Moore County Public Works
System Development Fee Analysis (SDFA) FY24 Update | Public Review Version
Moore County, North Carolina

Public Review Version
April 2, 2024

Prepared for:

Moore County Public Works Department

Moore County, North Carolina

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Executive Summary

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The FY24 System Development Fee Analysis (SDFA) contained herein is performed per requirements of the North Carolina "Public Water and Sewer System Development Fee Act" (DFA). This version is for posting on the website for a 45-day review period[1]. The tapping fees for new water meter or sewer stub installation are calculated separately[2].

This report is a full update of the FY22 SDFA for purposes of implementing the results in FY25. In 2018, the calculated SDF's were not fully implemented to give the development community time to adjust to the new fee schedule. An interim update was performed in 2019 to implement the full calculated fee. In FY22, preliminary cost estimates were available for water supply capacity needs. All SDFA studies use a combined "buy-in" and incremental cost methodology using depreciated replacement cost of assets to determine system value plus eligible capital improvements over the next 10 years. This FY24 SDFA uses updated asset and capital improvements data for the analysis and system development fee calculation.

Tables E.1 and E.2 summarize the maximum SDF calculation in FY24 using the requirements of the law. However, it is recommended that the SDF be increased to the full cost over a three-year period to allow the building community to adjust accordingly. The significant

[1] **"§ 162A-209. Adoption and periodic review.** (a) For not less than 45 days prior to considering the adoption of a system development fee analysis, the local governmental unit shall post the analysis on its Web site and solicit and furnish a means to submit written comments, which shall be considered by the preparer of the analysis for possible modifications or revisions.

[2] **"§ 162A-201. Definitions. (9) System Development Fee –** 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, as provided in this Article. The term includes amortized charges, lump-sum charges, and any other fee that functions as described by this definition regardless of terminology. **The term does not include any of the following:** a. A charge or fee to pay the administrative, plan review, or inspection costs associated with permits required for development. **b. Tap or hookup charges for the purpose of reimbursing the local governmental unit for the actual cost of connecting the service unit to the system. c. Availability charges.** d. Dedication of capital improvements on-site, adjacent, or ancillary to a development absent a written agreement providing for credit or reimbursement to the developer pursuant to G.S. 153A-280, 153A-451, 160A-320, 160A-499 or Part 3A of Article 18, Chapter 153A or Part 3D of Article 19, Chapter 160A of the General Statutes. e. Reimbursement to the local governmental unit for its expenses in constructing or providing for water or sewer utility capital improvements adjacent or ancillary to the development if the owner or developer has agreed to be financially responsible for such expenses; however, such reimbursement shall be credited to any system development fee charged as set forth in G.S. 162A-207(c).

increase in the full cost for system capacity has been driven by inflationary construction cost in recent years. In some cases, the cost to provide water and wastewater capacity has increased threefold.

Table E.1
Water System SDF

Meter Size	Current SDF	Calculated SDF
3/4"	$1,573	$3,512[3]
1"	$3,933	$8,780
2"	$12,584	$28,096
3"	$25,168	$56,192
4"	$39,325	$87,800
6"	$78,650	$175,600

Table E.2
Wastewater System SDF

Descriptions	Current SDF	Calculated SDF
Equivalent Dwelling Unit	$2,414	$3,046[4]

Note: The SDF is determined by water meter size for water system. For wastewater system, the SDF will be based on an equivalent dwelling unit[5]. Also, the wastewater SDF portion related to the interceptor/treatment plant should be tracked separately in the WPCP's Capital Project Reserve Fund.

Recommendations Summary of the FY18 SDFA

The following were recommendations for Moore County's consideration:

1. Refine MCPU and WPCP asset listing to help in managing asset replacement requirements.

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[3] EMWD would only pay the Supply/Treatment portion with the appropriate credit. This is calculated at $2571 per EDU.

[4] The WPCP portion is calculated to be $2,680.

[5] **"§ 162A-205. Supporting analysis.** A system development fee shall be calculated based on a written analysis, which may constitute or be included in a capital improvements plan, that: (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.

2. Implement a phase-in approach by adopting a portion of calculated SDF, $627/EDU for water and $1,092/EDU for wastewater[6]. The SDF will be added to the admin, tapping and meter set fees.
3. Conduct a Public Hearing after 45-day review period but before July 1, 2018[7].
4. Adopt accounting procedures based on DFA requirements. (FY18)
5. SDF's collected will need to be accounted for and used for the following items in priority order, system debt then asset renewal/replacement.
6. Full Update of the SDFA every five years as required by legislation or earlier if significant changes in consumption or infrastructure occur.

Items 2 through 5 have been implemented. Item 1 is estimated to be completed in FY23.

Recommendations Summary of the FY19 SDFA Update

1. Refine MCPU and WPCP asset listing to help in managing asset replacement requirements prior to FY23 SDFA Full Update.
2. Implement the second and final phase of the SDF by adopting the calculated maximum SDF, $1,027/EDU for water system and $1,831/EDU for wastewater[8] system. As before, the SDF will be added to the admin, tapping and meter set fees.
3. Provide a 45-day review period of this SDFA with provision to take written comments either via email or United States Postal Service delivery.
4. Adjust the FY19 SDFA based on comments received and perform a Public Hearing after the 45-day review period.
5. Full Update of the SDFA every five years as required by legislation or earlier if significant changes in consumption or infrastructure occur.

Except for #1, all recommendations have been implemented. The asset listing is still a work in progress regarding the management of asset replacement.

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[6] "**§ 162A-207. Minimum requirements.** (a) Maximum. – A system development fee shall not exceed that calculated based on the system development fee analysis.

[7] "**§ 162A-209. Adoption and periodic review** (b) After expiration of the period for posting, the governing body of the local governmental unit shall conduct a public hearing prior to considering adoption of the analysis with any modifications or revisions.

[8] "**§ 162A-207. Minimum requirements.** (a) Maximum. – A system development fee shall not exceed that calculated based on the system development fee analysis.

Recommendations For FY22 SDFA Update

1. Provide a 45-day review period of this SDFA with provision to take written comments either via email or United States Postal Service delivery;
2. Adjust the FY22 SDFA based on comments received;
3. Implement recalculated SDF fees; and,
4. Perform a full update of the SDFA every five years as required by legislation or earlier if significant changes in consumption or infrastructure occur. Especially as it relates to the cost and capacity of the wastewater expansion and the Deep-River water treatment plant
5. Implement fee for FY23 – FY26 based on Annual Budget preparation not to exceed Tables **3.1, 3.2 and 3.3**.

A water supply master plan has been developed with refined cost estimates for future water supply. Additionally, the wastewater capital improvement plan has been revised. These changes significantly raised the cost to provide new capacity for future development.

Recommendations For FY24 SDFA Update

1. Provide a 45-day review period of this SDFA with provision to take written comments either via email or United States Postal Service delivery;
2. Adjust the FY24 SDFA based on comments received;
3. Implement recalculated SDF fees; and,
4. Perform a full update of the SDFA every five years as required by legislation or earlier if significant changes in consumption or infrastructure occur.
5. Implement fee for FY25 – FY29 based on Annual Budget preparation not to exceed Tables **3.1, 3.2 and 3.3**.

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Section 1
Introduction

Section 1 - Introduction

Background Information

Moore County Public Works Department (MCPW) currently operates water and wastewater systems serving a portion the County. Portions of the County are also presently served by others, including the Town of Aberdeen, the Town of Southern Pines, the Town of Carthage, the Town of Pinebluff, the Town of Robbins, Foxfire Village, Whispering Pines Village, Town of Cameron and Woodlake.

Water System

Moore County currently owns and operates, through MCPW, 9 water systems. These are generally depicted in Figure 1.1 and consist of the following:

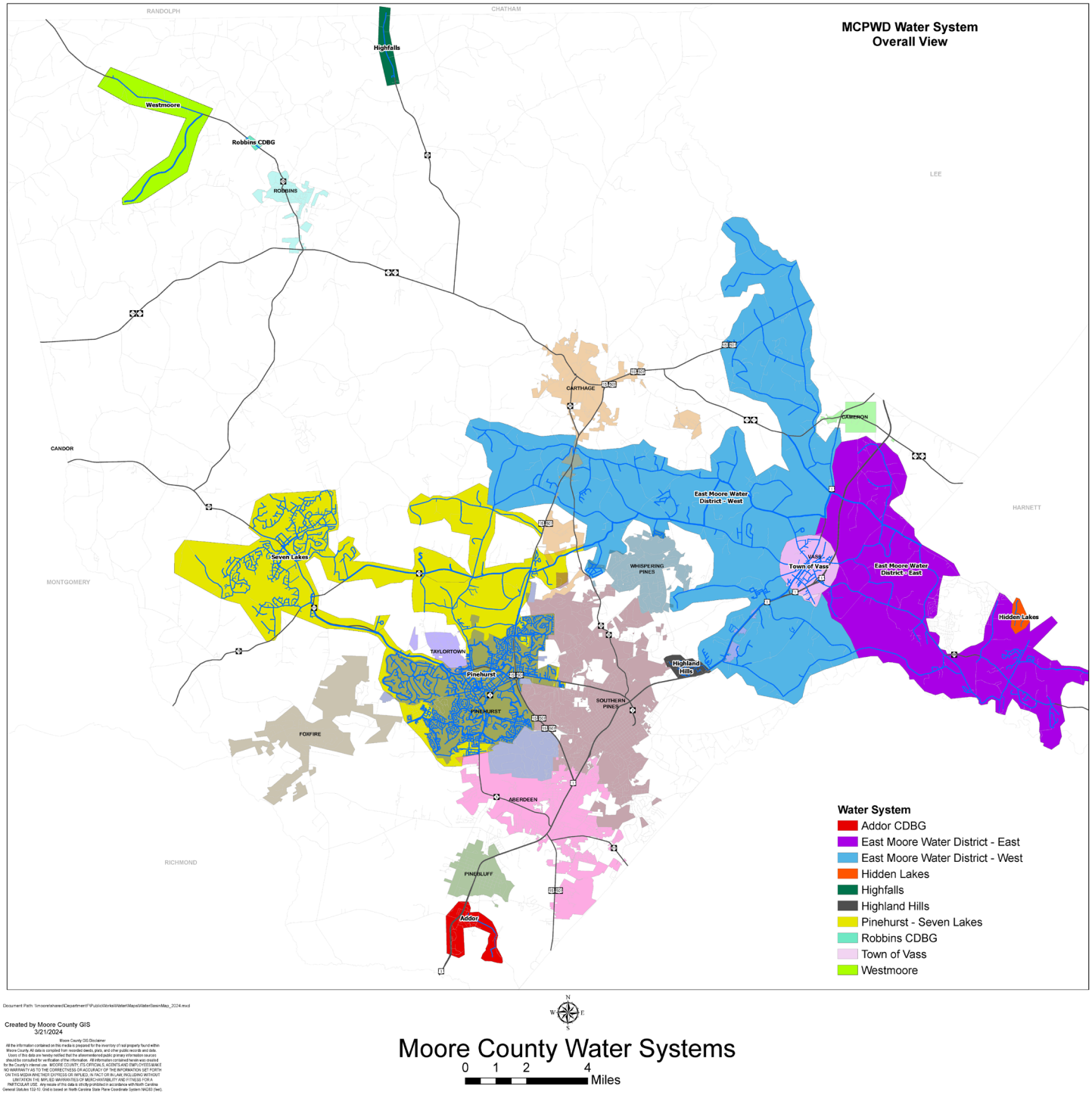
1. Pinehurst – Seven Lakes
2. East Moore Water District
3. Vass
4. Hyland Hills/Niagara
5. Addor CDBG
6. High Falls
7. Robbins CDBG
8. West Moore
9. Hidden Lakes

Please note that the East Moore Water District owns their water system but contracts with the Moore County Public Utilities (MCPU) to manage and operate it.

Moore County owns and operates, through MCPW, 17 wells in Pinehurst that withdraw water from Middendorf Aquifer[9]. The County also purchases water from Harnett County, Town of Southern Pines, Town of Aberdeen, Town of Robbins and Chatham County to serve its water system.

[9] Pinehurst Local Water Supply Plan 2020.

Figure 1.1
MCPW Water Systems



Wastewater System

Moore County also owns and operates, though MCPW, the sanitary sewage collection system for Pinehurst, Vass, a small portion of the Addor community and the East Moore Water District. Moore County also owns and operates, through the MCPW department, a 10-million gallon per day (MGD) wastewater treatment plant which treats flows from the MCPW collection system and wastewater received from Southern Pines, Aberdeen, and Carthage and the school in Cameron.

