

# City of Dunn

## System Development Fee Analysis

Project No. 3432-A  
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## 1. EXECUTIVE SUMMARY

In December 2017, the North Carolina General Assembly amended Chapter 162A of the General Statutes by passing House Bill 436. This amendment created “Article 8: System Development Fees”, and requires local governments to adopt uniform system development fees for public water and sewer systems by July 1, 2018 if the local government desires to charge system development fees thereafter. A factor driving the legislation is application of the ‘rational nexus text’, which requires decision makers to confirm the direct and reasonable connection between the impact of the new development, need for new infrastructure to support that development, and justify the appropriated **System Development Fees (SDFs)** necessary to support that growth. Prescribed methodologies to determine these SDFs are the *Buy-In (Equity) Cost Method*, *Incremental Cost (Marginal) Method*, and *Combined Cost Method*.

The City of Dunn has retained the professional engineering services provided by The Wooten Company to conduct the SDF analysis. The most practical methodology to calculate SDFs for the City is the Combined Cost Method. This method accounts for the costs of existing infrastructure serving both existing and future customers while avoiding adverse financial impacts to existing customers for construction of new infrastructure necessary to support new development.

Based on existing infrastructure costs totaling \$34.6 million and planned five-year capital improvement costs totaling \$186 million (refer to **Appendix 4**), the unit cost per gallon of water is \$2.75 and unit cost per gallon of sewer is \$5.88, for a maximum allowable combined unit cost of \$8.63 per gallon, as shown in **Table 1**.



**Table 1. Maximum Allowable System Development Fees**

Meter Size, inches	Equivalent Ratio	Water Capacity Cost, \$/gallon	Sewer Capacity Cost, \$/gallon	Total Capacity Cost, \$/gallon	Total Capacity Cost, \$/connection <sup>1</sup>
5/8	1.0	\$2.75	\$5.88	\$8.63	\$3,100
1	2.5				\$7,760
1-1/2	5.0				\$15,530
2	8.0				\$24,850
3	16.0				\$49,700
4	25.0				\$77,670
6	50.0				\$155,340
8	80.0				\$248,540
10	115.0				\$357,280
12	215.0				\$667,960

<sup>1</sup> Based on 360-GPD use for a 5/8" residential connection.

For a 360-GPD residential (5/8" meter size) connection, the maximum allowable combined water and sewer SDF would be \$3,100. The unit cost takes into account \$18.4 million in accumulated depreciation for the existing infrastructure assets of \$34.6 million, for a net total cost of \$16.2 million eligible to recuperate from SDFs.

Commercial, industrial, and institutional connections, which require larger water meters, may be charged higher SDFs based on American Water Works Association (AWWA) – prescribed equivalent ratios or other approved rate adjustment factors. **Table 1** also shows SDFs for meters ranging in size from 1- to 12-inch. This analysis allows policymakers to make an informed decision when allocating system capacity costs between existing and new customers. It is expected that, at the rates listed in **Table 1**, water SDFs will generate \$2.4 million and sewer SDFs will generate \$5.0 million for a total of \$7.3 million over a five-year planning horizon, to support necessary water and sewer infrastructure rehabilitation and expansion. The rates listed in **Table 1** represent the maximum rate supported by the SDF analysis. The City can elect to assess lower rates at the City's discretion. As required by the legislation, the City of Dunn will need to re-evaluate this analysis and proposed SDFs at a minimum every five years and make necessary fee adjustments.



## 2. INTRODUCTION

### 2.1 Background

The North Carolina General Assembly (NCGA) ratified House Bill 436 (HB 436)<sup>1</sup> in December of 2017, amending Chapter 162A: *Water and Sewer Systems*, Article 8: *System Development Fees* of the NC General Statutes (NCGS)<sup>2</sup>. This legislation requires local governments to adopt uniform system development fees for public water and sewer systems by July 2018. System Development Fees (SDFs), also commonly known as capacity charges, are charges imposed to customers (users) to fund capital improvements for new development, to recuperate costs of existing facilities that serve new development, or a combination<sup>3</sup>. According to HB 436, units of local government, authorities, and districts that provide water and sewer services are required to do the following:

1. Calculate SDFs by using a buy-in, incremental, or combined costs method;
2. Identify assumptions and limitations of the data analysis;
3. Identify metric components of the SDF, demand, and capacity by customer class/category;
4. Illustrate clear factors for units of measurement;
5. Provide a 5- to 20-year planning timeline;
6. Provide public notice and conduct a public hearing;
7. Adopt fees by resolution or ordinance to incorporate into the jurisdiction's annual budget; and
8. Update and reevaluate the SDFs every five (5) years.

The University of North Carolina at Chapel Hill (UNC) School of Government (SOG) Environmental Finance Center (EFC)<sup>4</sup> and American Water Works Association (AWWA) *Manual of Water Supply Practices* (M1)<sup>5</sup> provide detailed guidance and considerations for SDF determinations. In general, jurisdictions will

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<sup>1</sup> North Carolina General Assembly (NCGA). "Public Water and Sewer System Development Fee Act." *Local Government/Regulatory Fees, House Bill 436*. Session Law 2017-138. Ratified 20 December 2017. [HB 436]

<https://www.ncleg.net/gascripts/billlookup/billlookup.pl?Session=2017&BillID=H436>

<sup>2</sup> North Carolina General Statutes (NCGS). Chapter 162A. *Water and Sewer Systems*.

<https://www.ncleg.net/gascripts/Statutes/StatutesTOC.pl>

<sup>3</sup> NCGA. HB 436. <https://www.ncleg.net/gascripts/billlookup/billlookup.pl?Session=2017&BillID=H436>

<sup>4</sup> Hughes, Jeff & Millonzi, Kara. (2017, August 17). "Update on the Authority to Charge Water System Development Fees." [Webinar]. University of North Carolina at Chapel Hill (UNC). School of Government (SOG). Environmental Finance Center (EFC). <https://efc.sog.unc.edu/resource/update-authority-charge-water-system-development-fees>

<sup>5</sup> American Water Works Association (AWWA). *Principles of Water Rates, Fees, and Charges: Manual of Water Supply Practices (M1)*. 7<sup>th</sup> Edition, 2017.



need an inventory and condition of assets, financial commitment to capital improvements, and evidence of master planning strategies.

## **2.2 Purpose**

The City of Dunn, NC has requested The Wooten Company to provide professional consulting services, conduct an in-depth analysis of anticipated system costs, and project estimated revenues from SDFs using the City's existing infrastructure depreciation schedule and Capital Improvements Plan (CIP). This analysis will include evaluation of System Development Fee methodologies, investigate the scenario that provides the optimum outcome, present findings, and calculate proposed SDFs for public comment and adoption by the City Council.

### 3. METHODOLOGIES OF DETERMINING SYSTEM DEVELOPMENT FEES

System Development Fees (SDFs) are charges to new water and wastewater (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<sup>6</sup>. SDFs do not include routine City 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 in more detail below.

#### 3.1 Buy-In Method

The Buy-In Method, otherwise known as the equity method, is appropriate for use when the current system facilities are sufficient to serve existing and future customers or in systems where existing components do not anticipate needing replacement or expansion in the near future. In this approach, the past contributions of existing customers count as built-in equity accrued. New customers contribute equity (buy-in) to the system, relative to the debt-free position of current customers, accounting for their new share of the system cost. In simplest terms, the process of the buy-in method is to:

1. Identify existing capacity of assets;
2. Value that capacity;
3. Calculate a cost per unit of capacity; and
4. Provide conversion units to assign capacity based on customer type and demand.

The costs of facilities are based on system assets and liabilities, equity sources, and usage. Costs of system assets include replacement costs and depreciated value of that asset. System liabilities and equity include outstanding long-term debt, contributions such as grants, and revenues from existing users and customers. A common unit of measurement by type of customer and demand, such as *equivalent residential unit* (ERU), calculates the cost per unit of increased capacity. ERUs are converted to determine the SDF based on meter size (example “base” meter size, 5/8-inch meter), fixture units (number of water-using devices), square footage of property, or number of bedrooms. Revenue from SDFs using the Buy-In Method must be expended on repair or rehabilitation of system components, as well as previously completed capital improvements activities where capacity still exists for new customers.

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<sup>6</sup> NCGA. HB 436. <https://www.ncleg.net/gascripts/billlookup/billlookup.pl?Session=2017&BillID=H436>



## 3.2 Incremental Cost Method

The Incremental Cost Method, or marginal method, is appropriate for use when the current system facilities are sufficient to serve existing customers, but significant upgrades or expansion are required to serve any new customers. The primary concept of this approach is to charge new customers for the new development without existing user rates being adversely affected, but concurrently tackling the debt service associated with the capital improvements.

A primary step in calculating the SDF is determining the service area, such as jurisdictional boundaries or corporate limits. The SDF planning period aligned with projected growth and demand patterns within an existing master plan or Capital Improvements Plan (CIP), with projected growth and demand patterns for a 5- to 20-year lifespan to ensure adequate increase in needed system capacity.

Predicting future system expansion and capacity needs requires the type of customer, demand by customer type, and rate of growth over the planning period. Examples of customer types generally include residential, commercial, industrial, and institutional categories. Growth rates can include population and employment estimates. Just as with the Buy-In Method, a common unit of measurement by customer type or meter size is assigned a utilization rate equivalent to the typical ERU.

According to HB 436, the Incremental Cost Method must also account for revenue credit, which is a deduction of either the outstanding debt principal or present value of project revenues of the new development over the timeline of the planning period, at a minimum of twenty-five percent (25%) of cost of the capital improvements<sup>7</sup>. Separate construction or contribution credits may also be calculated to determine the excess cost of developer's share of connecting the new development to oversized facilities that accommodate anticipated future development.

System capacity expansion is more efficient and cost-effective when done in an incremental manner. The cost of each increment shifts to the new customers instead of the existing customers of the system. Revenue from collected SDFs covers the costs of constructing new capital improvements and related professional and technical fees to service new customer growth.

