Hazen *Technical Memorandum*

Graham Water and Sewer System Development Fee Analysis

FINAL

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1. Introduction

System development fees are one-time charges to new connections to the system that recover investments in additional capacity to serve new customers, either through existing capital assets, planned facilities expansion, or both. In North Carolina, System Development Fees are codified in G.S. Chapter 162A, Article 8, also known as the "Public Water and Sewer System Development Fee Act". This act provides a framework for local governments to implement System Development Fees (SDFs) for public water and sewer systems and aims to ensure that the cost of growth is shared by those creating the demand—new homes and businesses—rather than allocating those costs solely to existing ratepayers. Revenue from SDFs can be used to fund construction or design costs associated with infrastructure required to serve new development. The statue requires the SDF analysis must be performed and fee adoption by the corresponding local government occur, and this fee be re-evaluated and updated at least every five years, and the fees must be published in the annual budget or rate plan ordinance.

The act requires a detailed written analysis to be prepared by a financial or engineering professional, detailing the facts and data used in the analysis and their sufficiency and reliability. The analysis must employ generally accepted accounting, engineering, and planning methodologies, including buy-in, incremental cost (marginal cost), and combined cost methods for each service.

Further, the statute allows fees to be calculated based on a planning horizon of not less than 5 years and not more than 20 years. The statute (Chapter 162A-211) also identifies system development fee expenditures which includes but is not limited to the cost of constructing capital projects, professional fees incurred for the preparation of the SDF analysis, principal and interest on bonds or other obligations used to finance the construction or acquisition of existing capital improvements, and contractual obligations to other local government units for capacity in their water or sewer facilities.

Under the generally accepted methodology and case law, the amount of a capacity fee imposed does not need to be mathematically exact, but it must bear a reasonable relationship to the cost burden imposed and benefits received. The utilization of the planning and financing criteria and the actual costs of construction and the planned costs of construction provide the nexus for the reasonable relationship requirement.

2. Assessment Methodology

System Development Fees (SDFs) are one time charges to new water and sewer (sewer) system customers for system capacity. Revenue from these development fees funds capital improvements for new development, recuperates costs of existing facilities that serve new development, or some combination. SDFs do not include routine administrative or system inspection fees, connection (tap) fees, or ancillary development costs without written agreement regarding credit to the developer. Available methodologies to calculate SDFs are the Buy-In Method, Incremental Cost Method, and Combined Method, as described below:

- *Incremental/Marginal Cost* – This method requires new development to pay the proportional share of new capital costs that are attributable to new development.

- *Buy-In* – This method requires new development to pay a proportional share of the capital costs previously incurred by the local government unit that allows sufficient capacity to serve the new development.
- *Combined* – This method uses a combination of the incremental/marginal cost and the buy-in method.

A combined approach methodology was selected for this analysis as Graham currently has some available capacity in its existing water and sewer systems to serve new customers but is also planning to invest in additional infrastructure through its capital improvements plan which will also facilitate having available capacity for new customers. Sections 2.1 through 2.3 outline the calculations used to develop a unit cost for water and sewer system capacity under the combined methodology.

2.1 Assessment of Value of Existing Capacity (Buy-In Component of Combined Methodology)

The Buy-in approach sets a fee based on the investment in the existing infrastructure. Under the buy-in approach, new customers pay a proportional share of the capacity in the system for the investment existing customers have paid for facilities in service. It is reasonable to charge new customers for a previous investment if the existing facilities in service still have enough capacity to serve new customers. This approach is most commonly applied when there is adequate capacity remaining in the system to serve new customers.

The major steps involved in the buy-in approach are:

- Determine the available capacity in existing facilities,
- Calculate the value of the existing capacity either at its original cost (OC), net book value (NBV), replacement cost new (RCN), or replacement cost new less depreciation (RCNLD),
- Adjust the value of the capacity for outstanding debt, grants received, and/or contributed assets, and
- Calculate unit costs based on capacity

The results of this process are a calculated fee for each new equivalent unit added to the system that reimburses Graham for its past investments in facilities that are now available to provide capacity for those new connections.

