated Fee Per ERU	$	645
Less Rounding Adjustment		(5)
Adjusted Fee	$	640
Proposed SDF Per ERU (Rounded):		
Treatment Facilities	$	290
Collection Facilities		640
Combined Cost	**$**	**930**

New sewer connections equipped with larger water meters have the potential to place greater demand on the system and therefore require proportionally more capacity. To account for this, SDFs for larger meter sizes are scaled using maximum meter flow rates. These factors are determined by the American Water Works Association (AWWA). Based on their criteria, the applicable multipliers for larger meter sizes reflect their incremental increase in potential demand relative to the standard residential meter. The resulting maximum allowable sewer SDFs for each meter size are presented in Table 20.

Table 20
Maximum Sewer System Development Fees per Meter Size

Meter Size	Flow Factor	Max Fee
3/4 Inch	1.00	$ 930
1.0 Inch	1.67	$ 1,550
1.5 Inch	3.33	$ 3,100
2.0 Inch	5.33	$ 4,960
3.0 Inch	10.67	$ 9,920
4.0 Inch	16.67	$ 15,500
6.0 Inch	33.33	$ 31,000
8.0 Inch	53.33	$ 49,600
10.0 Inch	76.67	$ 71,300

Fee Comparison

To provide the City with additional insight regarding the development and application of the SDFs, a comparison is included in Table 21 to show the level of SDFs charged by other utility systems in North Carolina. The fees range from $2,170 to $18,910 for water and sewer systems.

Table 21
SDF's of Other Providers

Provider	***Water***	***Wastewater***	***Combined***
Mount Holly	$ 700	$ 1,470	$ 2,170
Greensboro	$ 1,338	$ 1,138	$ 2,476
Hickory	$ 1,695	$ 1,180	$ 2,875
Ocean Isle	$ 1,271	$ 1,684	$ 2,955
Oak Island	$ 592	$ 2,642	$ 3,234
Two Rivers Utilities (Gastonia)	$ 2,120	$ 1,380	$ 3,500
Winston-Salem	$ 816	$ 2,861	$ 3,677
Belmont	$ 1,780	$ 2,170	$ 3,950
Weaverville	$ 4,090	N/A	$ 4,090
Mooresville	$ 1,170	$ 3,150	$ 4,320
Selma	$ 1,820	$ 3,200	$ 5,020
Shallotte	N/A	$ 5,336	$ 5,336
Lincoln County	$ 3,592	$ 1,788	$ 5,380
Carolina Beach	$ 2,600	$ 2,980	$ 5,580
CFPU	$ 2,270	$ 3,465	$ 5,735
Beaufort	$ 476	$ 5,524	$ 6,000
Tuckaseigee Water & Sewer Authority - North System	$ 3,690	$ 2,550	$ 6,240
ONWASA	$ 2,063	$ 4,460	$ 6,523
Charlotte	$ 1,398	$ 5,389	$ 6,787
Harnett Regional	$ 3,000	$ 4,000	$ 7,000
Holden Beach (3 bedrooms)	$ 1,380	$ 6,720	$ 8,100
Brunswick County	$ 2,865	$ 5,868	$ 8,733
H2GO	$ 5,600	$ 6,600	$ 12,200
Johnston County Public Utilities	$ 8,670	$ 3,910	$ 12,580
Union County	$ 4,669	$ 10,800	$ 15,469
Southport	$ 1,100	$ 15,847	$ 16,947
Tuckaseigee Water & Sewer Authority - South Sewer	N/A	$ 18,910	$ 18,910

Outcomes and Conclusions

An alternative that helps manage the magnitude of SDFs is charging a fraction of the system values. The City has the flexibility to discount the total valuation of its systems by a factor that they deem appropriate. As discussed above, subject to the maximum SDFs calculated by this analysis, the City Council can and should weigh all relevant factors and exercise its legislative / public policy / political judgment to enact SDFs that are best suited to the City's needs and objectives. For example, the City may charge 75% or 50% of the maximum fees. In any case, the total fee cannot exceed the maximum fees specified in this report.

The proposed SDFs provide a diversification of the City's water and sewer fund revenue stream by creating a revenue source that lessens future water and sewer rate increases on existing customers. These fees should be viewed as important to ensure the equitable distribution of cost responsibilities between existing and future rate payers. The Act requires that the SDF analysis must be updated at least every five (5) years.