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<sup>7</sup> NCGA. HB 436. <https://www.ncleg.net/gascripts/billlookup/billlookup.pl?Session=2017&BillID=H436>



### 3.3 Combined Method

The Combined Method is a combination of the two previous methods. The Buy-In Cost component and Incremental Cost component are added together. This approach is generally appropriate for use when the current system facilities have capacity to serve some of the new growth, but the CIP identifies infrastructure to be constructed to meet the needs of the projected growth. Calculation of SDFs using this method includes both existing and planned capacity.

### 3.4 Overall Technical Approach

To determine the most appropriate and logical approach to calculate SDFs, the jurisdiction must evaluate its service area priorities and financial objectives:

1. Are major expansions anticipated?
2. Will new developments solely pay for new capacity?
3. What financial reserves exist for capital improvements?
4. What is the current debt situation?
5. Does current capacity adequately support the needs of the anticipated demand?
6. Do current revenues adequately support the needs of the system?
7. Are there any system assumptions or limitations?
8. What does the local government hope to achieve by charging SDFs? (What is the financial function for SDFs?)
9. Besides state legislation and local ordinances, are there any case law(s) applicable to the local system service area?
10. Are there any unique criteria important to the jurisdiction or local system service area?

#### 3.4.1 Rational Nexus Test

A common legal consideration to apply when determining SDFs is the 'rational nexus test' to ensure appropriate relationship between the SDF and cost of the new development. The 'rational nexus test' requires the following:

1. Confirm the direct and reasonable connection between the impact of the new development and need of new or expanded infrastructure (e.g., evaluation of master planning documents);



2. Determine the cost of the new infrastructure to support the new development (e.g., evaluating intricacies of how new infrastructure is financed and its economic development contributions); and
3. Demonstrate the rationale of appropriating the capital necessary to support that growth (e.g., providing a direct link between the establishment of fair and just fees to the amenities and benefits received by the new users of the new infrastructure).

### 3.4.2 Costs in SDF Calculations

The American Water Works Association (AWWA) *Manual of Water Supply Practices (M1)*<sup>8</sup> provides detailed guidance and considerations for SDF determinations. In general, costs related to existing system assets, estimated capital projects, interest costs, and reclaimed water costs can be included in calculating SDFs. **Table 2** summarizes the typical information needed to calculate the various methods.

**Table 2. Data Needed for SDF Calculations**

Data Needed	Buy-In / Equity Method	Incremental Cost / Marginal Method
Construction/Developer Contribution Credits	X	X
Actual Value of Assets	X	
Replacement Value of Assets	X	
Debt and Grant Credits	X	X
Revenue Credits		X
Existing Asset Inventory	X	
5-20 Year CIP		X
Capacity of Existing Assets	X	
Capacity of Planned CIP Assets		X
Estimated Capacity Needs of Customers based on Demand	X	X

<sup>8</sup> American Water Works Association (AWWA). *Principles of Water Rates, Fees, and Charges: Manual of Water Supply Practices (M1)*. 7<sup>th</sup> Edition, 2017.



## 4. EXISTING CONDITIONS

Utility system components including water source, treatment and distribution as well as wastewater collection, treatment and discharge must be identified and their overall condition assessed for adequacy to continue providing services to new customers.

### 4.1 Water Treatment & Distribution

The City’s primary water service area straddles US Highway 421 and US Highway 301, extending northwest to the City of Erwin, northeast to the Town of Benson, southwest to the Eastover Sanitary District, and east to Sampson County (refer to **Appendix 1**). The service area is bound on the west by the Black River and east by the Mingo Swamp. As shown in **Table 3**, according to the *2020 Local Water Supply Plan (LWSP)*<sup>9</sup>, the City of Dunn supplies potable water to not only its own users but also to five other municipalities. The City of Dunn is contractually obligated to provide up to 1.0 MGD to the Eastover Sanitary District, 1.0 MGD to Harnett County, 0.6 MGD to the Sampson County Water District II, 1.2 MGD to the Town of Benson, and 0.2 MGD to the Town of Falcon. The City owns and operates the 8-MGD A.B. Uzzle Water Treatment Plant (WTP) to supply potable water to its customers. Finally, the City has 6 million gallons of total elevated and ground storage. The distribution system consists of 115 miles of 1- to 24-inch diameter distribution pipe, predominately made of asbestos cement.

**Table 3. Water System Components**

Component	Design Capacity	Overall Condition
Water Supply/Treatment <sup>1</sup>	8.00 MGD	<i>Satisfactory</i>
Finished Water Storage	6.00 MGAL	<i>Satisfactory</i>
Fire Hydrants	838	<i>Satisfactory</i>
Water Mains	115 miles, 1-24 inch	<i>1920s–2010s</i>
<i>Asbestos Cement</i>	<i>48.3 miles, 6-16 inch</i>	<i>Unsatisfactory</i>
<i>Cast Iron</i>	<i>17.3 miles, 4-14 inch</i>	<i>Satisfactory</i>
<i>Ductile Iron</i>	<i>25.3 miles, 4-24 inch</i>	<i>Satisfactory</i>
<i>Galvanized Iron</i>	<i>5.8 miles, 1-2 inch</i>	<i>Unsatisfactory</i>
<i>Polyvinyl Chloride</i>	<i>16.1 miles, 2-12 inch</i>	<i>Satisfactory</i>
<i>Other</i>	<i>2.3 miles, 12 inch</i>	<i>Satisfactory</i>

<sup>1</sup> Drinking water is supplied through the A.B. Uzzle WTP.

<sup>9</sup> North Carolina Department of Environmental Quality (NC DEQ). Division of Water Resources (DWR). *Local Water Supply Plans*. “Dunn, 2020”. [https://www.ncwater.org/Water\\_Supply\\_Planning/Local\\_Water\\_Supply\\_Plan/search.php](https://www.ncwater.org/Water_Supply_Planning/Local_Water_Supply_Plan/search.php)



In order to assess overall current water system demands and supply, the Dunn Local Water Supply Plans (LWSPs) for 2015 to 2020 were evaluated. According to the latest 2020 LWSP, Dunn produced an average daily volume of 3.28 MGD of finished water. Water produced is used to supply metered customers in the City of Dunn, meet water needs of the wholesale connections (the Eastover Sanitary District, Harnett County, the Sampson County Water District II, the Town of Benson, and the Town of Falcon), and for maintenance of the water distribution and sewer system (cleaning/flushing, flushing fire hydrants, jetting sewers, etc.); some of the finished water is “lost” through leaks or due to metering inaccuracies (“unaccounted-for” water). Based on reported demands, the City of Dunn consumed approximately 1.286 MGD and the wholesale connections collectively consumed 1.564 MGD. With a total of 2.85 MGD consumed, the average “unaccounted-for” water was approximately 0.43 MGD, or approximately 13% of the water produced by the WTP. The City’s Maximum Daily Demand (MDD) was 4.38 MGD in 2020 but can reach up to 4.84 MGD, according to the City’s 2015-2020 LWSP (refer to **Appendix 2**).

According to the 2020 Dunn LWSP, the water system serves 3,920 residential customers, 791 commercial customers, 9 industrial customers, and 29 institutional customers. The metered monthly water uses averages 0.395 MGD, 0.311 MGD, 0.016 MGD, and 0.364 MGD for residential, commercial, industrial, and institutional customers, respectively. Thus, a typical residential water customer has a metered average monthly water use of approximately 101 GPD, a typical commercial customer has 393 GPD, a typical industrial customer has 1,778 GPD, and a typical institutional customer has 12,552 GPD.

## 4.2 Wastewater Treatment & Collection

The primary sewer service area is nearly the same as the water system but covering less area. The service area is bound on the west by the Black River and east by the Mingo Swamp (refer to the sewer system map in **Appendix 1**). Unlike the water system service area, the sewer service area ends at Arrowhead Road and does not reach the City of Erwin to the northwest nor the Town of Benson to the northeast (refer to **Appendix 1**). As shown in **Table 4**, according to the City’s GIS database, the collection system consists of 5.0 miles of 2- to 20-inch diameter force main and 87 miles of 4- to 36-inch diameter gravity sewer pipe. Force main pipe is made of either polyvinyl chloride (PVC) or Ductile Iron Pipe (DIP), while gravity sewer pipe is predominately made of unknown material, vitrified clay pipe (VCP), and polyvinyl chloride (PVC). The City of Dunn treats its wastewater at the 3.75-MGD Black River WWTP. The wastewater collection system also includes 9 pump stations and 1,937 manholes.



**Table 4. Sewer System Components**

<b>Component</b>	<b>#/Design Capacity</b>	<b>Overall Condition</b>
Black River WWTP	3.75 MGD	<i>Satisfactory</i>
Pump Stations	9 (50 GPM – 3,000 GPM)	<i>Satisfactory</i>
Force Main	8.0 miles, 2–20 inch	
<i>Abandoned</i>	1.2 miles	<i>Abandoned</i>
<i>DIP</i>	5.3 miles, 2-20 inch	<i>Satisfactory</i>
<i>PVC</i>	1.6 miles, 2-6 inch	<i>Satisfactory</i>
Manholes	1,937	<i>Satisfactory</i>
Gravity Main	86.7 miles, 4-36 inch	1940s–2010s
<i>Asbestos Cement</i>	0.08 mile, 8 inch	1960s
<i>Cast Iron</i>	0.02 mile, 8 inch	1960s
<i>CIPP</i>	0.06 mile, 8 inch	2010s
<i>Ductile Iron</i>	1.6 miles, 8-24 inch	1960s–1980s
<i>HPDE</i>	0.5 mile, 6-15 inch	1940s–1990s
<i>Other</i>	0.2 mile, 8-15 inch	1940s–1980s
<i>PVC</i>	10.5 miles, 4-24 inch	1940s–1990s
<i>RCP</i>	1.2 miles, 8-36 inch	1940s–1960s
<i>RPM</i>	4.1 miles, 8-27 inch	1940s–1980s
<i>Unknown</i>	54.2 miles, 4-24 inch	1940s–1990s
<i>VCP</i>	14.1 miles, 6-24 inch	1940s–1990s

According to the City of Dunn Financial Department, the sewer system serves 3,611 residential customers and 754 non-residential customers (716 commercial customers, 9 industrial customers, and 29 institutional customers). The metered monthly sewer productions are approximately 0.419 MGD, 0.067 MGD, 0.016 MGD, and 0.364 MGD for residential, commercial, industrial, and institutional customers, respectively. Thus, a typical residential sewer customer has a metered average monthly sewer use of approximately 116 GPD, a typical commercial customer has 94 GPD, a typical industrial customer has 1,778 GPD, and a typical institutional customer has 12,552 GPD. In 2020, the estimated average daily sewer flow treated at the Black River WWTP was approximately 3.34 MGD.