2.1.1 Existing Net System Value – Buy-In Methodology

A review of net system asset value was performed using the City's water and sewer fixed asset register provided by the City of Graham. The first step in this process was to remove any assets that are not considered core assets, key to system capacity, such as meters and rolling stock. Additionally, any projects that were funded through grant funding or developer contributions were excluded from the fixed asset list as they do not represent investments in capacity by existing City of Graham retail customers. The value of fixed assets was then adjusted from original cost to a replacement cost new by applying a

cost index[1]. After adjusting asset original costs to replacement costs new, an additional adjustment to account for depreciation is required to obtain RCNLD. This was done by reducing the value of the asset replacement cost new by the percentage of Once all asset values have been properly adjusted through RCNLD, the adjusted value is summed to determine existing system value. Taking this sum produces gross existing system value. The amount estimated is shown in the table below.

Table 2-1: Existing Water and Sewer Core Asset System Values, RCNLD

Item	Water	Sewer
RCNLD Value of System	$38,435,501	$29,078,850

Since SDFs exist as a mechanism to equitably recompensate existing rate-payers for money already paid into the system, the calculation of system value requires the deduction of water and sewer system related debt principal outstanding and any grants or developer contributions of infrastructure. The reasoning for deducting debt principal is grounded in the fact that the payment on the debt is a part of the utilities operating cost and therefore will be levied on the customer through monthly service charges.

In this assessment, current debt outstanding was determined by referencing the North Carolina Local Government Commission Annual Principal and Interest Requirements Service, which documents the current outstanding debt burdens of Local Government Units across the state. Included below is a table of current outstanding debt attributable to Graham's Water/Sewer Enterprise Fund. Below, **Table 2-2** shows an itemized breakdown of Graham's existing debt principal. **Table 2-3** provides the calculation of Net System Value for the Buy-In approach accounting for adjustments due to outstanding debt principal.

Table 2-2: Outstanding Principal as of July 2025

Description of Debt / Year of Issuance	Year of Issuance	Outstanding Jul 2025	Water %	Sewer %	Water Related Outstanding Principal	Sewer Related Outstanding Principal
E-SRF-T-09-0198, SEWER ARRA	2010	$98,974	0%	100%	$0	$98,974
H-ARRA-09-1295, DRINKING WATER	2010	$22,029	100%	0%	$22,029	$0
WATER & SEWER Loan	2014	$1,862,000	50%	50%	$931,000	$931,000
SRP-W-17-0054; INTEREST RATE 0%	2021	$1,859,302	0%	100%	$0	$1,859,302
Total		**$3,842,305**			**$953,029**	**$2,889,276**

Table 2-3: Net System Value, Existing Infrastructure

Line Item	Water	Sewer
Existing System Value (RCNLD of Assets)	$38,435,501	$29,078,850
Outstanding Principal	$953,029	$2,889,276
Net System Value for SDF Calculations	$37,482,472	$26,189,575

[1] For this assessment, the Consumer Price Index published by the Bureau of Labor Statistics was utilized. All costs are inflated forward to December 2025 values.

2.1.2 Existing System Capacity – Water

Graham currently has one water treatment plant with a permitted capacity of 12 million gallons per day measured in annual average. Capacity at the plant is shared with the Town of Mebane owning (6 MGD) of the plant's capacity. In addition to the shared capacity allocated to Mebane, Graham has interlocal contracts with the communities of Green Level and Swepsonville, who have 0.181 MGD and 0.3 MGD of reserved capacity in the WTP respectively. Resultingly, the total reserved capacity in the WTP that Graham does not have access to in order to meet the City's internal demand is to 6.481 MGD per day. This amount represents capacity that has already been allocated and therefore is not available to future customers. Below, **Table 2-4** presents an itemized view of Graham's capacity obligations as of 2025.

Table 2-4: Graham Water Treatment Capacity Contracts, 2025

Name	2025 MGD
Contract Capacity, Green Level	0.181
Contract Capacity, Mebane	6.000
Contract Capacity, Swepsonville	0.300
Contract Capacity, Total	**6.481**
Capacity Remaining for Graham Retail Customers	**5.519**

Shown in the table above, after deducting wholesale requirements, Graham has 5.519 MGD of capacity to service retail demand. To assess the remaining system capacity available for future customers, maximum daily retail use must also be excluded, along with process water, also at max daily value. A peaking factor of 1.2 was applied to 2025 average daily demand to estimate retail peak daily demand. A summary of Graham's available water system capacity is provided in **Table 2-5**.