This report provides the documentation for the water and wastewater System Development Fee (SDF) calculations and its fairness to new developments. The SDF covers the cost of the collection, distribution and treatment components of the systems. It includes the wastewater interceptor and treatment plant that reside within the Water Pollution Control Plant (WPCP) Enterprise Fund. A portion of the SDF for wastewater should be transferred to the WPCP Capital Reserve Fund related to the Treatment/Interceptor assets. The remaining assets are accounted for in the Moore County Public Utilities Enterprise Fund.

The SDF calculation should be periodically updated to demonstrate that it is still being appropriately applied to new developments. All **SDFs collected will need to be accounted for[10] and used for the following items in priority order, system debt then asset renewal/replacement.** The SDF should be tied to a specific facility and/or property at a specific capacity. In case of future changes, including the possible subdivision of property, Moore County will assign the capacity based on the modification requested by the owner. If additional capacity is requested, the SDF will be based on the latest SDFA calculation at that time and applied to the additional capacity, only.

Maintenance, Extension and Expansion

Maintenance of system components allows for extending the useful life of infrastructure and increasing value. Extension projects allow for serving new areas not currently served and expansion projects allow for more customers or volume within an existing service area. The primary funding for capital projects typically comes from three sources: debt, system revenues and connection fees collected.

Data Sources

For this study, the data sources included the FY23 infrastructure/asset listing, – FY22 and FY23 Annual Comprehensive Financial Reports (ACFR), monthly water and wastewater billing volumes, FY24 Adopted Budgets, existing debt amortization schedules, proposed project costs and the latest US Census.

[10] **§ 162A-211. Use and administration of revenue.** (d) System development fee revenues shall be accounted for by means of a capital reserve fund established pursuant to Part 2 of Article 3 of Chapter 159 of the General Statutes and limited as to expenditure of funds in accordance with this section.

Acknowledgements
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Definitions
The following definitions are used as part of this study.

Capital Improvements Program **(CIP)** – A listing of planned water and wastewater systems projects and their anticipated costs, design and construction schedule provided by the County and utilized when appropriate in these evaluations.

Collection Component – A component of the wastewater system that is used to transport wastewater from a customer to the treatment plant and includes sewers, interceptors, trunk lines, Lift stations and any associated storage or other buildings.

Connection Fee – A fee charged to new customers or an existing customer requesting an expanded service. The connection fee comprises of the **tap fee**, (the cost to install a meter or sewer connection) and a **system development fee** (the fair share of the system value based on anticipated usage of the connection).

Book Value – The value of an asset that is carried on the County's balance sheet. This may also be referred to as its acquisition cost.

Net Book Value – The value calculated by taking the acquisition cost (book value) of an asset minus the accumulated depreciation.

Depreciation – The reduction of value of physical assets for accounting purposes. There is a strong relationship between an asset's useful life and the time it takes the asset to reach a zero-book value[11].

Net Present Value – The current value of a stream of future payments and/or assets using an acceptable discount rate.

Developer Contribution – A contribution of physical assets to Moore County for either the water or wastewater systems. These assets meet the needs of a specific development and do not typically add additional system-wide distribution or collection capacity. These assets will need to be replaced or upgraded by Moore County upon completion of their useful life.

[11] A physical asset would usually have usefulness after being fully depreciated; however, when used in some connection fee methodologies, the depreciated asset value provides a more conservative approach by providing a lower system value.

Developer Project or Improvement – A water or wastewater system project or improvement that serves a specific development. These are usually required as part of the development regulations of the community. These typically become a developer contribution.

Discount Rate – The interest rate used in determining net present value for future assets. Generally, the interest rate is set at an expected inflation rate or revenue bond rate and is used to reflect the time value of money.

Distribution Component – A component of the water system that is used to provide potable water to the customer and includes transmission lines, pumping stations, storage tanks, additional in-distribution treatment[12], meters[13] and any associated storage or other buildings.

Equivalent Dwelling Unit (EDU) – A representative average or peak volume of a single-family household. This volume symbolizes consumption of a $^{5}/_{8}$-inch or $^{3}/_{4}$-inch meter used to serve a typical single-family household. This may be used as the basis for calculating the potential capacity of larger meters in terms of EDU's.

Construction-in-progress – Projects that have not been completed but started. They do not appear on the asset listing of Moore County. If the completion date extends beyond a single year, they may also be found on the CIP.

Specialized Contribution – A contribution that is not a developer contribution. These contributions may be in the form a public-private arrangement or a public-public arrangement (intergovernmental agreement). They are treated like a developer contribution in that they are not included in the connection fee calculations. However, unlike developer contributions, system capacity may be added. In this situation, the cost of the capacity may require a credit depending on funding source.

System Project or Improvement – A water or wastewater project that provides additional capacity or replaces existing capacity that serves beyond a single development.

Wastewater Treatment Component – A component of the wastewater system used to process raw sewage into a dischargeable form and includes treatment plants, discharge facilities, associated buildings and storage and lift stations at the treatment plants.

[12] Treatment within the distribution system is needed to maintain water quality standards. These facilities are not for the treatment of raw water.

[13] The initial meter is paid for up front by the customer and not included in the system value for the connection fee calculation; replacement meters, however, are included.

Water Treatment Component – A component of the water system used to process raw water into a potable form and includes supply, raw water transmission, treatment plants, associated buildings, storage and pumping stations at the treatment plants.

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Section 2

System Development Fee Calculation

Section 2 – System Development Fee Calculation

Methodology

The methodology recommended to compute the SDF for Moore County in this study is based on the combination of the buy-in approach using net book value (NBV) of the assets, provided by Moore County Finance Department and incremental approach using planned projects. The NBV is converted to a depreciated replacement cost using expected inflation since acquisition. SDF revenues generated from incremental approach (planned projects) must be expended on the construction of capital improvements. SDF revenues generated from the buy-in approach can be expended on the debt and rehabilitation of existing assets[14].

The latest capital asset listing used to conduct these evaluations was provided by the County. The acquisition cost of the assets was then adjusted based on depreciation as of June 30, 2023. These values are provided in the **Appendix A** of this report.

The calculations performed in this Study break out water system costs into two service districts. The primary district is the Moore County Public Utility (MCPU) service area. This district has detailed information on purchased water, water wells, distribution/collection system assets and debts for water and sewer collection system costs. The other district is the East Moore Water District (EMWD) service area. Assumptions have been made to determine a magnitude cost for the EMWD. ***Due to the debt payment requirements in the EMWD and resulting credit the distribution system component of the SDF is currently***

[14] **"§ 162A-211. Use and administration of revenue.**
(a) Revenue from system development fees calculated using the incremental cost method or marginal cost method, exclusively or as part of the combined cost method, shall be expended only to pay: (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 costs for an item listed in sub-subdivisions a. through c. of this subdivision. (2) Professional fees incurred by the local governmental unit for preparation of the system development fee analysis. (b) Revenue from system development fees calculated using the buy-in method may be expended for previously completed capital improvements for which capacity exists and for capital rehabilitation projects. The basis for the buy-in calculation for previously completed capital improvements shall be determined by using a generally accepted method of valuing the actual or replacement costs of the capital improvement for which the buy-in fee is being collected less depreciation, debt credits, grants, and other generally accepted valuation adjustments.

not warranted. As such, the EMWD distribution assets and capacity are not included in the overall system value. However, the supply component SDF can be charged.

Moore County also owns and operates a sewage collection system with lift stations. The SDF related to wastewater is for the collection system assets accounted for by the MCPU Enterprise Fund but also includes the treatment plant and interceptor accounted for by the WPCP Enterprise Fund. **We recommend that the wastewater SDFs collected and deposited into the Capital Projects Fund be tracked separately by collection system and treatment/interceptor for MCPU and WPCP, respectively.**

The starting point in calculating the system's SDF is to determine the value of the system. This will include all assets with a life span of 10 or more years when first constructed. The total value of a system is the sum of the existing assets, construction-in-progress, planned projects, and any cost attributed to obtaining existing debt to finance Moore County's projects. *However, developer and specialized contributions, grants and costs associated with planned projects are not included in the overall system value.*

Existing Assets

Moore County's Finance Department keeps track of revenues, expenses, investments and capital assets for the entire County Government including the Moore County Public Works Department. The capital asset listing includes a description of the asset as well as an acquisition date, life of asset, acquisition cost, depreciation to-date, NBV and depreciated replacement value of asset.

Assets with useful life of less than 10 years as well as those fully depreciated have been excluded to determine system value for the system development fee calculation. The assumption is that assets with less than 10 years of useful life should be considered an operational capital expense as opposed to a system capital expense.

Appendix A contains a listing of the WPCP and MCPU capital assets provided by the County and used for this Study. The net asset values are summarized in **Table 2.1 and Table 2.2**. Also, the percentages shown in these tables are calculated based on the depreciated replacement value of assets.

Table 2.1
Moore County's Water System FY23 Value Using Depreciated Replacement Value Including Assets with Useful Life of 10 and More Years

Description	Water
System-Wide Percent of Assets Water vs. Wastewater	32.0%
Percent of Water Assets that are part of Distribution	78.0%
Shared Water and Wastewater Systems Assets	$352,982
Shared Water Distribution and Wells/Purchased Water Assets	$0
Distribution	$27,621,411
Shared with other components	$275,476
Total Distribution (MCPU)	$27,896,887
Treatment	$7,771,293
Shared with other components	$77,505
Total Treatment (MCPU)	$7,848,798

Table 2.2
Moore County's Wastewater System FY22 Value Using Depreciated Replacement Value Including Assets with Useful Life of 10 and More Years

Description	Wastewater
System-Wide Percent of Assets Wastewater vs. Water	68.0%
Percent of Wastewater Assets that are part of Collection	14.7%
Shared Both Water and Wastewater Systems	$748,445
Shared Both Wastewater Collection and Treatment	$0
Collection	$11,014,189
Shared with other components	$109,848
Total Collection (MCPU)	$11,124,036
Treatment	$64,030,778
Shared with other components	$638,597
Total Treatment (WPCP)	$64,669,375

The above tables include shared assets. These assets may serve both water and wastewater customers, e.g. the public utility administrative building or certain service vehicles. Assets may also fall into a category where they are shared between collection/treatment or

distribution/treatment components. There were no assets identified in Moore County that fell into the second category for this Study.

Projects-in-Progress

There are a few projects-in-progress listed in the FY23 ACFR. These have not been entered onto the fixed asset listing but are included in the SDF fee calculation. The value of these projects is $171,304 for the Water Pollution Control Plant and $816,350 for the Public Utilities Distribution system. There were no projects-in-progress for the East Moore Water District.

Capital Improvements Program

Moore County has developed a capital improvements program (CIP) for renewal, expansion and extension of the water and wastewater systems. DFA legislation allows inclusion of planned improvements to calculate SDFs. Therefore, the cost associated with the CIP will need to be recovered by both new and existing customers.

The total value of the Water System CIP is approximately $222.9 million over a 10-year period[15]. This includes both water distribution, supply and treatment projects. The water supply project has an estimated cost of $199 million and is included in the SDF calculation. This will add approximately 6.0 mgd of water supply[16]. **Table 2.3** presents the planned projects that have been included in the SDF calculations for the Moore County water system.

Table 2.4 presents the planned projects that have been included in the SDF calculations for the Moore County wastewater system. The wastewater system is anticipated to have $79.0M of new assets added driven primarily by the treatment plant expansion of $38.4M (Design and Construction).

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[15] "**§ 162A-205. Supporting analysis.** (7) Covers a planning horizon of not less than 10 years nor more than 20 years.

[16] The treatment plant may only have 2.0 mgd upon initial construction but would be easily expanded for future demand. Using 3 mgd will provide a more conservative estimate of cost per EDU for the SDFA. This will be updated in the next SDFA scheduled after the Deep-Water Plant is completed and actual information is available.