### 4.3 Total System Capacity

Available water system supply capacity is based on meeting the maximum daily demand (MDD) through water purchase and storage capacity, while available capacity for the wastewater collection and treatment system is based on average daily demand. For the water system, the MDD can be met by the 8-MGD A.B. Uzzle WTP and the City’s 6-MG storage capacity. Thus, for the water system, the available MDD capacity for new customers is equal to the design capacity of the A.B. Uzzle WTP minus the existing



2020 maximum daily water demand. **Table 5** lists available daily capacity for the water and wastewater systems.

**Table 5. Water and Sewer System Available Capacity**

<b>System Capacity Million Gallons Per Day (MGD)</b>	<b>Design Capacity</b>	<b>Maximum Daily Demand</b>	<b>Average Daily Discharge</b>	<b>Available Daily Capacity</b>
Water System	8.00 MGD	4.84 MGD <sup>1</sup>	---	<b>3.16 MGD</b>
Wastewater System	3.75 MGD	---	3.34 MGD	<b>0.41 MGD</b>

<sup>1</sup> According to the 2015-2020 LWSPs, the Maximum Daily Demand is approximately 4.84 MGD.



## 5. FUTURE CONDITIONS

To determine future capacity, planned water and sewer system components are identified and prioritized in the service area. Such improvements are typically identified in a 5- to 20-year capital improvements planning (CIP) document adopted by the governing body. The City of Dunn has an assets depreciation schedule compiled as of April 2020 (refer to **Appendix 3**). In May 2022, the Wooten Company worked with the City to create a list of capital improvement projects. The water and sewer CIP are included at the end of **Appendix 3**. The projects listed within the CIP are evaluated for potential use in the Incremental Method and were prioritized utilizing a project score, with a higher score corresponding to higher priority. Projects with a score of 15 or less were assumed to take place outside the five-year SDF analysis period and thus are not considered in this SDF analysis.

### 5.1 Improvements to Existing Systems

#### 5.1.1 Existing Assets

Capital improvements to the existing water and wastewater systems are necessary to ensure continued reliable operation. System Development Fees (SDFs) may be charged based on existing asset values if excess capacity is available and after the assets have been depreciated to provide a proper current value. In this way, the SDFs can be charged to account for the remaining portion of the assets' useful service life. Currently, the City annually straight-line depreciates its water and sewer assets based on expected service life. Depreciation is not accounted for in the user charges of existing water and sewer customers. The Wooten Company evaluated the existing depreciation asset schedule to determine projects to be used in the **Buy-In Method** (refer to **Appendix 3**).

The 265 projects in the depreciation schedule were reviewed and 183 of these projects were eliminated as these assets were unrelated to water/sewer utilities (e.g., buildings, fences, land use, equipment, capital costs, vehicles, cameras, other machinery, stormwater infrastructure, etc.), or the assets were not of sufficient size to serve additional future users (e.g., water lines smaller than 8 inches in size, gravity sewers smaller than 10 inches in size), leaving 82 assets to be considered. In addition to these 82 assets, there is one additional project to consider. For the SDF analysis, one asset in particular (Asset 500, "Water & Sewer Project") had to be split into two items as it was for two separate sewer projects. In July 2022, the 14-inch water line that delivers potable water from the Dunn WTP to the City was abandoned in place, as it was operating beyond its useful service life and ran underneath several



homes and buildings. The second part of the project involved abandoning an existing 2-inch galvanized waterline and replacing it with a 6-inch waterline along East Wake Street from Carolina Drive to East Johnson Street. Adding this project to the assets from the depreciation schedule produces 84 water and sewer system total assets to be analyzed, shown in the Buy-In SDF worksheets in **Appendix 4**.

The evaluation described above provided a listing of projects that are potentially eligible to be included in the SDF Buy-in analysis. At this point, The Wooten Company performed additional evaluation to determine the current net project cost after depreciation. Depreciation was provided on the schedule. For the Dunn-Erwin project, depreciation was calculated utilizing CCI (Construction Cost Index) and the year of project completion under the straight-line method (refer to **Appendix 3**). Those projects completed within the past year (2022) were assumed to have negligible depreciation. In total, there are 83 potentially SDF-eligible water and sewer system assets, shown in the Buy-In SDF worksheets in **Appendix 4**. The results of the asset evaluation are listed below:

1. Based on a total of 84 assets identified, the original asset value of \$34.6 million for these assets was reduced by accumulated depreciation to date of \$18.4 million; to yield a total net asset value of \$16.2 million.
2. Of the 84 existing assets, 14 assets are fully depreciated according to the schedule. In addition, 20 assets were ineligible because the assets were undersized (e.g., 6-inch water lines, 8-inch gravity sewer) or the capacity of the asset supported only a small portion of the Town (e.g., 12-inch water main that only serves a Food Lion). Two (2) additional assets were considered ineligible as they were specifically for replacing equipment at the WWTP without increasing the overall treatment capacity of the WWTP.
3. Five (5) additional assets were considered ineligible because not enough information is known about the assets to analyze further (e.g., the City could not confirm what the “Engineering Black River” book cost in the schedule was for); these were marked ineligible. The three (3) assets related to the original 2.75-MGD Black River WWTP and its 3.0-MGD expansion are ineligible, as the existing sewer demands have already surpassed these capacities and thus there is no capacity left to give to new developers.
4. Forty (40) assets are eligible for SDFs. These assets include 8-inch through 24-inch water lines, 14-inch through 30-inch gravity sewers, the A.B. Uzzle WTP, the Powell Avenue and 301 N. Water Tanks, the Black River WWTP, and the force main of the Eastside Pump Station. The SDF eligible



projects are highlighted in bold type in the SDF Buy-in Methodology Table in **Appendix 4**. These assets are also listed in **Tables 9 and 10** in Section 6.1.

### 5.1.2 Future Projects

To evaluate planned projects applicable to the **Incremental Cost Method**, the City’s 2022 Capital Improvements Plan (CIP)<sup>10</sup> was examined (refer to **Appendix 3**). The CIP specifically identifies improvements to the existing utility systems, including the necessary utility transmission extensions and expansions to meet future demands. The projects listed within the CIP are evaluated for potential use in the Incremental Method. Because this is a five-year SDF analysis, the CIP projects whose completion date is during the years up to and including the year 2027 will be evaluated; these projects are highlighted on the Water and Sewer CIPs in **Appendix 3**. The CIP projects that will be completed later than the year 2027 and thus exist outside the five-year SDF analysis period will not be included in this analysis. Maps of the Water and Sewer CIPs to be completed within the next five years are included in **Appendix 1**. The results of the evaluation for each project are listed below:

#### **Water CIP Projects**

There are 30 projects in the Water CIP. Of these, only two projects will be completed within the next five years. For the purposes of this analysis, the “WTP Upgrades” project from the CIP was split into two projects: replacement/rehabilitation of the 8-MGD WTP and the new 5-day reservoir. Similarly, the “Transmission Main AG” project was split into three projects: the new elevated storage tank, replacing the 16-inch asbestos cement water main with a new 18-inch ductile iron water main, and a new booster pump station. Overall, a total of five projects were evaluated:

1. **Asset W-1: *Replace/Rehabilitate 8-MGD Water Treatment Plant.*** The A.B. Uzzle WTP will either be replaced with a new 8-MGD plant or undergo extensive rehabilitation. This project is conservatively anticipated to cost \$67.5 million and will be paid entirely through debt service, assuming the City cannot renegotiate the purchase contracts to have the other municipalities served by the WTP (Eastover SD, Benson, Four Oaks, etc.) purchase capacity in the WTP. According to the 2016-2020 LWSPs, the City experience a peak day water demand of 4.842 MGD for existing customers. To calculate cost per gallon of capacity, the net project cost was distributed over the volume of capacity at the WTP remaining for future development (8 MGD –

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<sup>10</sup> City of Dunn, NC. May 2022 Capital Improvements Plan (CIP).



4.842 MGD / 8 MGD). Therefore, this project is **39% SDF eligible**. However, because this project is paid in full by debt service, the net project cost is zero.

2. **Asset W-2: New 5-day Reservoir at the WTP.** A new raw water reservoir will be built near the existing A.B. Uzzle WTP. This reservoir will receive raw water from Cape Fear River and store it before sending it to the WTP for treatment. The reservoir will not only act as an equalization basin but also allow the WTP to keep producing potable water for 5 days for the City if the raw water from the Cape Fear River is not treatable (i.e., during an algae bloom). This reservoir is anticipated to cost \$25 million, with credits of \$6.25 million (25%). The A.B. Uzzle WTP has a permitted capacity of 8 MGD capacity. According to the 2016-2020 LWSPs, the WTP experience a peak day water production of 4.842 MGD for existing customers. To calculate cost per gallon of capacity, the net project cost was distributed over the volume of capacity at the WTP remaining for future development (8 MGD – 4.842 MGD / 8 MGD). Therefore, this project is **39% SDF eligible**.
3. **Asset W-3: New 0.5-MG Elevated Water Tank.** This tank will be located off of Arrowhead Road and will increase water pressure for the entire City. The tank is conservatively anticipated to cost \$3.125 million, with credits of \$781,250 (25%). It will connect to an existing 12-inch diameter water main (2.450 MGD). The storage capacity of this tank will go towards future growth within the City of Dunn; therefore, this project is **100% SDF eligible**.
4. **Asset W-4: Replace 16" AC Water Main with 18" DIP - Dunn to Benson & Four Oaks.** There is a 16-inch asbestos cement (AC) water line transporting potable water from the City of Dunn to the Towns of Benson, which is approximately 17 miles to the northeast of Dunn. This project will replace the 16-inch AC water line with an 18-inch DIP water line to the Town of Benson. In addition, a new 18-inch water line (and the booster pump station detailed in **Asset W-5**) will extend flow further to the Town of Four Oaks. This project is anticipated to cost \$33.755 million, with credits of \$8,438,750 (25%). Because this water main solely serves the Towns of Benson and Four Oaks, it will not impact future development with the City of Dunn. There is no capacity for future growth in Dunn as a result of this project and, therefore, all costs associated with this project are **ineligible**.
5. **Asset W-5: New Booster Pump Station - Dunn to Four Oaks.** A booster pump station is required in order to aid in transporting potable water from the City of Dunn to the Town of Four Oaks. This project is anticipated to cost \$3.125 million, with credits of approximately \$781,250 (25%). Like **Asset W-4**, this pump station will only serve the Town of Four Oaks and thus will not impact future



development with the City of Dunn. There is no capacity for future growth in Dunn as a result of this project and, therefore, all costs associated with this project are **ineligible**.