Table 2-5: Remaining Water Capacity for Future Customers

Description	2025 Value	Formula/Reference
Existing Capacity Remaining for Retail Customers	5.519 MGD	*(a) – Table 2-4*
Average Daily Retail Demand	1.409 MGD	*(b) – City of Graham Local Water Supply Plan*
Peaking Factor	1.2 x	*(c) – Average daily to maximum daily demand peaking factor*
Peak Daily Demand	1.691 MGD	*(d) = b * c*
Average Daily Water Loss and Process Water	1.252 MGD	*(e) – City of Graham Local Water Supply Plan*
Current Peak Day Demand	2.943 MGD	*(f) = d + e*
Capacity Remaing for Future Customers	2.576 MGD	*(g) = a - f*

Shown in the last row of **Table 2-5**, value g: Capacity Remaing for Future Customers, a value of 2.576 MGD was used in the calculation of water system development charges.

2.1.3 Existing System Capacity - Sewer

Graham has one sewer treatment plant that is permitted to discharge an annual average of 3.5 MGD. In addition to this, Graham has contracts with both Burlington and Haw River to discharge up to 0.5 MGD and 0.125 MGD respectively. Graham also has a contract with Mebane to treat up to 0.75 MGD of sewer. The effect of these contracts on net capacity is shown below in **Table 2-6**.

Table 2-6: Remaining Sewer Capacity for Future Customers

Value Name	2025 Amount	Formula/Reference
Graham WWTP Permit Capacity	3.500 MGD	*(a) - City of Graham Local Water Supply Plan*
Burlington Contract Capacity Allowance	0.500 MGD	*(b) - City of Graham Local Water Supply Plan*
Haw River Contract Capacity Allowance	0.125 MGD	*(c) - City of Graham Local Water Supply Plan*
Mebane Contract Capacity Requirement	0.750 MGD	*(d) - City of Graham Local Water Supply Plan*
Net Contract Capacity	-0.125 MGD	*(e) = b + c - d*
Capacity for City of Graham Retail Customers	3.375 MGD	*(f) = a + e*

Unlike the calculation of the same value for water, sewer retail demand is based on average daily demand rather than maximum daily demand. Existing system capacity can be determined by taking system capacity and deducting net contract capacity and average retail demand. This calculation is shown below in **Table 2-7**.

Table 2-7: Existing Sewer Capacity

Value Name	Amount	Formula/Reference
Remaining Capacity for Retail	3.375 MGD	*(a):* Table 2-6
Average Daily Retail Demand[2]	2.313 MGD	*(b): City of Graham Local Water Supply Plan (See footnote)*
Remaining System Capacity	1.062 MGD	*(c) = a - b*

2.1.4 Value of Existing Capacity Available for Future Customers

The final step in the calculation of the SDF using the buy-in approach is to determine a unit cost for capacity, which is defined as net system value defined in units of system capacity.

[2] Determined using NC LWSP average daily flows. Total treatment is computed by summing average daily flows treated by Graham WWTP, Burlington WWTP, and Haw River WWTP. These amounts were equal to 2.115 MGD, 0.188 MGD, and 0.070 MGD respectively. This amounts to a total average treatment flow of 2.373 MGD. Subtracting average daily flows from Mebane (0.060 MGD) results in an average daily City of Graham Retail Sewer demand of 2.313 MGD.

Table 2-8: Value of Existing Capacity Available for Future Customers

Value Name	Water	Formula/Reference	Sewer	Formula/Reference
Net Value of Existing System	$37,482,472	*(1.a): Table 2-3*	$29,078,850	*(2.a): Table 2-3*
Capacity available in existing system (MGD)	5.519 MGD	*(1.b): Table 2-4*	3.375 MGD	*(2.b): Table 2-6*
Capacity Remaing for Future Customers (MGD)	2.576 MGD	*(1.c): Table 2-5*	1.062 MGD	*(2.c): Table 2-7*
% of existing capacity available for future customers	47%	*(1.d) = 1.c/1.b*	31%	*(2.d) = 2.c/2.b*
Value of existing capacity available for future customers ($)	$17,497,149	*(1.e) = 1.a * 1.d*	$8,241,762	*(2.e) = 2.a * 2.d*

2.2 Assessment of Value of Future Capacity (Incremental Component of Combined Methodology)

The incremental-cost approach is based on the costs the utility expects to incur to provide additional capacity for new customers. With the incremental-cost approach, new customers pay a proportionate share of the future costs to expand the system. A rational basis exists for charging customers for proposed new capacity when the capacity in the existing system is inadequate to provide for the new customers' needs and the costs to expand the utility system are known and measurable. This approach is most commonly applied in situations where additional capacity is needed in order to serve new customers.