Table 2.3
Water System 10-Year CIP

WATER SYSTEM PROJECTS	Cost	Component
New Water Source- Phase 1	113,000,000	Water Treatment
New Water Source- Phase 2	86,000,000	Water Treatment
Linden Road Wells (2)- ARP Funds	1,223,689	Water Distribution
Water Line Extension Project to West End- ARP Funds	2,300,000	Water Distribution
Water Metering AMI System	9,250,000	Water Distribution
General Extensions of Service	1,200,000	Water Distribution
Water Main Replacements (Vass, etc.)	1,100,000	Water Distribution
Water Main Replacements (Surry Circle)	1,850,000	Water Treatment
Vehicles	1,900,000	Water Treatment
Generator Replacement	1,650,000	Water Distribution
Fire Hydrant Replacement	1,100,000	Water Distribution
Paint Elevated Tanks (Seven Lakes North)	300,000	Water Distribution
Paint Elevated Tanks (Cannon Park)	300,000	Water Distribution
Chloramines Booster Stations	107,834	Water Distribution
Paint Elevated Tanks(Monticello)	300,000	Water Distribution
New Elevated Tank	1,000,000	Water Distribution
Paint Elevated Tanks(McLean Rd)	300,000	Water Distribution
	222,881,523	

Table 2.4
Wastewater System 10-Year CIP

WASTEWATER SYSTEM PROJECTS	Cost	Component
Raw Sewage Bypass Pumps and Flow Meter - construction	1,749,990	WRF
Interceptor Rehab and Repair	2,300,000	WRF
Clarifier Troughs Coating (3 Trains)	345,000	WRF
Sludge Storage and Solids Handling Canopy and Sidewalls	500,000	WRF
WPCP Generator Switch Gear repair / replace	500,000	WRF
Replacement Vehicles: Operations, Maintenance, Solids Handling, Operations	290,000	WRF
Sand Filter Shelters	280,000	WRF
Sludge Belt Filter Press upgrade	600,000	WRF
Sand Filter Carriage Rehab	350,000	WRF
Sludge Force Main Rehab/Replace- Grit to Solids Handling	300,000	WRF
Aeration Basin Blower Replacement	1,125,000	WRF

Table 2.4
Wastewater System 10-Year CIP (Continued)

WASTEWATER SYSTEM PROJECTS	Cost	Component
Raw sludge pumps (PC) - grit building	350,000	WRF
Raw Sewage Pump Station Bar Screens& slide gates Replacement	1,000,000	WRF
AC Watermain Replacement, Relocation of Meter and RPZ and Abandon Pneumatic Tank	390,000	WRF
FSAB & SSAB control room valve replacement	150,000	WRF
Lime addition upgrade	800,000	WRF
WPCP Equipment replacement - loader	225,000	WRF
UV disinfection - building to house AC & controls	175,000	WRF
WPCP equipment replacement Vac Trailer	110,000	WRF
Digesters coating of roofs	165,000	WRF
Weir Replacement on Clarifiers (9)	100,000	WRF
WPCP Expansion - Study	400,000	WRF
WPCP Expansion - Design	3,000,000	WRF
WPCP Expansion - Construction	35,000,000	WRF
WPCP Roofs Replace/ Repair (6 Buildings)	375,000	WRF
Southern Pines #4 Station Upgrade	1,500,000	WRF
Southern Pines #4 Force Main Replacement	1,500,000	WRF
Basins Coating & Structural Repairs	750,000	WRF
Lift Station 3-2 Replacement	400,000	Collection
Backhoe	160,000	Collection
Vac-Truck Replacement	600,000	Collection
Skid Steer with Mowing Attachment	125,000	Collection
Lift Station 8-1 Replacement	400,000	Collection
Lift Station 4-2 Replacement	400,000	Collection
Sewer Rehabilitation (CCTV Detection and Replacement/Repairs)	1,650,000	Collection
Lift Stations 15-1 and 3-3 Replacement	800,000	Collection
Seven Lakes Force Main in NC 211 ROW- ARP Funds*	3,600,000	Collection
Seven Lakes Sewer Force Main- NC State Budget Appropriation	14,550,000	Collection
Seven Lakes Business Sewer Collection System	2,000,000	Collection
	79,014,990	

Debt Cost

Moore County has incurred debt to pay for construction of several existing facilities. Debts for the EMWD and the WPCP have been excluded from the MCPU water system's SDF calculations. New debt for the water supply project and the Wastewater Treatment Plant expansion have been anticipated.

Table 2.5 summarizes total system debt payments for both water and wastewater systems. The total interest payment included in these evaluations is approximately **$102,542,361**. The

net present value (NPV) in FY24 of this cost is calculated at approximately **$69,759,539** using a 4-percent per year discount rate. The resulting NPV of the debt costs of approximately **$51,808,805** and **$17,950,734** can be added to the water and wastewater systems, respectively.

Table 2.5
Moore County's Debt for Water and Wastewater Systems

Fiscal Year	Water		Wastewater		Total		Total Debt Payment
	Principal	Interest	Principal	Interest	Principal	Interest	
2024	$798,913	$393,244	$844,455	$420,850	$1,643,368	$814,094	$2,457,461
2025	$821,913	$372,313	$864,455	$381,350	$1,686,368	$753,663	$2,440,031
2026	$2,813,205	$5,038,116	$1,534,220	$1,903,350	$4,347,425	$6,941,466	$11,288,891
2027	$2,934,420	$4,920,208	$1,586,958	$1,829,362	$4,521,378	$6,749,570	$11,270,948
2028	$3,059,545	$4,790,624	$1,641,333	$1,752,737	$4,700,878	$6,543,360	$11,244,239
2029	$3,187,827	$4,660,539	$1,692,427	$1,673,393	$4,880,254	$6,333,932	$11,214,186
2030	$3,329,523	$4,524,533	$1,750,326	$1,591,494	$5,079,848	$6,116,027	$11,195,875
2031	$3,392,991	$4,381,975	$1,820,119	$1,506,701	$5,213,110	$5,888,676	$11,101,786
2032	$2,927,340	$4,233,003	$1,881,902	$1,418,418	$4,809,243	$5,651,420	$10,460,663
2033	$3,073,957	$4,089,406	$1,940,775	$1,336,545	$5,014,732	$5,425,951	$10,440,683
2034	$3,222,155	$3,938,988	$1,071,841	$1,251,879	$4,293,996	$5,190,867	$9,484,863
2035	$3,377,263	$3,781,080	$1,070,210	$1,201,510	$4,447,473	$4,982,590	$9,430,063
2036	$3,549,626	$3,615,929	$1,066,542	$1,150,722	$4,616,168	$4,766,652	$9,382,820
2037	$3,714,607	$3,442,385	$1,119,869	$1,097,395	$4,834,477	$4,539,781	$9,374,257
2038	$3,892,588	$3,260,205	$1,175,863	$1,041,402	$5,068,450	$4,301,607	$9,370,057
2039	$4,083,967	$3,069,226	$1,234,656	$982,609	$5,318,623	$4,051,834	$9,370,457
2040	$4,284,166	$2,868,827	$1,296,389	$920,876	$5,580,554	$3,789,703	$9,370,257
2041	$4,488,624	$2,658,569	$1,361,208	$856,056	$5,849,832	$3,514,625	$9,364,457
2042	$4,707,805	$2,438,188	$1,429,268	$787,996	$6,137,073	$3,226,184	$9,363,257
2043	$4,852,195	$2,206,998	$1,500,732	$716,533	$6,352,927	$2,923,530	$9,276,457
2044	$5,082,305	$1,967,888	$1,575,768	$641,496	$6,658,073	$2,609,384	$9,267,457
2045	$5,328,670	$1,717,323	$1,654,557	$562,708	$6,983,227	$2,280,030	$9,263,257
2046	$5,576,854	$1,454,539	$1,737,285	$479,980	$7,314,138	$1,934,519	$9,248,657
2047	$5,472,446	$1,179,346	$1,824,149	$393,115	$7,296,595	$1,572,462	$8,869,057
2048	$5,746,069	$905,724	$1,915,356	$301,908	$7,661,425	$1,207,632	$8,869,057
2049	$6,033,372	$618,421	$2,011,124	$206,140	$8,044,496	$824,561	$8,869,057
2050	$6,335,041	$316,752	$2,111,680	$105,584	$8,446,721	$422,336	$8,869,057
	$105,288,475	$76,451,104	$39,869,010	$26,091,257	$145,157,485	$102,542,361	$247,699,846

Discount Rate	4.0%	4.0%		
NPV	$51,808,805	$17,950,734	$69,759,539	

Total Systems Value

Tables 2.6 and 2.7 summarize Moore County's total systems' values[17]. The total water system value after adjusting for contributed assets and components with a useful life of 10 years or less is approximately **$253,409,696**. This includes **$29,766,257** of distribution facilities, **$171,834,634** in existing/planned supply and **$51,808,805** of applicable debt costs. The total wastewater collection system value after adjusting for contributed assets and components with a useful life of less than 10 years is approximately **$124,321,584** with a treatment value of **$95,246,814** plus **$11,124,036** in collection **$17,950,734** in debt related cost.

Table 2.6
Moore County's Water System Value

Total Water System Value	Cost (in FY24$)
Distribution	$29,766,257
Water Purchase/Wells	171,834,634
Financing Cost	51,808,805
TOTAL	**$253,409,696**

Table 2.7
Moore County's Wastewater System Value

Total Wastewater System Value	Cost (in FY24$)
Collection	$11,124,036
Treatment	95,246,814
Financing Cost	17,950,734
TOTAL	**$124,321,584**

Equivalent Dwelling Unit (EDU) Determination

Public water systems, especially smaller systems, mainly serve single-family residences. On average, single-family residential customers use a similar quantity of water during the day and their water-use pattern remains similar and uniform. Therefore, when designing and evaluating water systems, non-residential and multi-family water demands are normally compared to the typical quantity of water a single-family residential unit consumes. The term equivalent dwelling unit (EDU) refers to this typical water use and forms the basis of these comparisons.

[17] For purposes of the System Development Fee Analysis, the calculation estimates FY24 value to calculate the fee and includes FY23 fixed assets, interest payments for the life of outstanding loans, and planned capital improvements. These items are brought to FY24 using a 4% discount (interest) factor.

The peak month average day water EDU for Moore County was established by taking an average gallon per day per person (73 gpd) from FY21 State DNR records multiplied by the average number of persons per housing unit for Moore County identified from the US Census (2.41) and applying a peaking factor of 2.0. This equates to 351.9 gallons of water per day needed for a typical dwelling unit. Wastewater is assumed to return to the system at a rate of 90% of water metered or 316.7 gallons. **Table 2.8** summarizes these EDU calculations for water and wastewater systems. These are used for the FY24 SDF calculation.

Table 2.8
Moore County's Water and Wastewater Systems EDU Calculation

Item	Calculation Item	Value	Units	Source/Calculation
A	Average Consumption per person per day	73	GPD	State DNR Records
B	Persons per dwelling unit (DU)	2.41	Persons	US Census 2015-2019 QuickFacts
C	Average DU usage (gallons per day)	175.9	GPD	A*B
D	Peaking Factor	2.0		System records
E	Peak Water Consumption Per DU	351.9	GPD	C*D
F	Return Factor	90%		Consultant Assumption
G	Peak Wastewater Consumption Per DU	316.7	GPD	E*F

Capacity Determination

The capacities of the water distribution and treatment and the wastewater collection and treatment estimated for these financial computations are summarized in the following tables. Please note that these values are general in nature and are not meant to represent design engineering values. **Table 2.9** outlines the calculation to move from the wastewater permitted capacity provided as a peak month average day to a peak day.

The goal here is to identify the capacity of the system components available for customers use in a general sense. Since system design incorporates infiltration and inflow considerations these elements must also be removed. Finally, since the SDF is based on a typical peak day use by a customer, the units must be converted using generally accepted factors. These figures are for FY23 and are used for the FY24 SDF calculation.

Table 2.9
Moore County's Wastewater Treatment Plant Capacity

Item	Calculation Item	Value	Units	Source/Calculation
A	WPCP's Permitted Capacity (MGD)	10.0	MGD	By Permit (Peak Month Avg. Day)
B	Planned Expansion	3.3	MGD	
C	Total	13.3	MGD	By Permit (Peak Month Avg. Day)
D	Peak month avg. day to annual avg. day ratio	1.4		Need to discuss design factor
E	Avg. daily flow capacity at WPCP (MGD)	9.5	MGD	C/D
F	MCPU Water Distribution Capacity	10.0		Calculated Below
G	MCPU Collection System Capacity (Peak Day)	14.0	MGD	E*1.4 for I&I
H	Portion Reserved for I&I	4.0	MGD	G-F
I	Collection System Capacity for Customers (Peak Day)	10.0	MGD	G-H
J	Treatment Peak Month avg. day to peak day ratio	1.2		System records
K	Treatment System Capacity (Peak Day)	16.0	MGD	C*J
L	Portion Reserved for I&I	6.4	MGD	40% I&I
M	Wastewater Treatment Capacity for Customers (Peak Day)	9.6	MGD	K-L

Table 2.10 provides for the supply/treatment capacity of the water system as of FY24. The MCPU has several intergovernmental agreements (IGA's) for water supply. These are added to the well capacity assuming an 18-hour run-time per day. The well capacity information was provided by MCPU. An agreement with the EMWD reserves 1.25 MGD of this supply[18]. These are the latest numbers for FY24 including 6.0 mgd for the Deep-River project.