### **Sewer CIP Projects**

There are 18 projects on the Sewer CIP in total. Of these, only two projects will be completed within the next five years: the “Gravity Interceptor and Champion PS Removal” project and the “Loves Truck Stop Force Main” project. In addition to these, there are six projects not listed on the CIP but will be completed within the next five years. These include improvements to the Black River WWTP, improvements to the WWTP’s effluent conveyance system, a sewer rehabilitation project funded by CDGB-I, a sewer rehabilitation project funded by USDA, collection system improvements funded by CWSRF, and an improvements project involving the force main of the Eastside Pump station and the Machine and Welding Pump Station. For the purposes of this analysis, several of these projects were split into multiple projects. Overall, a total of 12 projects were evaluated:

1. **Asset S-1: Black River WWTP Improvements.** The City received non-grant funding from the NC Division of Water Infrastructure (DWI) for the design and construction of mechanical and structural upgrades that will increase the WWTP’s hydraulic capacity, improve clarification, improve the disinfection process, and position the treatment plant for a future expansion. These improvements are anticipated to cost \$11.5 million, with credits of approximately \$2.875 million (25%). Because the improvements to the Black River WWTP will not increase its treatment capacity in response to expected future growth, the existing capacity of the WWTP is expected to serve both existing customers and future growth. The current capacity of the Black River WWTP is 3.75 MGD. The 2021 Discharge Monitoring Reports (DMRs) for the Black River WWTP show the average daily effluent flow (ADF) from the WWTP is approximately 2.833 MGD. Therefore,  $3.75 \text{ MGD} - 2.833 \text{ MGD} = 0.917 \text{ MGD}$  of capacity is reserved for future growth. As a result, this project is **24% SDF eligible**.
2. **Asset S-2: Black River WWTP Effluent Conveyance System.** This project involves replacing the pumps that discharge effluent from the Black River WWTP as well as associated line upgrades that will accommodate future WWTP capacity expansion. The costs include a new Effluent Pump Station structure, three 4,200 GPM pumps to provide a firm capacity of 3.75 MGD (average), 15,400 LF 36-inch force main, and a re-aeration structure near the discharge point. These improvements are conservatively anticipated to cost \$16.1 million, with \$15.35 million being funded with grant money. Per HB 436 (detailed in Section 6.3), a 25% credit (\$187,500) is applied



to the remaining cost. Given the pump station capacity of 3.75 MGD and the 2021 PDF from the WWTP is 2.833 MGD, there is approximately 0.917 MGD of capacity left for future growth (like **Asset S-12**). Therefore, this project is considered **24% SDF eligible**.

3. **Assets S-3 through S-6: CDBG-I & USDA Phase 1 Sewer Line Rehabilitation.** The purposes of these projects are to reduce inflow and infiltration into the Dunn sewer collection system and reduce the frequency of sanitary sewer overflows within the system. For the sake of simplicity, the CDBG-I Sewer Line Rehabilitation and the USDA Phase 1 Sewer Line Rehabilitation projects from the CIP have been combined into one project item, then separated into four asset items for the SDF analysis. Each asset is distinguished by the size of the sewer line that is being rehabilitated as part of the projects. The cost of the CDBG-funded sewer line rehabilitation is \$1,999,129 and is fully funded by grant money. The cost of the USDA-funded sewer line rehabilitation is \$3.651 million, with \$1.2 million being funded with grant money. In total, the sewer line rehabilitation project costs \$5,650,129 with \$3,199,129 of it funded with grant money. The specifics of each asset are detailed below:

- **Asset S-3:** Approximately 8% of length of gravity sewer being rehabilitated are 15 inches in diameter. Therefore, the cost of this asset is  $\$5,650,129 \times 8\% = \$452,010$  and  $\$3,199,129 \times 8\% = \$255,930$  is funded with grant money. Per HB 436 (detailed in Section 6.3), a 25% credit (\$49,020) is applied to the remaining cost. It is assumed 50% of the capacity in the 15-inch gravity sewer is currently being utilized by existing customers, and thus 50% of the 15-inch line's capacity (0.665 MGD) remains to serve future growth. Therefore, this project is **50% SDF eligible**.
- **Asset S-4:** Approximately 8% of length of gravity sewer being rehabilitated are 12 inches in diameter. As with the previously listed **Asset S-14**, the total cost of this asset is \$452,010, with \$255,930 funded with grant money. Per HB 436 (detailed in Section 6.3), a 25% credit (\$49,020) is applied to the remaining cost. The majority of the 12-inch gravity sewers being rehabilitated are located in the downtown area. Because of this, it is assumed 75% of the capacity in the 12-inch gravity sewer is currently being utilized by existing customers, and thus 25% of the 12-inch line's capacity (0.444 MGD) remains to serve future growth. Therefore, this project is **25% SDF eligible**.
- **Asset S-5:** Approximately 2% of length of gravity sewer being rehabilitated are 10 inches in diameter. Therefore, the cost of this asset is  $\$5,650,129 \times 2\% = \$113,003$  and  $\$3,199,129 \times 2\% = \$63,983$  is funded with grant money. Per HB 436 (detailed in Section 6.3), a 25% credit



(\$12,255) is applied to the remaining cost. It is assumed 50% of the capacity in the 10-inch gravity sewer is currently being utilized by existing customers, and thus 50% of the 10-inch line's capacity (0.308 MGD) remains to serve future growth. Therefore, this project is **50% SDF eligible**.

- **Asset S-6:** Approximately 82% of length of gravity sewer being rehabilitated are 8 inches in diameter. Therefore, the cost of this asset is  $\$5,650,129 \times 82\% = \$4,633,106$  and  $\$3,199,129 \times 82\% = \$2,623,286$  is funded with grant money. This asset is **ineligible** because gravity sewers that are 8 inches or smaller are too small to be eligible.

4. **Assets S-7 through S-9: CWSRF Collection System Improvements.** This project will involve the rehabilitation and replacement of deteriorated 8-inch, 10-inch, and 15-inch sewer lines. To distinguish between the SDF eligible and the SDF ineligible costs of these improvements, the project was separated into five asset items for the SDF analysis. Each asset is distinguished by the size of the sewer line that is being rehabilitated or replaced as part of the project. The total cost of the project is \$3.12 million, with \$500,000 of it funded by grant money. The specifics of each asset are detailed below:

- **Asset S-7:** Approximately 16% of length of gravity sewer being rehabilitated or replaced are 15 inches in diameter. Therefore, the cost of this asset is  $\$3.12 \text{ million} \times 16\% = \$499,200$  and  $\$500,000 \times 16\% = \$80,000$  is funded with grant money. Per HB 436 (detailed in Section 6.3), a 25% credit (\$104,800) is applied to the remaining cost. The majority of the 15-inch gravity sewers being rehabilitated are located in the downtown area. Because of this, it is assumed 75% of the capacity in the 15-inch gravity sewer is currently being utilized by existing customers, and thus 25% of the 15-inch line's capacity (0.665 MGD) remains to serve future growth. Therefore, this project is **25% SDF eligible**.
- **Asset S-8:** Approximately 4% of length of gravity sewer being rehabilitated or replaced are 10 inches in diameter. Therefore, the cost of this asset is  $\$3.12 \text{ million} \times 4\% = \$124,800$  and  $\$500,000 \times 4\% = \$20,000$  is funded with grant money. Per HB 436 (detailed in Section 6.3), a 25% credit (\$26,200) is applied to the remaining cost. The majority of the 10-inch gravity sewers being rehabilitated are located in the downtown area. Because of this, it is assumed 75% of the capacity in the 10-inch gravity sewer is currently being utilized by existing customers, and thus 25% of the 10-inch line's capacity (0.308 MGD) remains to serve future growth. Therefore, this project is **25% SDF eligible**.



- **Asset S-9:** Approximately 80% of length of gravity sewer being rehabilitated or replaced are 8 inches in diameter. Therefore, the cost of this asset is \$3.12 million x 80% = \$2.496 million and \$500,000 x 80% = \$400,000 is funded with grant money. This asset is **ineligible** because gravity sewers that are 8 inches or smaller are too small to be eligible.
5. **Asset S-10:** *Eastside Pump Station/Force Main and Machine and Welding Outfall.* Flow from the Eastside Pump Station (PS) flow is currently discharged into a manhole located in the downtown area. The pipe leaving this Manhole is a 10-inch gravity sewer and, because of this, the manhole is frequently overflowing with sewer. To alleviate this, a new force main will transport flow from the Eastside PS to a manhole adjacent to the Machine and Welding PS. In addition to this, the Machine and Welding PS will be abandoned and all flow to that station will be diverted to the same manhole that serves as the outfall for the Eastside PS. Finally, a new gravity sewer will be installed that delivers the flow from the manhole to the Black River WWTP. These improvements are conservatively anticipated to cost \$15.85 million, with \$15.1 million being funded with grant money. Per HB 436 (detailed in Section 6.3), a 25% credit (\$187,500) is applied to the remaining cost. Drawdown tests at the Eastside PS show that the station has a maximum capacity of 3,000-GPM (4.230 MGD). The 2020-2021 runtimes for the Eastside PS show that the station pumped up to ~2.402 MGD. As a result, only 4.230 MGD – 2.402 MGD = 1.918 MGD of capacity is reserved for future growth. As a result, this project is **44% SDF eligible**.
  6. **Asset S-11:** *8" Gravity Interceptor and Champion PS Removal.* This project involves abandoning the Champion Pump Station and installing approximately 1,000 LF of new 8-inch gravity sewer. The project is anticipated to cost \$601,000, with credits of approximately \$150,250 (25%). This asset is **ineligible** because gravity sewers that are 8 inches or smaller are too small to be eligible.
  7. **Asset S-12:** *Loves Truck Stop Pump Station Force Main.* The force main from the Loves Truck Stop Pump Station is deteriorated and will be fully replaced with DIP pipe. These improvements are anticipated to cost \$1.038 million, with credits of approximately \$259,500 (25%). The capacity of the pump station is 275 gpm (0.396 MGD), although the 2020-2021 runtimes for the station show that the station pumped up to ~0.023 MGD. As a result, there is 0.396 MGD – 0.023 MGD = 0.370 MGD of capacity left for future growth. As a result, this project is **94% SDF eligible**.