The major steps involved in the incremental-cost method are:

- Determine proposed cost of growth/expansion projects from all other projects,
- Adjust the cost for expected contributions of assets,
- Determine the total equivalent meter units to be served with the capacity projects.
- Calculate unit costs based on capacity

The result of the above process is to produce a proportional fee for each equivalent unit that recovers the planned investments in growth-related capital projects.

2.2.1 Value of Projects Currently in Construction

There are two sources from which the value of current and future projects estimate is derived. The first is the City's Water and Sewer Capital Improvement Plan, and secondly, a record of construction works in progress (CWIP) as reported in the FY24 City of Graham Annual Comprehensive Financial Report for FY24. CWIP represent projects that are in construction and have not yet become listed on the fixed asset register but also are no longer on the future project CIP list.

When determining incremental system value using the CIP costs must be apportioned based on contribution to maintaining system capacity. Beyond this, some of the projects provide benefit to multiple utilities and are not fully funded by Graham. One example of this is that some CIP projects are expected to benefit from capital contributions from other sources, such as the Town of Mebane based on that Town's reserved capacity in the Water Treatment Plant. Therefore, the contribution attributable to those other sources must also be deducted. The apportionment with regards to growth and ownership are carried in this order: full projects value is first scaled by the proportion of the project that can be attributable to system capacity or "growth" and then further scaled by proportion that is to be directly funded by Graham. After this value is determined, a further deduction representing contributions from future revenue streams is required, in accordance with North Carolina General Statutes regulating SDFs. This reduction is referred to as a revenue credit and must account for no less than 25% of total estimated cost. After the application of this 25% minimum deduction, capital expenses are then allocated proportionally, either water or sewer costs. **Table 2-9** provides a summary of the CIP values which are segmented by project category and a full list of capital projects included in the CIP is available in Appendix A.

Table 2-9: Summary Values of Graham Current CIP (FY26-FY33)

CIP Project Category	Lift Stations	W&S Distribution	Water Treatment Plant	WWTP	Total
Count of Projects	10	35	25	25	95
Total Project Costs	$6,748,347	$53,079,375	$32,578,000	$1,762,500	$94,168,222
Project Costs Attributable to City of Graham	$6,748,347	$53,579,375	$32,878,000	$1,762,500	$94,968,222
Project Costs Attributable to the City of Graham and Associated with System Capacity	$4,213,347	$13,229,375	$1,362,500	$0	$18,805,222
Project Costs Attributable to the City of Graham, Associated with System Capacity, and Revenue Credit Applied	$3,160,010	$9,922,031	$1,021,875	$0	$14,103,917

CIP costs by service type are kept separate in order to develop a service specific water and sewer capacity cost value. The value of future system capacity is shown below in **Table 2-10**.

Table 2-10: CIP Costs by Service Type

Service Type	Value of Future Capacity from CIP
Water	$8,131,406
Sewer	$5,972,510
Total	$14,103,916

Projects included in the current CIP (FY26-FY33) are not sufficient to produce a comprehensive assessment of the total value of future system infrastructure as the CIP does not include projects that have already broken ground, or in more formal terms, Construction Works in Progress (CWIP). Using the most recently available published City of Graham Annual Comprehensive Financial Report (ACFR) from

FY24, Graham has 7 construction works currently ongoing. Of these projects, 3 are expected to be fully or significantly grant or debt funded. The costs for these projects which are equivalent to the amount funded by debt issuance or grants are excluded.

In addition, the 25% revenue credit reduction applied to other CIP projects is applied to CWIP projects. **Table 2-11** shows a detailed breakdown of how CWIP projects were incorporated into the incremental system value. Furthermore, **Table 2-12** shows the summary of total value contributed by CWIP to each service side through the incremental approach.