[18] Resolution approving services contract and water purchase contract between the County of Moore and East Moore Water District.

Table 2.10
Moore County's Water System Supply/Treatment Capacity

Item	Calculation Item	Value	Units	Source/Calculation
A	Chatham County Peak Month Avg. Day	25,000	Gallons	Per IGA*
B	Peak day to annual avg. day ratio	1.4		Per Consultant
C	Chatham County Peak Day Calculated	35,000	Gallons	A*B
D	Well capacity	1,997	gpm	MCPU asset spreadsheet
E	Run Time	18	hours	Consultant Assumption
F	Wells (Peak Day)	2,156,760	Gallons	D*E*60
G	Harnett County (Peak Day)	3,000,000	Gallons	Per IGA
H	Aberdeen (Peak Day)	0	Gallons	Per IGA
I	Robbins (Peak Day)	25,000	Gallons	Per IGA
J	Chatham County (Peak Day)	35,000	Gallons	See A-B above
K	Southern Pines (Peak Day)	0	Gallons	Per IGA
L	Water Supply (new)	6,000,000	Gallons	Master Plan
M	Total MCPU and EMWD Water Supply	11,216,760	Gallons	Sum of F-L
N	EMWD (Peak Day)	1,250,000	Gallons	Per IGA
O	Total MCPU (Peak Day)	9,966,760	Gallons	M-N

To calculate the effective capacity available for customers on the distribution side, fire protection volumes should be subtracted out and storage added in. **Table 2.11** assumes a goal of 180,000 gallons available for fire flows. This equates to a fire flow rate of about 1,500 gpm over a two-hour period. The Moore County Water & Wastewater Development Policy requires 1,500 gpm for buildings that are 10 feet or less from each other to maintain ISO ratings. Please note that the 180,000 gallons calculated and mentioned above should be viewed as a MCPU wide value for the purposes of calculating an average SDF. Actual modeling and field testing may show different volumes are available in different areas of the water distribution system. These figures are for FY22.

Table 2.11
Moore County's Water System Distribution Capacity

Item	Calculation Item	Value	Units	Source/Calculation
A	EMWD (Peak Day)	1,250,000	Gallons	Per IGA
B	Total MCPU (Peak Day)	9,966,760	Gallons	From Table 2.9
C	Fire Protection Capacity Needed	180,000	Gallons	See Text on previous page
D	Storage Capacity	4,100,000	Gallons	MCPU asset spreadsheet
E	Storage Capacity (Not Reserved for Fire Protection)	3,920,000	Gallons	D-C
F	EMWD Proration of Storage	436,846	Gallons	E*(A/(A+B)
G	MCPU Proration of Storage	3,483,154	Gallons	E*(B/(A+B)
H	Distribution Capacity EMWD	1,686,846	Gallons	A+F
I	Distribution Capacity MCPU	13,449,914	Gallons	B+G

The final step is to convert the system capacities into various EDU figures. **Table 2.12** summarizes the capacities of the water treatment/supply and distribution and wastewater collection and treatment. Please note that the wastewater treatment portion is not used as the wastewater treatment assets are outside of the MCPU.

Table 2.12
Moore County's Water System Distribution Capacity

Item	Calculation Item	Value	Units	Source/Calculation
A	Water EDU	351.9	Gallons	Table 2.8
B	Wastewater EDU	316.7	Gallons	Table 2.8
C	Water Purchase/Supply	9,966,760	Gallons	Table 2.10
D	Water Distribution	13,449,914	Gallons	Table 2.11
E	Wastewater Treatment	9.6	MGD	Table 2.9
F	Wastewater Collection	10.0	MGD	Table 2.9
G	**Water Purchase/Supply**	**28,323**	**EDU's**	**C/A**
H	**Water Distribution**	**38,221**	**EDU's**	**D/A**
I	**Wastewater Treatment**	**30,313**	**EDU's**	**E*1,000,000/B**
J	**Wastewater Collection (MCPU Only)**	**31,576**	**EDU's**	**F*1,000,000/B**

Rate Credit per EDU

The last step before SDF calculations are finalized is associated with determination of the credit for debt payments made from rate revenues. This is done since new customers will contribute through rate revenue to the retirement of debt cost included within the connection fee calculation.

To avoid double charging the customer for the same asset value, a credit is provided against the SDF to account for the anticipated payments made by a typical customer over the life of the debt. Connection fees anticipated for debt are subtracted from total anticipated debt paid by rate revenues. A net present value is then calculated using a 4% discount rate to determine the credit in today's dollars. **Tables 2.13 and 2.14** summarize the growth projections and the payments in terms of EDU's.

Table 2.13
Rate Credit Calculation for Wastewater System

Fiscal Year	Growth Rate	Billed Wastewater (1000 Gallons)	Wastewater Debt Payment	Debt Payments by Fees	Debt Payments through rate revenues	$ per 1000 Gallons	$ per EDU
2025	2.0%	2,131,780	$1,245,805	$1,000,000	$245,805	$0.12	$10.27
2026	2.0%	2,174,416	$3,437,570	$1,000,000	$2,437,570	$1.12	$99.84
2027	2.0%	2,217,904	$3,416,320	$1,000,000	$2,416,320	$1.09	$97.03
2028	2.0%	2,262,262	$3,394,070	$1,000,000	$2,394,070	$1.06	$94.25
2029	2.0%	2,307,507	$3,365,820	$1,000,000	$2,365,820	$1.03	$91.31
2030	2.0%	2,353,657	$3,341,820	$1,000,000	$2,341,820	$0.99	$88.61
2031	2.0%	2,400,730	$3,326,820	$1,000,000	$2,326,820	$0.97	$86.32
2032	2.0%	2,448,745	$3,300,320	$1,000,000	$2,300,320	$0.94	$83.66
2033	2.0%	2,497,720	$3,277,320	$1,000,000	$2,277,320	$0.91	$81.20
2034	2.0%	2,547,674	$2,323,720	$1,000,000	$1,323,720	$0.52	$46.27
2035	2.0%	2,598,627	$2,271,720	$1,000,000	$1,271,720	$0.49	$43.58
2036	2.0%	2,650,600	$2,217,264	$1,000,000	$1,217,264	$0.46	$40.90
2037	2.0%	2,703,612	$2,217,264	$1,000,000	$1,217,264	$0.45	$40.10
2038	2.0%	2,757,684	$2,217,264	$1,000,000	$1,217,264	$0.44	$39.31
2039	2.0%	2,812,838	$2,217,264	$1,000,000	$1,217,264	$0.43	$38.54
2040	2.0%	2,869,095	$2,217,264	$1,000,000	$1,217,264	$0.42	$37.79
2041	2.0%	2,926,477	$2,217,264	$1,000,000	$1,217,264	$0.42	$37.04
2042	2.0%	2,985,007	$2,217,264	$1,000,000	$1,217,264	$0.41	$36.32
2043	2.0%	3,044,707	$2,217,264	$1,000,000	$1,217,264	$0.40	$35.61
2044	2.0%	3,105,601	$2,217,264	$1,000,000	$1,217,264	$0.39	$34.91
2045	2.0%	3,167,713	$2,217,264	$1,000,000	$1,217,264	$0.38	$34.22
2046	2.0%	3,231,067	$2,217,264	$1,000,000	$1,217,264	$0.38	$33.55
2047	2.0%	3,295,688	$2,217,264	$1,000,000	$1,217,264	$0.37	$32.89
2048	2.0%	3,361,602	$2,217,264	$1,000,000	$1,217,264	$0.36	$32.25
2049	2.0%	3,428,834	$2,217,264	$1,000,000	$1,217,264	$0.36	$31.62
2050	2.0%	3,497,411	$2,217,264	$1,000,000	$1,217,264	$0.35	$31.00
			$65,960,267	$65,960,267	$65,960,267		$1,359
						Discount Rate	**4.0%**
					Credit for Wastewater NPV (Part 2 Step A of FCCF Calc)		**$920**

Table 2.14

Rate Credit Calculation for Water System

Fiscal Year	Growth Rate	Billed Water (1000 Gallons)	Water Debt Payment	Debt Payments by Fees	Debt Payments through rate revenues	$ per 1000 Gallons	$ per EDU
2025	2.0%	1,248,480	$1,194,226	$1,000,000	$194,226	$0.16	$13.86
2026	2.0%	1,273,450	$7,851,321	$2,000,000	$5,851,321	$4.59	$409.22
2027	2.0%	1,298,919	$7,854,628	$2,000,000	$5,854,628	$4.51	$401.42
2028	2.0%	1,324,897	$7,850,169	$2,000,000	$5,850,169	$4.42	$393.25
2029	2.0%	1,351,395	$7,848,366	$2,000,000	$5,848,366	$4.33	$385.42
2030	2.0%	1,378,423	$7,854,055	$2,000,000	$5,854,055	$4.25	$378.23
2031	2.0%	1,405,991	$7,774,966	$2,000,000	$5,774,966	$4.11	$365.80
2032	2.0%	1,434,111	$7,160,343	$2,000,000	$5,160,343	$3.60	$320.46
2033	2.0%	1,462,793	$7,163,363	$2,000,000	$5,163,363	$3.53	$314.36
2034	2.0%	1,492,049	$7,161,143	$2,000,000	$5,161,143	$3.46	$308.07
2035	2.0%	1,521,890	$7,158,343	$2,000,000	$5,158,343	$3.39	$301.86
2036	2.0%	1,552,328	$7,165,555	$2,000,000	$5,165,555	$3.33	$296.36
2037	2.0%	1,583,375	7,156,993	$2,000,000	5,156,993	$3.26	$290.07
2038	2.0%	1,615,043	7,152,793	$2,000,000	5,152,793	$3.19	$284.15
2039	2.0%	1,647,344	7,153,193	$2,000,000	5,153,193	$3.13	$278.60
2040	2.0%	1,680,291	7,152,993	$2,000,000	5,152,993	$3.07	$273.12
2041	2.0%	1,713,897	7,147,193	$2,000,000	5,147,193	$3.00	$267.47
2042	2.0%	1,748,175	7,145,993	$2,000,000	5,145,993	$2.94	$262.16
2043	2.0%	1,783,139	7,059,193	$2,000,000	5,059,193	$2.84	$252.68
2044	2.0%	1,818,802	7,050,193	$2,000,000	5,050,193	$2.78	$247.29
2045	2.0%	1,855,178	7,045,993	$2,000,000	5,045,993	$2.72	$242.24
2046	2.0%	1,892,282	7,031,393	$2,000,000	5,031,393	$2.66	$236.80
2047	2.0%	1,930,128	6,651,793	$2,000,000	4,651,793	$2.41	$214.64
2048	2.0%	1,968,731	6,651,793	$2,000,000	4,651,793	$2.36	$210.43
2049	2.0%	2,008,106	6,651,793	$2,000,000	4,651,793	$2.32	$206.31
2050	2.0%	2,048,268	6,651,793	$2,000,000	4,651,793	$2.27	$202.26
			$181,739,579	$51,000,000	$130,739,579		$7,357
						Discount Rate	**4.0%**
					Credit for Water NPV (Part 2 Step A of FCCF Calc)		**$4,687**

We can now calculate the SDF. These calculations are provided in **Table 2.15** and **Table 2.16** for the water and wastewater systems, respectively. In each table, Part 1 provides the calculations of total system values and those costs per EDU's. Part 2 provides the credit applied based on new development's contribution of rate revenue applied to debt. Part 3 provides the fair share cost of new developments per EDU.