## 5.2 Future Demand

The future water and sewer demands are projected five years forward through 2027 to gauge the need for improvements during the five-year planning period. Based on historic population trends in the



US Census data, Dunn's population decreased from 9,263 persons in 2010 to 8,446 persons in 2020. This decrease of 871 persons is equivalent to an annual residential growth rate of -0.88%. However, the Census population of Harnett County increased from 115,733 persons in 2010 to 133,568 persons in 2020, which is equivalent to an annual growth rate of 1.5%. In the LWSPs for Dunn, an annual population growth of 0.2% is utilized. For this SDF analysis, it is assumed the future population growth in Dunn is approximately 0.5% for the next five years.

In addition to the projected population, future demand estimates must also account for future developments and annexations. According to the City of Dunn, there are eight proposed developments to be built in the next five years (2022 to 2027):

1. The Canterbury Phase 2 subdivision will add 63 new homes on a 64-acre parcel in the City. The properties will be located near Susan Tart Road and can be accessed via Canterbury Drive. The construction of these homes is anticipated to be completed in the 2022-2023 period.
2. Lots 4 and 5 of the Edgerton Property include 160,000-square feet (or ~3.67 acres) of land on two parcels, which are to be developed for commercial use. This property is located off of Gateway Drive. For the purpose of this study, it was assumed that 180 new commercial connections will occupy this space, with the first set of connections made in 2023 and the second set connections formed in 2026.
3. A campground near I-95 will be built on two parcels and include 87 RV sites upon completion; this is assumed to be equivalent to adding 87 new residential connections to the City. This campground will be located between I-95 and NC Hwy 55 and is expected to be completed this year (2022).
4. The Jonesboro Road subdivision will add 183 proposed new homes on a 72-acre parcel in the City. The properties will be located adjacent to Jonesboro Road and Cooper Street. The construction of these homes is anticipated to be completed in the 2022-2024 period.
5. The McLamb Property includes ~136 acres of land, which will be developed for commercial use. This property is located between I-95 and W. Core Road. For the purpose of this study, it was assumed that 180 new commercial connections will occupy this space, with the first set of connections made in 2023 and the second set connections formed in 2026.
6. In 2023, a new Speedway gas station will be constructed along I-95 and serves as an additional commercial connection.



7. The Susan Tart Development includes four parcels that will add 103 proposed new homes to the City. This property is located off of Bruce Drive. The construction of these homes is anticipated to be completed in the 2022-2026 period.
8. The Wellons Development includes four parcels that will involve the construction of 36 new homes in Middletown Townes and 108 new proposed homes located off of Friendly Road. In total, this development will add 144 proposed new homes to the City. Middletown Townes is currently under construction. The construction of the remaining homes is anticipated to be completed in the 2023-2024 period.

Proposed Developments 2, 5, and 6 all add new commercial metered connections to the Dunn system; all other developments add new residential metered connections.

Using a 0.5% annual growth rate and a current population of 8,446 people, the projected 2027 service population for Dunn is estimated to be 8,746 people (300 additional people in the next five years). In total, the proposed developments will contribute 1,888 residential metered connections and 181 commercial metered connections. **Table 6** shows the projected number of water and sewer future connections for the City in the next five years, assuming the number of connections increase in the same proportion as the population.

**Table 6. Number of Projected Connections**

WATER CONNECTIONS	Existing (2020)	Future (2027)	
		0.5% Growth Only	Including Developments
Residential	3,920	4,057	4,637
Commercial	791	819	1,000
Industrial	9	9	9
Institutional	29	30	30
<b>TOTAL WATER</b>	<b>4,749</b>	<b>4,915</b>	<b>5,676</b>

SEWER CONNECTIONS	Existing (2020)	Future (2027)	
		0.5% Growth Only	Including Developments
Residential	3,611	3,737	4,317
Commercial	716	741	922
Industrial	9	9	9
Institutional	29	30	30
<b>TOTAL SEWER</b>	<b>4,365</b>	<b>4,518</b>	<b>5,279</b>



According to calculation guidelines from state administrative code and statutes<sup>11,12,13</sup>, increases in population and water and sewer demands are anticipated with the additional connections in **Table 6**. Projected water demands are based on the existing average demands and MDD peaking factors as determined in Section 4.1 and then adding the new customers from **Table 6** (for 2027). For future demands, state guidelines were used for future residential demands and non-residential demands were based on 2020 LWSP data.

**Table 7** lists the estimated 2027 water demands. In 2020, the total metered flow was approximately 1.086 MGD, the ADD was approximately 3.28 MGD, and the MDD was approximately 4.38 MGD. About 13% of the water produced by the WTP is lost before reaching the customers and it is assumed that this will remain constant for the next five years. Therefore, the total projected 2027 ADD is equivalent to the sum of the existing ADD, the additional flow as a result of the additional connections, and the additional water lost (i.e., ~13% x ADD Total). In order to calculate the projected 2027 MDD, the 2020 MDD-to-ADD ratio of 1.34 was utilized. In addition, the City of Dunn is contractually obligated to provide up to 4 MGD to its wholesale customers. Overall, the projected 2027 MDD of 6.256 MGD is within the current design capacity of the 8-MGD A.B. Uzzle WTP. However, since this flow is close to exceeding 90% of the WTP's permitted capacity, the City will need to expand its water treatment capacity.

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<sup>11</sup> North Carolina Administrative Code (NCAC). 15A NCAC 02T. *Waste Not Discharged to Surface Waters*.

<http://reports.oah.state.nc.us/ncac.asp?folderName=\Title%2015A%20-%20Environmental%20Quality\Chapter%2018%20-%20Environmental%20Health>

<sup>12</sup> NCAC. 15A NCAC 18C .0409. *Service Connections*. <http://reports.oah.state.nc.us/ncac.asp?folderName=\Title%2015A%20-%20Environmental%20Quality\Chapter%2018%20-%20Environmental%20Health>

<sup>13</sup> NCGS. Chapter 162A. *Water and Sewer Systems*. <https://www.ncleg.net/gascripts/Statutes/StatutesTOC.pl>



**Table 7. Estimated Water Demands, 2027**

Expanded Service Area Customer Type	Quantity	Design Flow (gallons per unit per day)	Average Daily Design Flow (MGD)
Existing Customer Demand	---	---	1.086
New Residential	717	400	0.287
New Commercial	209	393	0.082
New Industrial	0	1,778	0.000
New Institutional	1	12,552	0.013
<b>ADD Billable Total</b>			<b>1.467</b>
<b>Estimated Water Loss:</b>			<b>0.220</b>
<b>ADD Total</b>			<b>1.688</b>
<b>MDD:ADD Ratio</b>			<b>1.34</b>
<b>Contracted Water Sales</b>			<b>4.00</b>
<b>MDD Total</b>			<b>6.256</b>

**Table 8** provides estimated sewer demands based on existing average daily demand for the residential, commercial, industrial, and institutional customer categories (3.339 MGD) and projected demand per connection for future customers. New residential wastewater flows are based on State statutes while new commercial, industrial, and institutional design flows are assumed to be equivalent to the average monthly water use: 94 GPD (commercial), 1,778 GPD (industrial), and 12,552 GPD (institutional). The 2027 Average Daily Flow (ADF) estimates result in a total ADF of 3.625 MGD, which does not exceed the collective sewer treatment capacity of the City’s 3.75-MGD Black River WWTP. The City of Dunn is planning to expand its WWTP to a capacity of 5.5 MGD in the future, as shown on the Sewer CIP (see **Appendix 3**).

**Table 8. Estimated Sewer Demand, 2027**

Expanded Service Area Customer Type	Quantity	Design Flow (gallons per unit per day)	Average Daily Design Flow (MGD)
Existing Base Wastewater Flow	---	---	3.339
New Residential	706	360	0.254
New Commercial	206	94	0.019
New Industrial	0	1,778	0.000
New Institutional	1	12,552	0.013
<b>Total ADF</b>			<b>3.625</b>



### **5.3 Assumptions & Limitations**

The projected 2027 water and wastewater demands are subject to change, given the developmental pace of the City of Dunn. The intent of the capacity discussion above was to demonstrate the future water and sewer demands required of the City of Dunn to sufficiently handle the projected population within the five-year planning period of the SDF analysis.

### **5.4 Water System Future Improvements**

Future improvements for the water distribution system to serve future growth within the five-year SDF planning period were identified. These improvements were detailed in Section 5.1.2. These projects include the replacement/rehabilitation of the 8-MGD WTP, the construction of a new 5-day reservoir at the existing A.B. Uzzle WTP, the construction of a new 500,000-gallon elevated storage tank, the replacement of the 16-inch water line main along US Hwy 301 to the Town of Benson and the extension to the Town of Four Oaks, and the installation of a new booster pump station.

### **5.5 Sewer System Future Improvements**

Future improvements for the wastewater collection system to serve future growth within the five-year SDF planning period were identified. These projects include improvements to the Black River WWTP and effluent conveyance system; improvements to the Eastside Pump Station and a new sewer outfall to the Black River WWTP; rehabilitation of various 8-inch, 10-inch, 12-inch, and 15-inch gravity sewers; and the replacement of the Loves Truck Stop Pump Station Force Main.