Table 2-11: Itemized Calculation of CWIP Contribution to Incremental Value

Project	Project Cost	Debt or Grant Funding	Cost Above Debt or Grant Funding Amount	Revenue Credit Reduction %	Cost After Reduction	Water Value	Sewer Value
Boyd Creek Pump Station	$3,961,999	N/A	$3,961,999	25%	$2,971,499	$2,971,499	$0
Old Fields Outfall	$2,955,000	N/A	$2,955,000	25%	$2,216,250	$0	$2,216,250
WWTP Upgrade	$84,649,290	$82,989,500	$1,659,790	25%	$1,244,843	$0	$1,244,843
10" Water line Replacement	$17,250,000	$17,250,000	$0	N/A	$0	$0	$0
Long and Albright Water and Sewer Improvements	$1,454,860	N/A	$1,454,860	25%	$1,091,145	$436,458	$654,687
Water Line Inventory	$400,000	$400,000	$0	N/A	$0	$0	$0
Boyd Creek Watershed Water Project	$452,000	N/A	$452,000	25%	$339,000	$339,000	$0
Total	$111,123,149	-$100,639,500	$10,483,649		$7,862,737	$3,746,957	$4,115,780

Table 2-12: Summarized Incremental System Value

Service	CWIP Cost Allocation	CIP Cost Allocation	Total Incremental Value
Water	$3,746,957	$8,131,406	$11,878,363
Sewer	$4,115,780	$5,972,510	$10,088,290
Total	$7,862,737	$14,103,916	$21,966,653

2.3 Combining Incremental and Buy-in Approach

The combined method uses values from both the buy-in and incremental analysis in order to determine a unit value for system capacity that includes both existing and future investments in system capacity. The subsequent Sections outline the calculation for the City of Graham, separated by service type, being either water or sewer.

2.3.1 Combined Approach – Water System

Table 2-13, shows how net system value is calculated under the combined approach including both existing and future system capacity value.

Table 2-13: Hybrid System Value for Future Customers - Water

Approach	Description	Value	Calculation
Buy-In	Existing System Value	$17,497,149	*(a): from Table 2-8*
Incremental	Value of Future Capacity Projects	$11,878,364	*(b): from Table 2-12*
Combined	Total Value of Capacity for Future Customers	$29,375,513	*(c) = a + b*

Table 2-14, provides a summary of water system capacity available for future customers of the City of Graham.

Table 2-14: System Capacity for Future Customers - Water

Approach	Description	Value	Calculation
Buy-In	Existing Capacity Available for Future Customers	2.576 MGD	*(a): Table 2-5*
Incremental	Additional Capacity from CIP Projects	0.00 MGD	*(b): CIP*
Combined	Total Available Capacity for Future Customers	2.576 MGD	*(c) = a + b*

Finally, **Table 2-15**, takes the results from the previous two tables and incorporates these values to show how SDF for an equivalent residential unit ("ERU") is calculated. HB-436 defines a service unit as "a unit of measure, typically an equivalent residential unit, calculated in accordance with generally accepted engineering or planning standards." In the context of Graham, the minimum sized water meter is ¾" and this size is also the standard for most residential units. The City of Graham for its water supply planning processes has established that the standard home consumes 240 gallons per day (GPD), where the unit is allotted 120 GPD per bedroom, and the standard residential unit consists of 2 bedrooms. Therefore 240 GPD was determined to be the usage associated with an ERU in the SDF calculations. **Table 2-15** provides a summary of the calculation of the Water System Development fee under the combined method.

Table 2-15: System Development Fee Calculation - Water

Description	Value	Calculation
Total Value of Capacity for Future Customers	$29,375,513	*(a): from Table 2-8*
Total Available Capacity for Future Customers (MGD)	2.576 MGD	*(b): from Table 2-5*
Total Available Capacity for Future Customers (Gallons)	2,576,000	*(c) = b * 1,000,000*
Unit Value of Capacity per GPD ($/GPD)	$11.40	*(d) = a/c*
GPD Demand per ERU (GPD, max day)	240	*(e):City of Graham Water Capacity Planning*
Water System Development Cost per ERU ($/ERU)	$2,737	*(f) = d * e*

2.3.2 Combined Value – Sewer

Table 2-16 provides a summary of net system value calculated using the combined approach including both existing and future system capacity value.

Table 2-16: Total System Value for Future Customers - Sewer

Approach	Description	Value	Calculation
Buy-In	Existing System Value	$8,241,762	*(a): from Table 2-8*
Incremental	Value of Future Capacity Projects	$10,088,290	*(b): from Table 2-12*
Combined	Total Value of Capacity for Future Customers	$18,744,999	*(c) = a + b*

Table 2-17 details the total system capacity available for future customers. Available capacity includes both existing and expected future capacity, in line with the combined methodology.