Table 2.15
Water System SDF Calculations

PART 1: Calculate Facilities Cost Per EDU

Step A Calculate Distribution Facilities Component

Distribution Facilities	Cost (in FY24$)	Comments
Existing Facilities: Water Mains, Pumps, Storage	$27,896,887	
Projects-in-Progress or Planned	1,869,370	6%
SUBTOTAL	**$29,766,257**	
TOTAL	$29,766,257	
CAPACITY (in EDUs)	38,221	
RESULTS ($'s/EDU)	**$778**	Rounded down to nearest $

Step B Calculate Treatment System Facilities Component

Treatment Facilities	Cost (in FY24$)	Comments
Water Purchase/Wells	$7,848,798	
Projects-in-Progress or Planned	163,985,836	95%
SUBTOTAL	**$171,834,634**	
TOTAL	$171,834,634	
CAPACITY (in EDUs)	28,323	
RESULTS ($'s/EDU)	**$6,066**	Rounded down to nearest $

Step C Calculate Debt Costs & Interest Component

Debt Costs & Interest	Cost (in FY24$)	Comments
Total Debt Cost (Not including Principal)	$51,808,805	
CAPACITY (in EDUs)	38,221	Uses higher of component capacity
RESULTS ($'s/EDU)	**$1,355**	Rounded down to nearest $

Step D Calculate Total Facilities Cost per EDU

All Components	Cost (in FY24$)	Comments
Distribution Component	$778	
Treatment System Component	6,066	
Debt Costs & Interest Component	1,355	
RESULTS ($'s/EDU)	**$8,199**	

Total Water System Value	Cost (in FY24$)	Comments
Distribution	$29,766,257	
Water Purchase/Wells	171,834,634	
Financing Cost	51,808,805	
TOTAL	**$253,409,696**	

PART 2: Calculate Rate Credit Per EDU

Step A Calculate Per EDU Share of Annual Water System Debt

Net Present Value Per EDU of Annual Debt = Credit Value

Annual Debt Payments of Water System for Existing and Anticipated Debt	Cost (in FY22$)	Comments
RESULTS ($'s/EDU)	-$4,687	Calculated exceeds 25% as required by law

PART 3: Calculate Full Proportionate Share Water Connection Fee Per EDU

Step A Subtract Rate Credit Per EDU from Total Facilities Cost Per EDU

	Cost (in FY23$)	Comments
Facilities Cost Per EDU	$8,199	
Rate Credit	-4,687	-57.2%
RESULTS ($'s/EDU)	**$3,512**	

Table 2.16
Wastewater System SDF Calculations

PART 1: Calculate Facilities Cost Per EDU

Step A Calculate Collection Facilities Component

Collection Facilities	Cost (in FY23$)	Comments
Existing Facilities: Gravity Sewers, Force Mains, Lift Stations	$11,124,036	
Projects-in-Progress or Planned	0	0%
SUBTOTAL	**$11,124,036**	
TOTAL	$11,124,036	
CAPACITY (in EDUs)	31,576	
RESULTS ($'s/EDU)	**$352**	Rounded down to nearest $

Step B Calculate Treatment System Facilities Component

Treatment Facilities	Cost (in FY23$)	Comments
Treatment Plant	$64,669,375	
Projects-in-Progress or Planned	30,577,439	32%
SUBTOTAL	**$95,246,814**	
TOTAL	$95,246,814	
CAPACITY (in EDUs)	30,313	
RESULTS ($'s/EDU)	**$3,142**	Rounded down to nearest $

Step C Calculate Debt Costs & Interest Component

Debt Costs & Interest	Cost (in FY23$)	Comments
Total Debt Cost (Not including Principal)	$17,950,734	
CAPACITY (in EDUs)	31,576	Uses higher of component capacity
RESULTS ($'s/EDU)	**$568**	Rounded down to nearest $

Step D Calculate Total Facilities Cost per EDU

All Components	Cost (in FY23$)	Comments
Collection Component	$352	
Treatment System Component	3,142	
Debt Costs & Interest Component	568	
RESULTS ($'s/EDU)	**$4,062**	

Total Wastewater System Value	Cost (in FY23$)	Comments
Collection	$11,124,036	
Treatment	95,246,814	
Financing Cost	17,950,734	
TOTAL	**$124,321,584**	

PART 2: Calculate Rate Credit Per EDU

Step A Calculate Per EDU Share of Annual Wastewater System Debt

Net Present Value Per EDU of Annual Debt = Credit Value

Annual Debt Payments of Wastewater System for Existing and Anticipated Debt	Cost (in FY23$)	Comments
RESULTS ($'s/EDU)	-$1,016	Rate credit is adjusted to 25% of SDF per NC Law

PART 3: Calculate Full Proportionate Share Wastewater Connection Fee Per EDU

Step A Subtract Rate Credit Per EDU from Total Facilities Cost Per EDU

	Cost (in FY23$)	Comments
Facilities Cost Per EDU	$4,062	
Rate Credit	-1,016	-25.0%
RESULTS ($'s/EDU)	**$3,046**	

The EDU is based on a typical residential demand using a $^{5}/_{8}$-inch or $^{3}/_{4}$-inch meter for water service. Larger meters will be charged a multiple based on the expected increase in provided capacities over the 5/8" meter[19]. Capacities are based on the AWWA meter equivalency ratios. **Table 2.17** provide the Water System SDF by meter size. The SDF will be added to any applicable tapping and administrative fees.

Table 2.17
Water EDU and SDF by Meter Size

Meter Size (in inches)	Peak Day Volume (no I&I)	EDU's	SDF
3/4	352	1	$3,512
1	880	2.5	$8,780
2	2,815	8	$28,096
3	5,630	16	$56,192
4	8,797	25	$87,800
6	17,593	50	$175,600
8	28,149	80	$280,960

For wastewater service, the EDU is based on 317 Gallons per day. **Table 2.18** provides that calculation up to 5 EDU's. Larger requests are determined by taking the daily capacity needed and dividing by 317 gallons. This results in an EDU value that is then multiplied by $3,046.

[19] The 5/8" meter represents the equivalent residential demand (EDU). Though many homes now use ¾" meters, their demand did not increase, as such it is still treated as a single EDU and larger meter EDU's are based on the 5/8" capacity ratio. The ratio was confirmed by an analysis of existing billed volumes.

Table 2.18
Wastewater SDF by EDU's

EDU's	Results	Peak Day Volume (no I&I)
1.0	$3,046	317
2.0	$6,092	633
3.0	$9,138	950
4.0	$12,184	1,267
5.0	$15,230	1,583

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Section 3

Findings & Recommendations

Section 3 - Findings/Recommendations

Findings

This report presents an analysis of the system development fee for the Moore County Public Works. The findings and recommendations are summarized in this section.

In general, the MCPW has capacity to sell to new developments for water and wastewater services. The "Buy-in" approach was selected to numerate the value of the existing system in terms of an equivalent dwelling unit (EDU). Additionally, the incremental cost approach was utilized to capture the future cost of replacement and expansion projects over the next 10 years. ***Assets with less than 10 years of useful life were excluded from these valuations. Additionally, replacement cost value of existing assets being replaced are excluded in the value.***

The East Moore Water District (EMWD) assets and debts were also analyzed during this project. However, due to the high debt load and resulting rate credit, an SDF for water system is not warranted. Though a separate EMWD SDF was not possible to pay for EMWD assets, the MCPU SDF for water treatment/supply and wastewater treatment and collection would be possible. Additionally, other wastewater districts that utilize the Moore County Water Pollution Control Plant (WPCP) may collect the SDF for wastewater treatment on behalf of Moore County. This would require an intergovernmental agreement that requires these districts to provide sufficient information to satisfy DFA tracking requirements.

The revenue credit for water facilities is calculated at $4,687 of the $8,199 facility cost per EDU resulting in a maximum fee of **$3,512**. The revenue credit for wastewater facilities is set at 25% or $1,016 of the $4,062 facility cost per EDU resulting in a maximum fee of **$3,046**. The wastewater credit provided here is higher than the calculated credit provided in the previous section. The credit may never go below 25% per DFA[20].

[20] (b) Revenue Credit. – In applying the incremental cost or marginal cost, or the combined cost, method to calculate a system development fee with respect to water or sewer capital improvements, the system development fee analysis must include as part of that methodology a credit against the projected aggregate cost of water or sewer capital improvements. That credit shall be determined based upon generally accepted calculations and shall reflect a deduction of either the outstanding debt principal or the present value of projected water and sewer revenues received by the local governmental unit for the capital improvements necessitated by and attributable to such new development, anticipated over the course of the planning horizon. **In no case shall the credit be less than twenty-five percent (25%) of the aggregate cost of capital improvements.**

Tables 3.1 and 3.2 summarize the maximum SDF recommended for FY23. An equivalency table for wastewater by water meter size is provided in **Table 3.3**.

Table 3.1
Water System SDF by Meter Size

Meter Size (in inches)	Peak Day Volume (no I&I)	EDU's	SDF
3/4	352	1	$3,512
1	880	2.5	$8,780
2	2,815	8	$28,096
3	5,630	16	$56,192
4	8,797	25	$87,800
6	17,593	50	$175,600
8	28,149	80	$280,960

Table 3.2
Wastewater SDF by EDU's

EDU's	Results	Peak Day Volume (no I&I)
1.0	$3,046	317
2.0	$6,092	633
3.0	$9,138	950
4.0	$12,184	1,267
5.0	$15,230	1,583

Table 3.3
Wastewater SDF by Meter Size

Meter Size (in inches)	Peak Day Volume (no I&I)	EDU's	SDF
3/4	317	1	$3,046
1	633	2.5	$7,615
2	2,027	8	$24,368
3	4,053	16	$48,736
4	6,333	25	$76,150
6	12,667	50	$152,300
8	20,267	80	$243,680

The fixed asset listing provided sufficient level of detail for the analysis presented in this report. However, additional details would allow for both a higher level of analysis and potential future replacement costs. Many asset descriptions were based on information provided from the purchase from other entities. In some cases, fixed assets were consolidated under a single heading/description.

For wastewater there is an assumed outdoor water usage based on meter size. Larger meters are assumed to use more water outside for landscaping purposes than a typical dwelling unit. This schedule should cover most new development. In situations where a facility has a high-water demand but low wastewater (greenhouses, plant retailers, industries that use water as part of their product) the wastewater SDF shall be determined by actual daily demand requested. Such requests shall be approved by Moore County and resulting sewer tap shall be sized as appropriate.

The East Moore Water District will not have a water SDF to recoup their distribution assets. An analysis of debt using the North Carolina DFA legislation would nullify the value of the water distribution system. However, East Moore Water District utilizes assets owned by MCPU and WPCP. The associated fees can be charged to new connections for these entities to recover their cost. However, since the rate credit is doubled, the Water SDF calculates to **$2,571** per EDU and the Wastewater SDF calculates to $2,680.

Tap Fee costs are excluded from the SDF and are provided separately on the official Moore County fee schedule. A tap fee recovers the cost of physically connecting a property to the distribution or collection systems. For water system, this would be the service line connecting the water main to a water meter. Moore County allows developers to provide the materials and labor to perform the water tap except for the meter. In this situation and only if the water tap conforms to Moore County specifications and there is no additional work needed for the tap by Moore County, the Developer will only need to pay for the meter set fee portion of the tap. The developer would pay for the water SDF, the admin fee and the meter set fee. For connection to the sewer main, the developer may provide the materials and labor for the tap and only pay the wastewater SDF and admin fee.

Capacity for water and sewer systems is only committed when an SDF is paid for either at platting for new subdivision after July 1, 2018, or at time of application for connection for other developments[21].

Recommendations

The following are recommendations for MCPU's consideration:

1. Provide a 45-day review period of this SDFA with provision to take written comments either via email or United States Postal Service delivery;
2. Adjust the FY22 SDFA based on comments received;
3. Implement fee for FY23 – FY26 based on Annual Budget preparation not to exceed **Tables 3.1, 3.2 and 3.3 of the amended (if needed) report.**
4. Perform full update of the SDFA every five years as required by legislation or earlier if significant changes in consumption or infrastructure occur. Especially as it relates to the cost and capacity of the wastewater expansion and the Deep-River water treatment plant

[21] **§ 162A-213. Time for collection of system development fees.**
(a) Land Subdivision. – For new development involving the subdivision of land, the system development fee shall be collected by a local governmental unit either at the later of either of the following:
a. The time of plat recordation.
b. When water or sewer service is committed by the local governmental unit.
(b) Other New Development. – For all other new development, the local governmental unit shall collect the system development fee at the earlier of either of the following:
a. The time of application for connection of the individual unit of development to the service or facilities.
b. When water or sewer service is committed by the local governmental unit."

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Appendix

Appendix A

Assets with less than 10 years of useful life were excluded from the SDF calculation.