### **5.6 Methodology Selection**

Remaining capacity exists within both the water and wastewater systems to serve near term growth within Dunn. Because the depreciated assets identified in Section 5.1.1 can serve future population growth without expansion, their remaining non-depreciated value is appropriate to recover using the Buy-in Cost Methodology.

Likewise, projects identified in Section 5.1.2 are associated with projects required that are needed to service future growth. The Incremental Cost Methodology is appropriate to charge new development for the increased capacity to serve it. For example, the costs for the additional capacity related to wastewater collection and treatment to extend service to the proposed future developments should be borne by the new development being served.



Therefore, the **Combined Cost Method**, employing both the Buy-in Cost Methodology and Incremental Cost Methodology, is appropriate for the City of Dunn to assess System Development Fees.



## 6. ANALYSIS OF SYSTEM DEVELOPMENT FEES

The **Buy-In (Equity) Cost Method** is appropriate when the existing system facilities are sufficient to service existing and new customers. The primary concept of this approach is to charge new customers for their equitable share of an asset with remaining service life. The **Incremental Cost (Marginal) Method** is appropriate when the existing system facilities are sufficient to serve existing customers, but significant upgrades or expansion are required to serve any new customers. The primary concept of this approach is to charge new customers for the new development without adversely affecting user rates for the existing customers. Dunn has need for both methodologies; therefore, the **Combined Cost Method** is appropriate. The full tables for the SDF Combined Cost Method are presented in **Appendix 4**.

### 6.1 Buy-In Component for Existing Facilities

**Water System:** Water system improvements are grouped into seven categories in **Table 9** – 8” diameter water lines, 12” diameter water lines, 16” diameter water lines, 24” diameter water lines, the Powell Water Tank, the 301 N. Water Tank, and the A.B. Uzzle WTP. With a net total cost of \$2.8 million eligible for SDFs, the total water cost per gallon of capacity is \$0.88.

**Wastewater System:** Wastewater system improvements have been grouped into 11 categories in **Table 10** – the Black River WWTP, Eastside Pump Station Force Main, 14” diameter sewer lines, 15” diameter sewer lines, 16” diameter sewer lines, 18” diameter sewer lines, 20” diameter sewer lines, 21” diameter sewer lines, 24” diameter sewer lines, 27” diameter sewer lines, and 30” diameter sewer lines. With a net total cost of \$4.7 million eligible for SDFs, the total sewer cost per gallon of capacity is \$2.95.

**Table 9. Water System Buy-In Valuation**

Group Asset ID	Total Costs, \$	Total Credits, \$	Net Total Cost, \$	Capacity, MGD	Net Total Cost per Gal Capacity, \$/GPD
24" Water Lines (Assets 131 & 188)	2,086,488	[773,802]	1,312,687	10.080	0.13
16" Water Lines (Asset 15)	521,700	[318,341]	203,359	4.460	0.05
12" Water Lines (Assets 24, 41, 45, 62, 120, 144, 159, 177, 319, 481, 529, & 597)	1,199,426	[488,378]	711,048	2.450	0.29
8" Water Lines (Assets 23, 112, 122, 165, 532, & 533)	690,840	[326,861]	363,979	1.010	0.36
A.B. Uzzle WTP (Asset 78)	10,528	[5,832]	4,696	8.000	0.00
Powell Water Tank (Asset 18)	250,000	[240,000]	10,000	4.460	0.00
301 N. Water Tank (Assets 153 & 154)	413,413	[182,589]	230,824	4.460	0.05
<b>TOTAL WATER COST/GALLON CAPACITY</b>					<b>0.88</b>

**Table 10. Sewer System Buy-In Valuation**

Group Asset ID	Total Costs, \$	Total Credits, \$	Net Total Cost, \$	Capacity, MGD	Net Total Cost per Gal Capacity, \$/GPD
Black River WWTP (Asset 186)	1,765,655	[847,514]	918,140	3.750	0.24
Eastside PS Force Main (Assets 500-B & 501)	2,805,274	[901,806]	1,903,468	2.304	0.83
30" Gravity Sewer (Asset 35)	72,850	[46,551]	26,299	2.670	0.01
27" Gravity Sewer (Asset 34)	202,752	[129,557]	73,195	2.177	0.03
24" Gravity Sewer (Assets 33 & 500-A)	1,201,762	[502,241]	699,521	1.700	0.41
21" Gravity Sewer (Asset 32)	425,304	[271,766]	153,538	1.331	0.12
20" Gravity Sewer (Asset 31)	363,580	[232,325]	131,255	1.226	0.11
18" Gravity Sewer (Asset 30)	201,220	[128,578]	72,642	0.967	0.08
16" Gravity Sewer (Asset 29)	42,560	[27,195]	15,365	0.763	0.02
15" Gravity Sewer (Assets 28, 178, & 187)	1,322,809	[674,185]	648,624	0.665	0.98
14" Gravity Sewer (Asset 27)	210,000	[134,188]	75,812	0.589	0.13
<b>TOTAL SEWER COST/GALLON CAPACITY</b>					<b>2.95</b>



## 6.2 Incremental Component for Future Facilities

**Water System:** Future capacity related assets for the water system shown in **Table 11** are included in the City's CIP (and as identified in Section 5.1.2). Five water assets from the CIP serving future growth were identified and categorized into three groups – replacement/rehabilitation of the 8-MGD WTP (Asset W-1), a new 5-Day Reservoir at the WTP (Asset W-2) and a new 0.5-MG Elevated Storage Tank (Asset W-3). The new 0.5-MG elevated storage tank will discharge to an existing 12-inch water line. The W-1 project, replacement/rehabilitation of the A. B. Uzzle WTP, will be fully paid for via debt service, so the Total Credits for this project are equivalent to the Total Cost for the project; as a result, the net project cost is zero. For the W-1 and W-2 projects, replacement/rehabilitation of the A. B. Uzzle WTP and the new 5-day reservoir at the A. B. Uzzle WTP, it is projected that 39% of the WTP's permitted capacity (8 MGD – 4.842 MGD / 8 MGD) will serve future growth. With a net total cost of \$28.125 million eligible for SDFs and after applying the minimum 25% credit, the total water cost per gallon of capacity is \$1.87.

**Sewer System:** Future capacity related assets for the sewer system shown in **Table 12** are included in the City's CIP. Twelve sewer assets from the CIP serving future growth were identified (refer to Section 5.1.2) and categorized into eight groups – improvements to the Black River WWTP and effluent conveyance system (Assets S-1 and S-2); improvements to the Eastside Pump Station and a new sewer outfall to the Black River WWTP (Asset S-10); replacement of the force main from the Loves Truck Stop Pump Station; and rehabilitation of various 10-inch, 12-inch, and 15-inch gravity sewers. For Projects S-1 and S-2, the Black River WWTP and effluent conveyance system improvements, it is projected that 24% of the WWTP's permitted capacity (3.75 MGD – 2.833 MGD / 3.75 MGD) will serve future growth. Project S-10 is related to diverting flow from the Eastside Pump Station to a manhole located next to the Machine and Welding Pump Station, as well as the construction of a new gravity sewer outfall to deliver flow to the Black River WWTP; based on the capacity of and 2021 runtime for the Eastside Pump Station, about 44% (4.32 MGD – 2.402 MGD / 4.32 MGD) of the pump station's capacity is available for future growth. For the S-12 project, the replacement of the Loves Truck Stop Pump Station force main, it is projected that 94% of the station's capacity (0.396 MGD – 0.023 MGD / 0.396 MGD) will serve future growth. Projects S-3 and S-5 are projected to have 50% of the remaining capacity available to serve future growth. Projects S-4, S-7, and S-8 are projected to have 25% of the remaining capacity available to serve future growth. After applying the minimum 25% credit to the net total cost of \$15.0 million, dividing the result by the incremental increase in capacities yields a total sewer cost per gallon capacity of \$2.93.



**Table 11. Water System Incremental Valuation**

CIP Project Description	Total Costs, \$	Total Credits, \$	Net Total Cost, \$	New/Expand Capacity, MGD	% Credit <sup>1</sup>	% SDF Eligible	Net Total Cost per Gal Capacity <sup>1</sup> , \$/GPD
Replace/Rehabilitate 8-MGD Water Treatment Plant (Asset W-1)	67,500,000	[67,500,000]	0	8.000	25%	39%	0.00
New 5-Day Reservoir at the WTP (Asset W-2)	25,000,000	0	25,000,000	8.000	25%	39%	0.91
New 0.5-MG Elevated Water Tank (Asset W-3)	3,125,000	0	3,125,000	2.450	25%	100%	0.96
<b>TOTAL WATER COST/GALLON CAPACITY</b>							<b>1.87</b>

<sup>1</sup> Includes minimum 25% credit per HB 436.

**Table 12. Sewer System Incremental Valuation**

CIP Project Description	Total Costs, \$	Total Credits, \$	Net Total Cost, \$	New/Expand Capacity, MGD	% Credit <sup>1</sup>	% SDF Eligible	Net Total Cost per Gal Capacity <sup>1</sup> , \$/GPD
Black River WWTP and Effluent Conveyance Improvements (Assets S-1 & S-2)	27,600,000	[15,350,000]	12,250,000	3.750	25%	24%	0.59
Eastside Pump Station and New Sewer Outfall (Asset S-10)	15,850,000	[15,100,000]	750,000	4.320	25%	44%	0.06
Loves Truck Stop Pump Station Force Main (Asset S-12)	1,038,000	0	1,038,000	0.396	25%	94%	1.85
15" Sewer Lines, 50% capacity (Asset S-3)	452,010	[255,930]	196,080	0.665	25%	50%	0.11
15" Sewer Lines, 25% capacity (Asset S-7)	499,200	[80,000]	419,200	0.665	25%	25%	0.12
12" Sewer Lines, 25% capacity (Asset S-4)	452,010	[255,930]	196,080	0.444	25%	25%	0.08
10" Sewer Lines, 50% capacity (Asset S-5)	113,003	[63,983]	49,020	0.308	25%	50%	0.06
10" Sewer Lines, 25% capacity (Assets S-8)	124,800	[20,000]	104,800	0.308	25%	25%	0.06
<b>TOTAL WATER COST/GALLON CAPACITY</b>							<b>2.93</b>

<sup>1</sup> Includes minimum 25% credit per HB 436.