Table 2-17: Total System Capacity for Future Customers - Sewer

Approach	Description	Value	Calculation
Buy-In	Existing Capacity Available for Future Customers	1.062 MGD	*(a): Table 2-7*
Incremental	Additional Capacity from CIP Projects	1.500 MGD	*(b): CIP*
Combined	Total Available Capacity for Future Customers	2.562 MGD	*(c) = a + b*

Table 2-18 shows the full derivation of sewer SDFs, using the combined approach. In the same manner as water service, SDFs must be set at a benchmark cost for the standard unit and scaled up depending on

projected usage factor. In the case of sewer, the standard is determined by NC DEQ's 2T rules, which set the sets the minimum volume to 240 GPD and further specifies that volume shall increase by 120 GPD per bedroom (with the minimum assumed to have 2 bedrooms). ERU SDF represents the charge to a standard residential, calculated by multiplying cost per gallon by the estimate 240 GPD per ERU.

Table 2-18: System Development Fee - Sewer

Description	Value	Calculation
Total Value of Capacity for Future Customers	$18,330,052	*(a): from Table 2-8*
Total Available Capacity for Future Customers (MGD)	2.562 MGD	*(b): from Table 2-17*
Total Available Capacity for Future Customers (Gallons)	2,562,000	*(c) = b * 1,000,000*
Unit Value of Capacity per GPD ($/GPD)	$7.15	*(d) = a/c*
GPD Demand per ERU (GPD, max day)	240	*(e):City of Graham Sewer Capacity Planning*
Sewer System Development Cost per ERU ($/ERU)	$1,717	*(f) = d * e*

3. Summary and Maximum Cost-Justified SDF Values

The system development costs per ERU detailed in Section 2.3 are used to determine the *maximum cost-justified level* of the water and wastewater system development fees. Fees for different types of customers are based on the cost per ERU multiplied by the amount of capacity needed to serve each type or class of customer. The *maximum cost-justified level* of system development fees the City of Graham can assess for water and wastewater system development fees per EDU are shown in **Table 3-1** below. Graham may elect to charge a cost per gallon that is less than the maximum cost-justified charge. If Graham elects to charge a fee that is less, all customers must be treated equally, thus the same reduced cost must be used for all customers.

Table 3-1: Water and Wastewater Gallons per Day per EDU & Capacity Fee

	Water	Wastewater	Total SDF
GPD per **EDU (GPD/EDU)**	240	240	
Cost per gpd ($/GPD)	$11.40	$7.15	$18.55
Capacity Fee per EDU ($/EDU)	$2,737	$1,717	$4,454

With effort to faithfully adhere to both state statutes and industry standards, the previous section of this report produces a calculation of the maximum justifiable charge for the purpose of equitably allocating system capacity cost amongst the utilities current and future customer base. This report produces both a reasonable basis and a rational nexus for both water and sewer, standardized at an equivalent residential unit. This equivalent residential unit is defined as a residential dwelling unit with ¾" meter, and 2 bedrooms. Below, in **Table 3-2** a summary of the maximum allowable SDF charge is shown, in terms of how many ERUs a different class represents.

Table 3-2: Summary of SDF Charge by Equivalent Residential Units

Customer Type	Equivalent Residential Unit(s)	Water Fee	Sewer Fee	Total Fee
Residential Dwelling Unit (3/4" meter – 2 BR)	1	$2,737	$1,717	$4,454
Residential Dwelling Unit (3/4" meter – 3 BR)	1.5	$4,105	$2,576	$6,680
Residential Dwelling Unit (3/4" meter – 4 BR)	2	$5,473	$3,434	$8,907
Residential Dwelling Unit (3/4" meter – 5 BR)	2.5	$6,841	$4,293	$11,134
All other Zoning Categories/Uses – ¾" meter	1	$2,737	$1,717	$4,454
All Other Zoning Categories/Uses – 1" meter	1.67	$4,570	$2,867	$7,437
All Zoning Categories/Uses 1.5" meter	3.33	$9,113	$5,718	$14,830
All Zoning Categories/Uses 2"	5.33	$14,586	$9,152	$23,737

For meters larger than 2 inches, water demands and sewer flows can vary widely, and system development fees assessed using meter ratios can underestimate the actual demands. Hazen recommends using demand and flow projections to assess the water and sewer capacity fees for customers requiring these large meter sizes. The calculated fees in GPD should be used to assess capacity fees for large meter customers. The fees are assessed based on the GPD projected demands multiplied by the fee in GPD that is used in the EDU cost determination.