Acq Date	Asset #	Description	Acq Cost	Acq Year	Net Book Value	Inflation Factor	Book Life	Depreciated Replacement Value
6/13/2011	0009148	PH LAKE LIFE STATION ARRA PROJECT	2,792,803	2011	2,094,603	1.355	20	2,837,345
6/25/2012	0009252	VASS WASTEWATER IMPROVEMENTS	2,302,091	2012	1,504,670	1.327	20	1,996,899
6/25/2012	0009253	LIFT STATION 3-4 REPLACEMENT	1,136,617	2012	852,463	1.327	20	1,131,332
7/1/1999	0007764-13	VASS SEWER SYSTEM	991,878	1999	353,083	1.829	35	645,769
6/30/2015	0009467	3-3, 3-1 LS REPLACEMENT	680,771	2015	538,944	1.286	20	692,850
6/30/2007	0008885	LS 9-1 PH HOSPITAL 420 LONGLEAF DR EAST	649,000	2007	194,700	1.470	20	286,124
4/5/2021	0010009	LIFTSATINO 10-3	480,907	2021	478,502	1.124	50	538,069
12/31/2005	0008716	L.S. 14-1 UPGRADE 328000.0330	427,633	2005	105,524	1.560	20	164,637
9/30/2006	0008805	OLD TOWN PINEHURST SEWER REHAB	404,901	2006	130,814	1.511	20	197,715
6/30/2018	0009708	VASS PHASE II SEWER SYSTEM IMP	393,879	2018	393,879	1.213	20	477,946
6/30/2006	0008766	LAKE PINEHURST REHAB 3280008065	352,562	2006	153,073	1.511	20	231,358
4/30/2007	0008880	LAKE PINEHURST EMERGENCY REPAIR	251,560	2007	73,372	1.470	20	107,824

Acq Date	Asset #	Description	Acq Cost	Acq Year	Net Book Value	Inflation Factor	Book Life	Depreciated Replacement Value
6/30/2007	0008882	PH LAKE LIFT STATION REPLACEMENT 328000	229,000	2007	103,050	1.470	20	151,438
6/30/2010	0009110	VASS SEWR PROJECT 328000.8126	204,368	2010	91,875	1.397	20	128,382
11/26/2012	0009336	GRAVITY SEWER @MR2 PUMP STATION	63,781	2012	36,143	1.327	20	47,966
7/1/1999	0007758-05	Sugar Gum Road Force Main	51,830	1999	18,235	1.829	35	33,351
9/30/2014	0009475	Pump 10-3 TreeHouse LS	35,134	2014	31,913	1.287	20	41,076
7/1/1999	0007758-16	MCCASKILL RD SEWER LINE	30,414	1999	0	1.829	20	0
7/1/1999	0007758-08	SEWER-CENTENNIAL GOLF COURSE	27,000	1999	8,602	1.829	35	15,732
6/30/2007	0008887	PH#2 Sewer rapair main golf co	23,487	2007	11,744	1.470	20	17,258
12/31/2006	0008817	Pump Replacement #10-3 324200	19,446	2006	10,209	1.511	20	15,431
9/30/2011	0009265	UPGRADE PINEWILD LS#4	11,134	2011	5,660	1.355	20	7,667
3/9/2012	0009266	UPGRADE LIFT STATION 10-4	11,005	2012	5,869	1.327	20	7,789
6/30/2007	0008889	PINEWILD PUMP REPLACEMENT LS PW1	10,131	2007	3,039	1.470	20	4,466
7/1/1999	0007935	LAKES LIFT STATION RELOCATION	9,578	1999	0	1.829	15	0
11/21/2014	0009473	SUBMERSIBLE PUMP TREEHOUSE LS	6,347	2014	4,231	1.287	20	5,446
7/1/1999	0007758-11	LIFT STA 16-2	3,013	1999	0	1.829	15	0
4/5/2021	0010009	LIFTSATINO 10-3	480,907	2021	459,266	1.124	50	516,438
6/15/2021	0009998CON	DOD CAMELLIA CROSSING PHASE 3	307,000	2021	294,208	1.124	50	330,833

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Acq Date	Asset #	Description	Acq Cost	Acq Year	Net Book Value	Inflation Factor	Book Life	Depreciated Replacement Value
3/29/2021	0010025	HYLAND HILLS COLUMBINE RD PROJECT	188,756	2021	179,947	1.124	50	202,348
6/6/2023	0010309CON	GRETCHEN PINES DOD PHASE 4	181,000	2023	180,698	1.000	50	180,698
3/6/2018	0009687-CON	ALMA ST-CAMELLIA CROSSING DEV. EQUP.	693,415	2018	577,846	1.213	20	701,178
2/3/2015	0009695-CON	HERONSBROOK - DEVELOPER EQUIP.	347,450	2015	235,976	1.286	20	303,364
9/15/2015	0009688-CON	JUNIPER RIDGE PHASE 1 DEV. EQUIP.	319,100	2015	226,029	1.286	20	290,576
6/15/2021	0009998CON	DOD CAMELLIA CROSSING PHASE 3	307,000	2021	306,488	1.124	50	344,642
11/13/2019	0009843CON	DOD DORMIE CLUB - WEST END	242,109	2019	221,933	1.192	20	264,509
12/3/2019	0009845CON	DOD ALMA STREET PHASE 2 (CAMILIA)	175,000	2019	161,146	1.192	20	192,060
4/4/2017	0009683-CON	WIGGS FARM - CURRIE MILL DEVELOPER EQUIP	167,250	2017	131,709	1.243	20	163,724
8/8/2019	0009848CON	DOD FOX GROVE PHASE II	163,338	2019	147,685	1.192	20	176,016
9/24/2019	0009805CON	DOD LAUREL RIDGE PHASE 1 - BLUE FARM	161,042	2019	146,280	1.192	20	174,342
1/3/2017	0009696-CON	SINCLAIR DEVELOPER EQUIP.	155,450	2017	120,474	1.243	20	149,758
5/19/2020	0009879CON	DOD DORMIE CLUB PHASE 2	154,704	2020	145,680	1.177	20	171,511
6/5/2018	0009691-CON	FOX GROVE	132,637	2018	112,189	1.213	20	136,134
4/21/2020	0009863CON	GRETCHIN PINES INFASTRUCTURE DOD	132,100	2020	123,844	1.177	20	145,803
2/18/2021	0009958CON	MAGNOLIA ON KNOLL DOD	125,000	2021	123,958	1.124	50	139,389

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Acq Date	Asset #	Description	Acq Cost	Acq Year	Net Book Value	Inflation Factor	Book Life	Depreciated Replacement Value
3/3/2020	0009876CON	SINCLAIR PHASE 5 DOD - INFASTRUCTURE	120,459	2020	112,428	1.177	20	132,364
9/1/2020	0009915CON	GRETCHEN PINES ESTATES II DOD	120,000	2020	118,000	1.177	50	138,923
2/18/2020	0009849CON	DOD ROYAL OAKS OF PINEHURST (TIARA PROP)	120,000	2020	111,500	1.177	20	131,271
11/12/2019	0009844CON	DOD DAVITA DIALYSIS - TOTAL RENAL CARE	105,000	2019	96,250	1.192	20	114,715
5/4/2021	0009991CON	DOD GRETCHEN PINES PHASE 2	102,000	2021	101,660	1.124	50	114,315
6/19/2018	0009690-CON	JUNIPER RIDGE PHASE 3 DEV. EQUIP	101,415	2018	85,780	1.213	20	104,089
4/16/2019	0009755CON	BROOKWOOD STAR RIDGE DOD	100,000	2019	88,750	1.192	20	105,776
1/5/2021	0009959CON	FOX GROVE PHASE 3 DOD	96,000	2021	95,040	1.124	50	106,871
10/6/2020	0009923CON	DOD TOWN OF HOFFMAN	91,450	2020	90,078	1.177	50	106,050
1/9/2018	0009686-CON	GREENS AT THE ARBORETUM DEVELOP EQUIP	85,500	2018	70,538	1.213	20	85,593
12/6/2018	0009726CON	WINSTON PINES SUBDIVISION WATERLINE	76,542	2018	66,655	1.213	20	80,882
10/4/2016	0009684-CON	SANDHILLS ALLIANCE CHURCH DEVELOPER EQUI	74,900	2016	57,111	1.270	20	72,506
9/6/2016	0009694-CON	MEADOWS AT FARM LIFE DEV. EQUIP.	67,525	2016	51,206	1.270	20	65,009
10/16/2018	0009723CON	LOT 133 CLARENDON GARDENS	63,750	2018	63,750	1.213	999	77,356
6/15/2021	0009999CON	DOD LAUREL RIDGE PHASE 2	60,000	2021	59,900	1.124	50	67,357

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Acq Date	Asset #	Description	Acq Cost	Acq Year	Net Book Value	Inflation Factor	Book Life	Depreciated Replacement Value
6/4/2019	0009777CON	JORDANS RIDGE DEVELOPER INFASTRUCTUR	58,720	2019	52,603	1.192	20	62,695
2/15/2017	0009689-CON	JUNIPER RIDGE PHASE 2 DEV. EQUIP.	55,520	2017	43,259	1.243	20	53,774
9/4/2018	0009724CON	PINEHURST BREWERY WATERLINE	50,150	2018	43,045	1.213	20	52,233
12/17/2019	0009906-1	815 ST ANDREWS DRIVE EASEMENT	48,464	2019	48,464	1.192	999	57,761
10/2/2018	0009725CON	PINEHURST SENIOR APARTMENTS WATERLINE	45,600	2018	39,330	1.213	20	47,724
4/16/2019	0009754CON	LONGLEAF PINES STORAGE DOD	37,279	2019	33,085	1.192	20	39,432
6/4/2019	0009778CON	HARNESS TRACK SEWER EXTENSION	35,350	2019	31,668	1.192	20	37,743
6/19/2018	0009693-CON	CAMERON AVENUE	35,000	2018	29,604	1.213	20	35,923
10/8/2019	0009905	3 INVERRARY RD EASEMENT	32,395	2019	32,395	1.192	999	38,609
9/1/2020	0009914CON	LA FORET DEED OF DECIATION	30,000	2020	29,500	1.177	50	34,731
7/21/2020	0009912CON	BROOKWOOD PH1B DOD	30,000	2020	29,400	1.177	50	34,613
11/13/2019	0009907-1	1724 NC 73 HWY EASEMENT	29,396	2019	29,396	1.192	999	35,035
8/16/2016	0009711-CON	MEDLIN RD DEVELOPER EQUIPMENT	25,500	2016	19,231	1.270	20	24,415
11/6/2018	0009722CON	GOLF PRIDE-CENTENNIAL BLVD	25,000	2018	21,667	1.213	20	26,291
9/16/2019	0009904	10 BECKETT RIDGE EASEMEN	24,395	2019	24,395	1.192	999	29,075

Acq Date	Asset #	Description	Acq Cost	Acq Year	Net Book Value	Inflation Factor	Book Life	Depreciated Replacement Value
2/15/2017	0009682-CON	SPUR RD WATER DISTRIBUTION SYSTEM	22,200	2017	17,298	1.243	20	21,503
7/16/2019	0009857CON	PINEHURST TEMP SCHOOL DOD	21,500	2019	19,350	1.192	20	23,062
11/5/2019	0009847CON	DOD BEACH CLUB PINEHURST	18,379	2019	16,847	1.192	20	20,079
10/23/2017	0009685-CON	RIO DE AGUA VIVA CHURCH DEV. EQUIP	17,600	2017	14,300	1.243	20	17,776
10/17/2017	0009681-CON	SANDHILLS CENTER DEVELOPER CONST	17,200	2017	13,975	1.243	20	17,372
9/25/2018	0009791	125 TRADE ST UTILITY EASEMENT	12,777	2018	12,777	1.213	999	15,504
9/4/2018	0009798	300 MAGNOLIA UTILITY EASEMENT	12,225	2018	12,225	1.213	999	14,834
5/19/2020	0009908-2	1724 NC 73 HWY EASEMENT	11,814	2020	11,814	1.177	999	13,908
9/26/2018	0009799	4176 MURDOCKSVILLE RD UTILITY EASEMENT	11,332	2018	11,332	1.213	999	13,751
6/5/2018	0009692-CON	BIBEY ROAD DEVELOPER EQUIPMENT	10,000	2018	8,458	1.213	20	10,264
7/1/2019	0009842CON	DOD FOR MANOR INN-PINEHURST	9,600	2019	8,640	1.192	20	10,297
12/17/2019	0009906	430 ST ANDREWS DR EASEMENT	8,577	2019	8,577	1.192	999	10,222
7/16/2019	0009846CON	DOD STAR SCHOOL - AEP CHARTER	8,000	2019	7,200	1.192	20	8,581
6/18/2019	0009779CON	O'REILLY AUTO PART INFASTRUCTURE	7,867	2019	7,048	1.192	20	8,400
11/5/2019	0009850CON	DOD COMMUNITY CENTER PINEHURST	6,496	2019	5,955	1.192	20	7,097