### 6.3 Valuation Adjustments

HB 436 specifies that a minimum 25% credit be applied towards the calculated incremental cost per gallon capacity. This credit assumes that existing retail user rates and charges will generate at least 25% of the present worth capital costs through the five-year planning period necessary to construct new infrastructure. To avoid collecting revenues twice (first through the SDF, and secondly through retail water and sewer rates), credits were applied to the incremental costs calculated in **Tables 11 and 12** above.

Note this credit adjustment is different from specific credits given to an individual developer for constructing infrastructure *above and beyond* its proportionate share to service anticipated future connections. These additional credits may be applied by the City to individual developers on a case-by-case basis.

Adding the buy-in cost to the incremental cost yields a combined cost per gallon of capacity, as shown in **Table 13**. The combined water cost is \$2.75 per gallon and combined sewer cost is \$5.88 per gallon. The total water and sewer combined cost is \$8.63 per gallon.

**Table 13. Combined Cost Valuation**

Utility	Buy-In Cost per Gallon, \$	Incremental Cost per Gallon, \$	Combined Cost per Gallon, \$
Water	0.88	1.87	<b>2.75</b>
Sewer	2.95	2.93	<b>5.88</b>
<b>Total</b>	<b>3.83</b>	<b>4.80</b>	<b>8.63</b>

### 6.4 Cost per Unit of Volume

The maximum-allowable combined cost of \$2.75 per one-gallon capacity of water and \$5.88 per one-gallon capacity of sewer serves as the basis for adjusting the fees for different customer classes. Using an equivalent ratio recommended by *AWWA Manual M1*, increased operational demands on the water and sewer systems for larger customers are calculated to produce higher SDFs.

In this analysis, meter sizes are utilized to estimate how much water or sewer the new customer can be expected to use. The equivalent ratio for larger meters represents the higher demand of larger customers, computed using the 5/8- inch meter as a base unit. The ratio is representative of the maximum



safe operating flow through the meter as compared to a residential meter. **Table 14** calculates the water and sewer capacity costs for larger meter sizes using the equivalent ratios.

As an alternative to equivalent meter ratios, which are conservative by nature, the City may also consider charging non-residential (i.e., commercial, industrial, and institutional) customers based on estimated water consumption, number of plumbing fixture units, or other special considerations that may affect water or sewer demand.

Given that a residential customer consumes 360 gallons per day (GPD) per NCDEQ, the water and sewer capacity costs from **Table 13** are converted into typical ‘per connection’ fees for the various water meter sizes, using the same equivalent ratios. These typical ‘per connection’ costs, illustrated in **Table 14**, are the basis for the annual revenue forecasts in Section 7.0. For example, a residential customer with a 5/8” water meter may be charged a maximum-allowable system development fee of \$3,100 for both water and sewer service.

**Table 14. Maximum Allowable Capacity Cost Per Equivalent Connection**

Meter Size, inches	Equivalent Ratio	Water Capacity Cost, \$/connection	Sewer Capacity Cost, \$/connection	Total Capacity Cost, \$/connection <sup>1</sup>
5/8	1.0	\$990	\$2,117	<b>\$3,100</b>
1	2.5	\$2,475	\$5,292	<b>\$7,760</b>
1-1/2	5.0	\$4,950	\$10,584	<b>\$15,530</b>
2	8.0	\$7,920	\$16,934	<b>\$24,850</b>
3	15.0	\$15,840	\$33,869	<b>\$49,700</b>
4	25.0	\$24,750	\$52,920	<b>\$77,670</b>
6	50.0	\$49,500	\$105,840	<b>\$155,340</b>
8	80.0	\$79,200	\$169,344	<b>\$248,540</b>
10	115.0	\$113,850	\$243,432	<b>\$357,280</b>
12	215.0	\$212,850	\$455,112	<b>\$667,960</b>

<sup>1</sup> Based on 360-GPD use for a 5/8” residential connection.



## 7. APPLICATION OF SYSTEM DEVELOPMENT FEES

According to Article 8 (System Development Fees) of the NC General Statutes<sup>14</sup>, SDFs are collected for subdivisions of land at the time of plat recording, or when the unit of local government commits water or sewer service for the new development. For un-subdivided land, the SDF applies when the individual customer applies to connect to the system. Additional guidance for fee collection was released in the spring of 2021.

A projection of water and sewer customer connections in the five-year SDF planning period (2023 to 2027) is provided in **Table 15**. This projection is based on the projected population in Section 5.2 and **Table 6**. Note the existing City’s metered connections were projected with a 0.5% annual growth rate. In addition to this City growth, the Proposed Developments, as listed in Section 5.2, contribute 87 residential connections in 2021, 148 residential connections in 2022, 167 residential connections and 181 commercial connections in 2023, 136 residential connections in 2024, 21 residential connections in 2025, and 21 residential connections and 180 commercial connections in 2026.

**Table 15. Projected Cumulative Water and Sewer Customers, 2027**

Year	WATER				SEWER			
	Residential	Commercial	Institutional	Industrial	Residential	Commercial	Institutional	Industrial
2020	3,920	791	29	9	3,611	716	29	9
2021	4,027	795	29	9	3,716	720	29	9
2022	4,194	799	29	9	3,882	723	29	9
2023	4,381	984	29	9	4,067	908	29	9
2024	4,537	988	30	9	4,222	911	30	9
2025	4,578	992	30	9	4,261	915	30	9
2026	4,619	1,176	30	9	4,301	1,099	30	9
2027	4,639	1,180	30	9	4,319	1,102	30	9

Capacity costs per connection in **Table 14** multiplied by the annual customer growth projections in **Table 15** result in the estimated annual revenues – that is, revenue projections from water and sewer SDFs – for the five-year planning period as shown in **Tables 16** and **17**. Revenues assume that the typical residential customer will have a 5/8” water meter, commercial customers a 1-1/2” water meter, institutional customers a 4-inch compound water meter, and industrial customers a 1-1/2” water meter. The full revenue calculations, which are summarized in **Tables 16** and **17**, are presented in **Appendix 4**.

<sup>14</sup> NCGS. Chapter 162A. *Water and Sewer Systems*. <https://www.ncleg.net/gascripts/Statutes/StatutesTOC.pl>



Estimated SDF water revenues for the next five-year planning period are approximately \$2.4 million from new residential and non-residential growth while estimated SDF sewer revenues total \$5.0 million during the same timeframe. *If the City elects to charge SDFs on a per gallon basis instead of an equivalent meter basis, the projected SDFs will likely be less than what it shown in **Tables 16 and 17.***

**Table 16. Estimated Water Revenues, 2027**

Year	Residential (5/8")	Commercial (1.5")	Institutional (4" compound)	Industrial (1.5")	TOTAL
2023	\$185,130	\$915,750	\$0	\$0	\$1,100,880
2024	\$154,440	\$19,800	\$24,750	\$0	\$198,990
2025	\$40,590	\$19,800	\$0	\$0	\$60,390
2026	\$40,590	\$910,800	\$0	\$0	\$951,390
2027	\$19,800	\$19,800	\$0	\$0	\$39,600
<b>TOTAL</b>	<b>\$440,550</b>	<b>\$1,885,950</b>	<b>\$24,750</b>	<b>\$0</b>	<b>\$2,351,250</b>

**Table 17. Estimated Sewer Revenues, 2027**

Year	Residential (5/8")	Commercial (1.5")	Institutional (4" compound)	Industrial (1.5")	TOTAL
2023	\$391,608	\$1,958,040	\$0	\$0	\$2,349,648
2024	\$328,104	\$31,752	\$52,920	\$0	\$412,776
2025	\$82,555	\$42,336	\$0	\$0	\$124,891
2026	\$84,672	\$1,947,456	\$0	\$0	\$2,032,128
2027	\$38,102	\$31,752	\$0	\$0	\$69,854
<b>TOTAL</b>	<b>\$925,042</b>	<b>\$4,011,336</b>	<b>\$52,920</b>	<b>\$0</b>	<b>\$4,989,298</b>

The foregoing revenue projections intend to provide a gauge of anticipated income based on the assessment of the maximum-allowable SDFs. The projections are highly dependent on the City's assigned land uses and zoning, which will influence the future development type and associated water and sewer demands. After projects in the CIP are better defined and planning costs refined, the revenue projections may be re-evaluated and adjusted accordingly.



## 8. CONCLUSIONS & RECOMMENDATIONS

The Wooten Company has calculated maximum allowable water and sewer System Development Fees (SDFs) on a 'per gallon' basis and 'per connection' basis for new development within the City of Dunn's service area. These fees may be assessed by Dunn at a lower rate but cannot exceed the calculated figures for a five-year SDF analysis period. The calculated combined water cost is \$2.75 per gallon capacity and combined sewer cost is \$5.88 per gallon capacity, for a total of \$8.63 per gallon.

Dunn has existing water and sewer assets with available capacity and useful life to serve both existing and new customers, as well as major water and sewer capacity expansion needs on the horizon. Therefore, the SDFs are based on the Combined Cost methodology, a combination of Buy-In (Equity) and Incremental (Marginal) Cost methodologies. Application of the 'rational nexus test' to the calculated SDFs for Dunn demonstrates that:

- While the existing water and sewer treatment capacities for the City are adequate to handle the projected population increase, there is a direct and reasonable connection between the impact of the new development and need of new or expanded infrastructure;
- The total cost of the new infrastructure to support the new development is estimated to be \$186 million; \$7.3 million may be collected in the next five years through adoption of SDFs; and
- Appropriation of capital funds necessary to support that growth can be achieved through collection of SDFs using a combined cost approach, so that new development customers are afforded the same level of service as existing utilities customers.

Based on the calculated capacity costs per gallon and per connection, **Table 18** summarizes the maximum allowable SDFs for the connection of new water and sewer customers using meter size to determine the equivalent ratio for non-residential customers.