This methodology would reduce the incentives to undersize meters and gives the City flexibility when a customer has different water versus sewer demands (e.g., data centers). In these cases, Graham could sign an allocation agreement with the customer for an established level of demand and if the customer uses more the City could assess additional capacity fees.

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Appendix A: City of Graham Capacity Related Capital Improvements Plan

Project	Division	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	Total	Capacity Related %	Contributions from Other Utilities %	Revenue Credit	Water Total	Sewer Total
Cooper Rd. HR Lift Station Upgrade/Relocation	Lift Stations				$5,000,000					$5,000,000	75%	0%	$937,500	$0	$2,812,500
Cherry Ln.Lift Station Upgrade	Lift Stations			$589,500						$589,500	100%	21.4%	$115,837	$0	$347,510
Neighorhood Water Enhancement Program	W&S Distribution		$1,000,000	$1,000,000	$1,000,000	$1,000,000	$1,000,000	$1,000,000	$1,000,000	$7,000,000	10%	0%	$175,000	$525,000	$0
Hwy 49 & Hwy 54 WS line Replacement	W&S Distribution	$500,000								$500,000	10%	0%	$12,500	$37,500	$0
Haw River Sewer Outfall and Manhole Rehab (NCDEQ)	W&S Distribution				$2,500,000					$2,500,000	10%	0%	$62,500	$0	$187,500
Southern Water Interconnection	W&S Distribution		$1,000,000							$1,000,000	90%	50%	$112,500	$337,500	$0
Downtown Water/Sewer Improvements (if State Funded)	W&S Distribution						$1,200,000			$1,200,000	50%	0%	$150,000	$225,000	$225,000
Hanover Rd Sewer Rehab	W&S Distribution			$2,000,000						$2,000,000	20%	0%	$100,000	$0	$300,000
Cheek Lane Water Main Extension	W&S Distribution				$1,000,000					$1,000,000	100%	0%	$250,000	$0	$750,000
Lacy Holt Rd-Extend Water Main Loop	W&S Distribution					$600,000				$600,000	50%	0%	$75,000	$0	$225,000
Distribution System Hydraulic Model	W&S Distribution			$25,000					$25,000	$50,000	50%	0%	$6,250	$18,750	$0
Trollingwood 16" TL Connection	W&S Distribution					$3,000,000				$3,000,000	50%	0%	$375,000	$0	$1,125,000
Kimrey Rd Outfall	W&S Distribution		$1,200,000							$1,200,000	100%	0%	$300,000	$900,000	$0
Woody Dr. 16" TL Connection	W&S Distribution							$2,500,000		$2,500,000	50%	0%	$312,500	$937,500	$0
Harden St. 16" TL Connection	W&S Distribution						$4,000,000			$4,000,000	50%	0%	$500,000	$1,500,000	$0
Pumped Inner connection at Scott Parkway	W&S Distribution		$625,000							$625,000	100%	50%	$78,125	$234,375	$0
Rileys Meadow WL Connector	W&S Distribution			$1,500,000						$1,500,000	100%	50%	$187,500	$562,500	$0
Parker Street 10" WL Replacement	W&S Distribution					$4,400,000				$4,400,000	50%	0%	$550,000	$1,650,000	$0
Cooper Road WL Loop	W&S Distribution				$405,000					$405,000	100%	75%	$25,313	$75,938	$0
Webster WL Connection	W&S Distribution					$450,000				$450,000	100%	75%	$28,125	$84,375	$0
Moore Street WL Connection	W&S Distribution				$112,500					$112,500	100%	75%	$7,031	$21,094	$0
Water Conservation Program	Water Treatment Plant					$250,000	$50,000	$50,000	$50,000	$400,000	100%	0%	$100,000	$300,000	$0
Water Treatment Plant Upgrade	Water Treatment Plant				$10,000,000	$8,000,000				$18,000,000	10%	50%	$225,000	$675,000	$0
Interconnect at WTP - Outside WTP	Water Treatment Plant				$250,000					$250,000	100%	75%	$15,625	$46,875	$0
Total	**All**	**$520,000**	**$13,825,000**	**$14,214,500**	**$24,347,500**	**$17,760,000**	**$6,310,000**	**$3,640,000**	**$13,145,000**	**$93,762,000**	**N/A**	**N/A**	**$4,701,306**	**$8,131,406**	**$5,972,510**