Acq Date	Asset #	Description	Acq Cost	Acq Year	Net Book Value	Inflation Factor	Book Life	Depreciated Replacement Value
5/19/2020	0009908	215 DORMIE DR EASEMENT	5,344	2020	5,344	1.177	999	6,292
9/26/2018	0009792	135 N. TRADE ST UTILITY EASEMENT	4,540	2018	4,540	1.213	999	5,510
9/20/2018	0009794	104 SEVEN LAKES CT UTILITY EASEMENT	4,188	2018	4,188	1.213	999	5,082
11/13/2019	0009907	215 DORMIE DR EASEMENT	3,882	2019	3,882	1.192	999	4,627
3/18/2019	0009795-1	6500 NC 211 HWY UTILITY EASEMENT #2	2,367	2019	2,367	1.192	999	2,822
3/18/2019	0009795	6500 NC 211 HWY UTILITY EASEMENT	2,209	2019	2,209	1.192	999	2,633
11/13/2019	0009907-3	1724 NC 73 HWY EASEMENT	2,182	2019	2,182	1.192	999	2,600
5/21/2019	0009797	150 MCKEITHAN AVE UTILITY EASEMENT	2,074	2019	2,074	1.192	999	2,472
11/24/2019	0009897-1	119 BLUEBIRD LN EASEMENT	2,073	2019	2,073	1.192	999	2,471
5/19/2020	0009908-1	1724 NC 73 HWY EASEMENT	1,983	2020	1,983	1.177	999	2,334
10/8/2019	0009905-1	3 INVERRARY RD EASEMENT	1,903	2019	1,903	1.192	999	2,268
2/5/2020	0009901	2763 MURDOCKSVILLE RD EASEMEN	1,721	2020	1,721	1.177	999	2,026
11/21/2018	0009793	244 SOUTH ST UTILITY EASEMENT	1,703	2018	1,703	1.213	999	2,067
11/24/2019	0009897	119 BLUEBIRD LANE EASEMENT	1,617	2019	1,617	1.192	999	1,927
11/20/2019	0009900-1	BLUEBIRD TRAIL EASEMENT	1,242	2019	1,242	1.192	999	1,480

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Acq Date	Asset #	Description	Acq Cost	Acq Year	Net Book Value	Inflation Factor	Book Life	Depreciated Replacement Value
11/6/2019	0009898	250 OLMSTEAD BLVD EASEMENT	1,231	2019	1,231	1.192	999	1,467
5/1/2019	0009796	200 BEULAH HILL RD UTILITY EASEMENT	1,230	2019	1,230	1.192	999	1,466
3/18/2019	0009795-2	6500 NC 211 HWY UTILITY EASEMENT #3	621	2019	621	1.192	999	740
11/2/2019	0009903	BLUEBIRD LANE EASEMENT	556	2019	556	1.192	999	662
11/20/2019	0009900	2825 MURDOCKSVILLE RD EASEMENT	466	2019	466	1.192	999	555
7/21/2020	0010016CON	STARS SCHOOL EASEMENT - DOD	340	2020	340	1.177	999	401
2/5/2020	0009901-1	BLUEBIRD TRAIL EASEMENT	235	2020	235	1.177	999	277
11/1/2019	0009896	199 BLUEBIRD LANE EASEMENT	232	2019	232	1.192	999	277
11/13/2019	0009907-2	215 DORMIE DR EASEMENT	217	2019	217	1.192	999	258
7/1/2019	0009899	NC 1 HWY AEP CHARTER SCHOOLS EASEMENT	132	2019	132	1.192	999	158
12/5/2019	0009902	236 BLUEBIRD LANE EASEMENT	29	2019	29	1.192	999	35
6/30/2014	0009393	WATER SOURCES PROJECT	7,601,355	2014	5,875,079	1.287	20	7,561,792
6/13/2011	0009183	PH WATER TANK PROJECT LOB CAPITAL/LK PHU	7,041,740	2011	5,686,299	1.355	26	7,702,652
7/1/1999	0007758-03	PINEHURST WATER SYSTEM	5,815,818	1999	1,638,239	1.829	35	2,996,246
9/30/2007	0008918	US 15/501 WATER MAIN 328000.0280	2,395,311	2007	1,077,890	1.470	20	1,584,027

Acq Date	Asset #	Description	Acq Cost	Acq Year	Net Book Value	Inflation Factor	Book Life	Depreciated Replacement Value
6/30/2009	0009054	PINEHURST ELEVATED STOR TANK 328000.8095	1,300,945	2009	593,431	1.420	20	842,837
7/1/1999	0007758-17	ADDOR/JACKSON HAMLET WATER PROJ CDBG	1,065,000	1999	0	1.829	20	0
6/30/2005	0008694	PINEWILD BYPASS 328000.0290 CIP PROJEC	922,460	2005	394,436	1.560	20	615,389
6/30/2003	0008535	WEST END/HWY 705 ROBBINS	860,000	2003	79,385	1.656	20	131,460
6/30/2002	0008497	CANNON PARK WATER TOWER PROJECT	848,974	2002	42,449	1.694	20	71,897
6/25/2012	0009251	MIDLAND RD WATERLINE UPGRADE	674,902	2012	380,690	1.327	20	505,227
6/30/2000	0008080	SEVEN LAKES 211 WATER LINE PROJECT	643,750	2000	0	1.769	20	0
12/4/2014	0009474	MCLEAN TANK RENOVATIONS	540,876	2014	362,838	1.287	20	467,007
11/1/2013	0009389	MCLEAN ROAD TANK 1 RENOVATION	459,895	2013	283,602	1.308	20	370,944
3/1/2006	0008732	INTERCONNECT - 7 LAKES 328000.0260	440,843	2006	191,303	1.511	20	289,140
7/1/1999	0007757-42	WESTSIDE OPERATIONAL EQUIPMENT	395,643	1999	74,042	1.829	30	135,418
7/1/1999	0007757-40	NORTHSIDE OPERATIONAL EQUIP	322,207	1999	52,977	1.829	30	96,892
4/30/2019	0009782	SEABOARD STREE WATER MAIN	243,563	2019	216,162	1.192	20	257,631
6/14/2011	0009188	WATER MAIN EXTENSION	180,221	2011	89,360	1.355	20	121,046
7/1/1999	0007757-41	SOUTHSIDE OPERATIONAL EQUIP	149,688	1999	24,612	1.829	30	45,013
7/1/1999	0007757-32	NORTHSIDE ELV TANK 158,000 GAL	149,365	1999	0	1.829	15	0

Acq Date	Asset #	Description	Acq Cost	Acq Year	Net Book Value	Inflation Factor	Book Life	Depreciated Replacement Value
9/30/2008	0009028	SIX INCH WATER MAIN, MCKINON RD 328000	112,875	2008	40,917	1.415	20	57,907
7/1/1999	0007758-10	WELL 19	107,799	1999	0	1.829	15	0
7/1/1999	0007757-33	WESTSIDE ELV TANK 150,000 GAL	105,792	1999	0	1.829	15	0
7/1/1999	0007936	MAGNOLIA RD WATERLINE	99,930	1999	0	1.829	15	0
7/1/1999	0007757-35	WEST END WATER LINE	89,749	1999	0	1.829	20	0
7/1/1999	0007764-01	Hyland Hills Water Sys	81,000	1999	1,277	1.829	20	2,335
6/30/2014	0009392	EDGEWOOD TERRACE PROJECT	78,500	2014	50,698	1.287	20	65,253
5/1/2010	0009104	HWY 211 WATER MAIN	74,151	2010	32,750	1.397	20	45,764
7/1/1999	0007764-02	VASS WATER SYSTEM(1993)	74,136	1999	21,132	1.829	35	38,649
6/19/2019	0009789	VIRGINIA ROAD WATER MAIN	72,570	2019	65,011	1.192	20	77,482
7/1/1999	0007758-02	WELL 2A	64,573	1999	0	1.829	15	0
4/17/2019	0009783	TRADE STREET WATER MAIN	62,240	2019	55,238	1.192	20	65,835
11/1/2017	0009680	NIAGARA CARTHAGE WATER MAIN IMP	57,550	2017	46,999	1.243	20	58,423
7/1/1999	0007925	RATTLESNAKE DR LINE EXT	55,386	1999	0	1.829	15	0
6/14/2011	0009189	OLD TOWN DIST HYDRANT UPGRADE	54,783	2011	27,163	1.355	20	36,795
7/1/1999	0007941	DUNDEE WOODS WATERLINE	49,097	1999	0	1.829	15	0
6/30/2005	0008693	INTERCONECT PHURST & EMWD	49,000	2005	10,453	1.560	20	16,309

Appendix

Acq Date	Asset #	Description	Acq Cost	Acq Year	Net Book Value	Inflation Factor	Book Life	Depreciated Replacement Value
3/8/2017	0009596	MONITORING STATION FOR TAYLORTOWN	41,686	2017	32,654	1.243	20	40,592
7/1/1999	0007932	CULDEE MAIN REPLACEMENT	41,568	1999	0	1.829	15	0
7/1/1999	0007758-06	BOOSTER STA MIDLAND RD	31,272	1999	9,179	1.829	35	16,788
7/1/1999	0007758-09	12"LINE-HWY 211 UPGRADE	25,658	1999	0	1.829	15	0
7/1/1999	0007758-01	WELLHOUSE #12	21,591	1999	0	1.829	15	0
7/1/1999	0007757-10	Westside Tanksite	18,000	1999	18,000	1.829	999	32,921
6/22/2012	0009279	WELL PW 5-LIFT STATION/3A	17,932	2012	9,788	1.327	20	12,990
3/31/2008	0008960	WATER LINE SERVICE EXT 328000.8040	15,994	2008	7,797	1.415	20	11,034
7/1/1999	0007758-14	PALMETTO DR MAIN EXTENSION	15,832	1999	0	1.829	20	0
7/1/1999	0007764-04	VASS WATER SYS(1995)	15,529	1999	4,707	1.829	35	8,609
3/11/2020	0009862	LEWIS POINT WATERLINE EXTENSION	12,430	2020	11,601	1.177	20	13,658
7/1/1999	0007757-30	WELL 6A	12,416	1999	0	1.829	15	0
1/10/2017	0009594	.11 ACRES PINEHURST LRK#20160018	11,980	2017	11,980	1.243	999	14,892
7/1/1999	0007764-14	WATERMAIN EXT-VASS-MCKEITHAN RD	9,070	1999	0	1.829	20	0
11/8/2016	0009586	LS 13-2 PARCEL .047 ACRES	9,000	2016	9,000	1.270	999	11,426
6/25/2012	0009261	MCPU HYDRAULIC MODEL, FLOAT UPGRADE	8,000	2012	4,367	1.327	20	5,795
7/1/1999	0007764-03	NIAGARA TIE-IN	5,697	1999	0	1.829	20	0

Acq Date	Asset #	Description	Acq Cost	Acq Year	Net Book Value	Inflation Factor	Book Life	Depreciated Replacement Value
7/1/1999	0007757-36	SHAW RD 6" WATERMAIN	4,902	1999	0	1.829	20	0
12/31/2005	0008717	GENERATOR NC211 BOOSTER STATION	2,700	2005	608	1.560	20	948
2/3/2023	0010238	PINEWILD INFASTRUCUTRE	2,275,751	2023	2,219,973	1.000	17	2,219,973
9/6/2022	0010156CON	DOD WINDER STATION	571,951	2022	562,419	1.041	50	585,571
10/14/2022	0010164	VASS WATER LINE IMPROVEMENTS	159,540	2022	157,147	1.041	50	163,616
3/1/2022	0010095CON	GRETCHEN PINES PHASE III	112,000	2022	109,013	1.041	50	113,501
5/4/2021	0009991CON	DOD GRETCHEN PINES PHASE 2	102,000	2021	97,580	1.124	50	109,727
7/1/1999	0007758-03	PINEHURST WATER SYSTEM	5,815,818	1999	1,638,239	1.829	35	2,996,246
7/1/1999	0007758-03	PINEHURST WATER SYSTEM	5,815,818	1999	1,638,239	1.829	35	2,996,246
6/30/2005	0008695	EMWD PHASE II 338100.0020 CIP PROJECT	10,942,122	2005	4,909,575	1.560	20	7,659,792
9/30/2005	0008718	PHASE I CONTRACT III 338000.0065	3,540,821	2005	1,377,837	1.560	20	2,149,666
4/1/2003	0008533	EAST MOORE WATER DIST PHASE I WATER	3,112,217	2003	1,679,686	1.656	40	2,781,541
6/30/2019	0009788	EMWD Phase IV	1,235,071	2019	1,235,071	1.192	20	1,472,006
4/15/2004	0008610	MECKLENBURG UTILITIES PHASE I CONTRA	39,132	2004	5,398	1.613	20	8,707
6/1/2006	0008767	RING LAND .34 ACRE LOT WATER TANK	21,998	2006	21,998	1.511	999	33,249
7/1/1999	0007759	PUB UTILITIES COMPLEX	907,249	1999	0	1.829	15	0
6/30/2000	0008081	CDBG SOUTH ST, VASS	838,400	2000	0	1.769	15	0

Acq Date	Asset #	Description	Acq Cost	Acq Year	Net Book Value	Inflation Factor	Book Life	Depreciated Replacement Value
6/30/2003	0008534	MONROETOWN UTIL SYSTEM SPRING LAKE ROAD	500,522	2003	49,101	1.656	20	81,310
3/29/2021	0010025	HYLAND HILLS COLUMBINE RD PROJECT	188,756	2021	187,497	1.124	50	210,838
12/20/2017	0009632	PINEHURST MAINT. YARD METAL BUILDING PAR	96,571	2017	79,934	1.243	20	99,364
7/1/1999	0007942	CAROLINA CRATE CDBG ADD 79170 ON 6/30/03	86,670	1999	0	1.829	15	0
6/16/2017	0009589	MAINTENANCE YARD FENCE IN PINEHURST	37,104	2017	21,953	1.243	10	27,290
6/30/2009	0009055	LAND EASEMENT SETTLEMENT AGREEMENT	29,500	2009	29,500	1.420	999	41,898
3/1/2000	0007988	PUB UTIL FENCING	9,760	2000	0	1.769	10	0
9/1/2006	0008811	60' ROAD BORE UNDER US HWY 1	7,435	2006	1,921	1.511	20	2,903
2/1/2022	0010090CON	THE VILLAGE PHASE 4 DOD	79,500	2022	77,248	1.041	50	80,427
11/15/2022	0010187CON	DOD VILLAGE CHAPEL	76,370	2022	75,352	1.041	50	78,454
2/1/2022	0010092CON	ROYAL OAK DOD	70,000	2022	68,017	1.041	50	70,817
10/5/2021	0010098	PALLET RACK SHELF SYSTEM	6,494	2021	5,358	1.124	10	6,024
9/1/2020	0009914CON	LA FORET DEED OF DECIATION	0	2020	28,300	1.177	50	33,318
9/1/2020	0009915CON	GRETCHEN PINES ESTATES II DOD	0	2020	113,200	1.177	50	133,272
10/6/2020	0009923CON	DOD TOWN OF HOFFMAN	0	2020	86,420	1.177	50	101,744
2/18/2021	0009958CON	MAGNOLIA ON KNOLL DOD	0	2021	118,958	1.124	50	133,767

Appendix

Acq Date	Asset #	Description	Acq Cost	Acq Year	Net Book Value	Inflation Factor	Book Life	Depreciated Replacement Value
1/1/1978		WPCP	34,661,152	1978	0	4.673	60	0
6/13/2011	0009100	WPCP UPGRADE PLANT	25,174,821	2011	16,239,414	1.355	20	21,997,883
1/1/1978		WPCP Interceptor	14,127,297	1978	3,296,369	4.673	60	15,405,066
1/1/1978	1000080	SEWER PLANT	9,167,837	1978	3,000,000	4.673	30	14,020,031
1/1/1978	1000075	SEWER LINES #1	3,335,322	1978	433,592	4.673	50	2,026,324
6/30/2019	0009787	PINEHURST #7 INTERCEPTOR	2,184,271	2019	2,038,653	1.192	20	2,429,746
6/30/2005	0008691	INFLUENT PUMP STATION UPGRADE	2,149,487	2005	487,197	1.560	20	760,113
1/1/1978	1000076	SEWER LINES #2	2,139,480	1978	278,132	4.673	50	1,299,808
1/1/1978	1000076	SEWER LINES #2	2,139,480	1978	278,132	4.673	50	1,299,808
9/30/2006	0008804	SOUTHERN PINES #4 PUMP REPLACEMENT	1,397,492	2006	628,872	1.511	20	950,488
6/30/2013	0009332	WPCP INTERCEPTOR SEWER REHAB	1,100,010	2013	820,424	1.308	20	1,073,094
7/1/1979	1000079	SOUTHERN PINES INTERCEPTOR	796,445	1979	127,431	4.197	50	534,828
7/1/1999	0007737	CAMP MCCALL SEWER PROJ	514,542	1999	0	1.829	15	0
1/1/1978	1000077	SEWER LINES #3	487,560	1978	63,383	4.673	50	296,210
1/1/1992	0006511	AERATION PROJECT	451,045	1992	0	2.172	20	0
1/1/1978	1000078	SEWER LINES #4	412,781	1978	53,661	4.673	50	250,778
6/30/2006	0008762	LIME SYSTEM 318000.0600	357,856	2006	161,035	1.511	20	243,392
6/30/2005	0008692	INTERCEPTOR LINES & MANHOLES	318,798	2005	83,590	1.560	20	130,416

Acq Date	Asset #	Description	Acq Cost	Acq Year	Net Book Value	Inflation Factor	Book Life	Depreciated Replacement Value
4/30/2001	0008255	BAR SCREEN & INFL PUMP STATION	250,318	2001	0	1.721	10	0
3/29/2018	0009675	FLUME UPGARDE	163,636	2018	136,364	1.213	20	165,468
8/29/2018	0009709	BAR RAKE	149,900	2018	128,040	1.213	20	155,368
6/16/2017	0009588	BAR RAKE #1	131,000	2017	104,254	1.243	20	129,596
6/30/2008	0008988	SLUDGE SYSTEM TRANSITION 31800	106,144	2008	60,872	1.415	20	86,147
3/31/2004	0008585	MONITORING STATION #10 3180000405	105,079	2004	14,448	1.613	20	23,306
10/1/1987	1000084	MAINTENANCE/STORAGE BLDG	99,971	1987	0	2.682	15	0
10/1/1987	1000083	SLUDGE BEDS	89,765	1987	0	2.682	30	0
4/15/2007	0008878	ROOF REPLACEMENT 3141000040	49,338	2007	14,185	1.470	20	20,845
12/11/1992	0006706	SOUTHERN PINES PUMP STATION	43,187	1992	0	2.172	15	0
6/30/2017	0009611	STORAGE BARN	41,428	2017	32,970	1.243	20	40,984
12/31/2006	0008814	SLUDGE SYSTEM TRANSITION PROJE	38,707	2006	18,386	1.511	20	27,789
6/14/2011	0009187	BAR SCREEN #2 REHAB WPCP	31,179	2011	21,695	1.355	20	29,389
9/30/2005	0008712	RAW SEWAGE PUMP STATION DESIGN	30,800	2005	6,545	1.560	20	10,211
8/1/2006	0008803	WWTP UPGRADE MAIN PLANT 318000.0590	28,500	2006	7,244	1.511	20	10,948
9/30/2004	0008626	OFFICE RENOVATIONS SANDHILLS BLDG SYS	26,546	2004	4,314	1.613	20	6,958
4/15/2004	0008608	SEPTIC HAULER TRUCK UNLOADING	23,138	2004	7,447	1.613	20	12,012

Acq Date	Asset #	Description	Acq Cost	Acq Year	Net Book Value	Inflation Factor	Book Life	Depreciated Replacement Value
9/22/2020	0010003	PAVING NEW ROAD CONSTRUCTION	12,189	2020	11,173	1.177	10	13,154
10/1/2013	0009386	SECURITY GATE FOR FRONT ENTRANCE	10,344	2013	6,336	1.308	20	8,287
10/13/2015	0009517	GREEN VINYL CHAIN LINK/BARBED WIRE PH 3	5,569	2015	3,968	1.286	20	5,101
5/1/2005	0008677	12X30 BLDG REPLACE LAB -WPCP	5,400	2005	1,035	1.560	20	1,615
6/30/2023	0010324	RAW SEWAGE BYPASS PUMP & FLOW METER	47,300	2023	47,300	1.000	50	47,300
6/30/2023	0010325	SEWER INTERCEPTOR UPGRADE	124,004	2023	124,004	1.000	50	124,004
3/30/2023	0010251	VAULT VALVE PRIMARY CLARIFIERS	400,994	2023	394,311	1.000	20	394,311
6/1/2022	0006235-2	SPUR GEAR 1989	19,000	2022	0	1.041	10	0
9/17/2013		Water Supply Harnett County Purchased Capacity	5,450,000	2013	5,232,000	1.308	100	6,843,327
6/30/2000	0008077	MOBBS WELL PROJECT FOXFIRE RD	234,495	2000	0	1.769	20	0
6/14/2011	0009191	WELL 3A	225,746	2011	134,324	1.355	20	181,955
3/31/2007	0008835	Scada Telemetry System 328000	201,049	2007	89,021	1.470	20	130,822
3/31/2008	0008959	CONSTRUCT WELL 9 AND 5A 328000.0755	186,775	2008	84,049	1.415	20	118,948
6/30/2014	0009388	LINDEN RD WELLS	94,500	2014	61,031	1.287	20	78,553
6/30/2002	0008498	WELL#22 PINEHURST, NC ADDED 45384.23	72,890	2002	3,644	1.694	20	6,173
6/30/2007	0008881	PINEHURST WELL 5A 3280000755	58,403	2007	17,521	1.470	20	25,748

Acq Date	Asset #	Description	Acq Cost	Acq Year	Net Book Value	Inflation Factor	Book Life	Depreciated Replacement Value
7/1/1999	0007764-07	Vass Water Plant Rehabilitatio	53,685	1999	23,584	1.829	35	43,134
6/14/2011	0009190	GROUND WATER MONITORING WELL	49,000	2011	24,296	1.355	20	32,911
6/30/2007	0008884	Water source study	43,404	2007	23,872	1.470	20	35,082
12/10/2012	0009337	NEW METER BASE WELL #13	36,753	2012	20,980	1.327	20	27,843
12/31/2006	0008815	PINEHURST TEST WELL8 FOR WELL5A	18,418	2006	5,065	1.511	20	7,655
3/1/2010	0009109	WELL#9	17,950	2010	7,778	1.397	20	10,869
7/1/1999	0007757-04	Well Lot #7	15,000	1999	15,000	1.829	999	27,434
7/1/1999	0007757-05	WELL LOT #8	15,000	1999	15,000	1.829	999	27,434
7/1/1999	0007757-06	Well Lot #9	15,000	1999	15,000	1.829	999	27,434
7/1/1999	0007757-07	Well Lot #9A	15,000	1999	15,000	1.829	999	27,434
7/1/1999	0007757-08	WELL LOT #11	15,000	1999	15,000	1.829	999	27,434
7/1/1999	0007757-09	Well Lot #11A	15,000	1999	15,000	1.829	999	27,434
6/22/2017	0009598	WELL REHABILITATION #17	14,029	2017	11,165	1.243	20	13,879
6/30/2007	0008888	PH#10 WELL PUMP REPLACEMENT 3243003526	9,288	2007	2,786	1.470	20	4,095
3/1/2010	0009108	WELL#23 328000.8125	7,093	2010	3,073	1.397	20	4,295
7/1/1999	0007757-03	Well Lot #6	6,000	1999	6,000	1.829	999	10,974
6/30/2014	0009387	WELL 24	5,800	2014	3,746	1.287	20	4,821
7/1/1999	0007757-01	Well Lot #3	5,000	1999	5,000	1.829	999	9,145
7/1/1999	0007757-02	WELL LOT #4	5,000	1999	5,000	1.829	999	9,145
7/1/1999	0007757-27	Well-Auman Property	4,000	1999	4,000	1.829	999	7,316

Appendix