**Table 18. Maximum Allowable System Development Fees**

Meter Size, inches	Equivalent Ratio	Water Capacity Cost, \$/gallon	Sewer Capacity Cost, \$/gallon	Total Capacity Cost, \$/gallon	Total Capacity Cost, \$/connection <sup>1</sup>
5/8	1.0	\$2.75	\$5.88	\$8.63	\$3,100
1	2.5				\$7,760
1-1/2	5.0				\$15,530
2	8.0				\$24,850
3	16.0				\$49,700
4	25.0				\$77,670
6	50.0				\$155,340
8	80.0				\$248,540
10	115.0				\$357,280
12	215.0				\$667,960

<sup>1</sup> Based on 360-GPD use for a 5/8" residential connection.

It is expected that the SDFs will generate approximately \$2.4 million for water improvements (refer to **Table 16**) and \$5.0 million for sewer improvements (refer to **Table 17**) over the next five years to support necessary rehabilitation and upgrades. In accordance with HB 436, this analysis provides information to the public and Dunn’ policymakers to assign system development fees to customers, with re-evaluation occurring at least every five years.



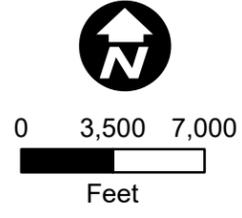
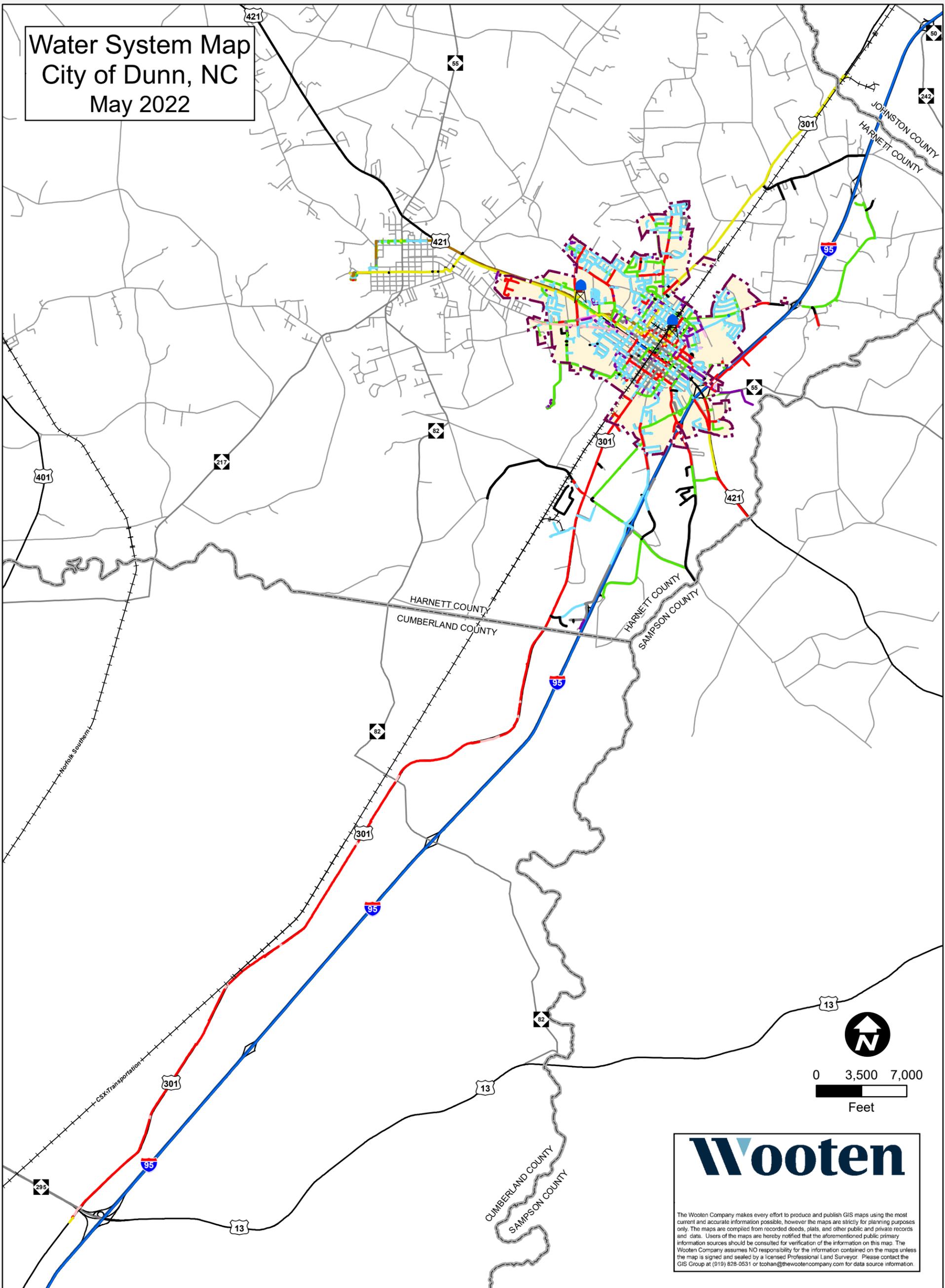
## **APPENDIX 1**

**Dunn Water System Maps**

**Dunn Sewer System Maps**

**Future CIPs Maps**

**Water System Map**  
**City of Dunn, NC**  
 May 2022



**Wooten**

The Wooten Company makes every effort to produce and publish GIS maps using the most current and accurate information possible, however the maps are strictly for planning purposes only. The maps are compiled from recorded deeds, plats, and other public and private records and data. Users of the maps are hereby notified that the aforementioned public primary information sources should be consulted for verification of the information on this map. The Wooten Company assumes NO responsibility for the information contained on the maps unless the map is signed and sealed by a licensed Professional Land Surveyor. Please contact the GIS Group at (919) 828-0531 or tohan@thewootencompany.com for data source information.

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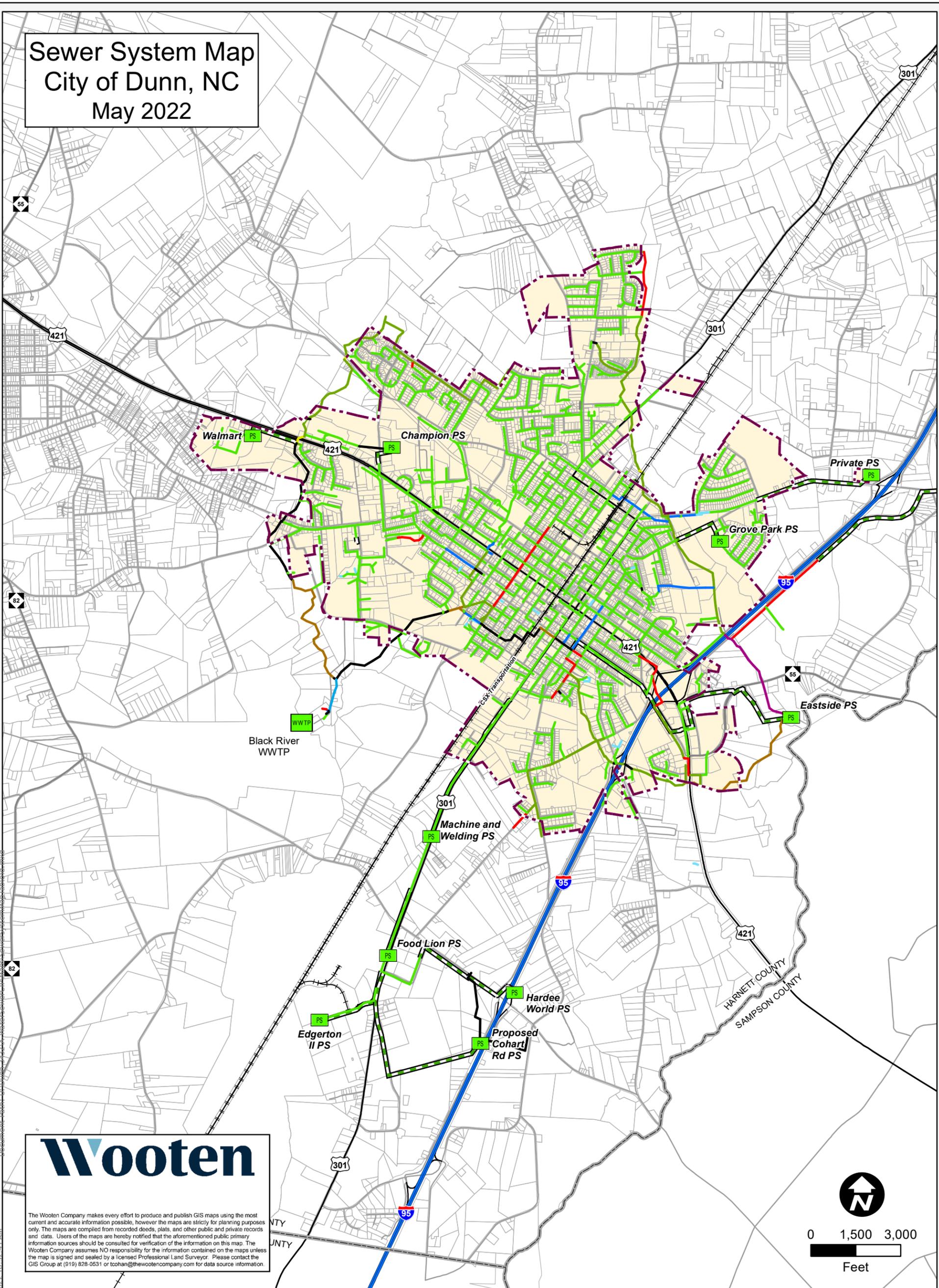
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4" Water Main	14" Water Main			Street	

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# Sewer System Map

## City of Dunn, NC

May 2022



# Wooten

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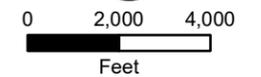
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| 4" Gravity Main | 12" Gravity Main | 24" Gravity Main | US Route   | City of Dunn |
| 6" Gravity Main | 15" Gravity Main | 30" Gravity Main | NC Route   | County       |
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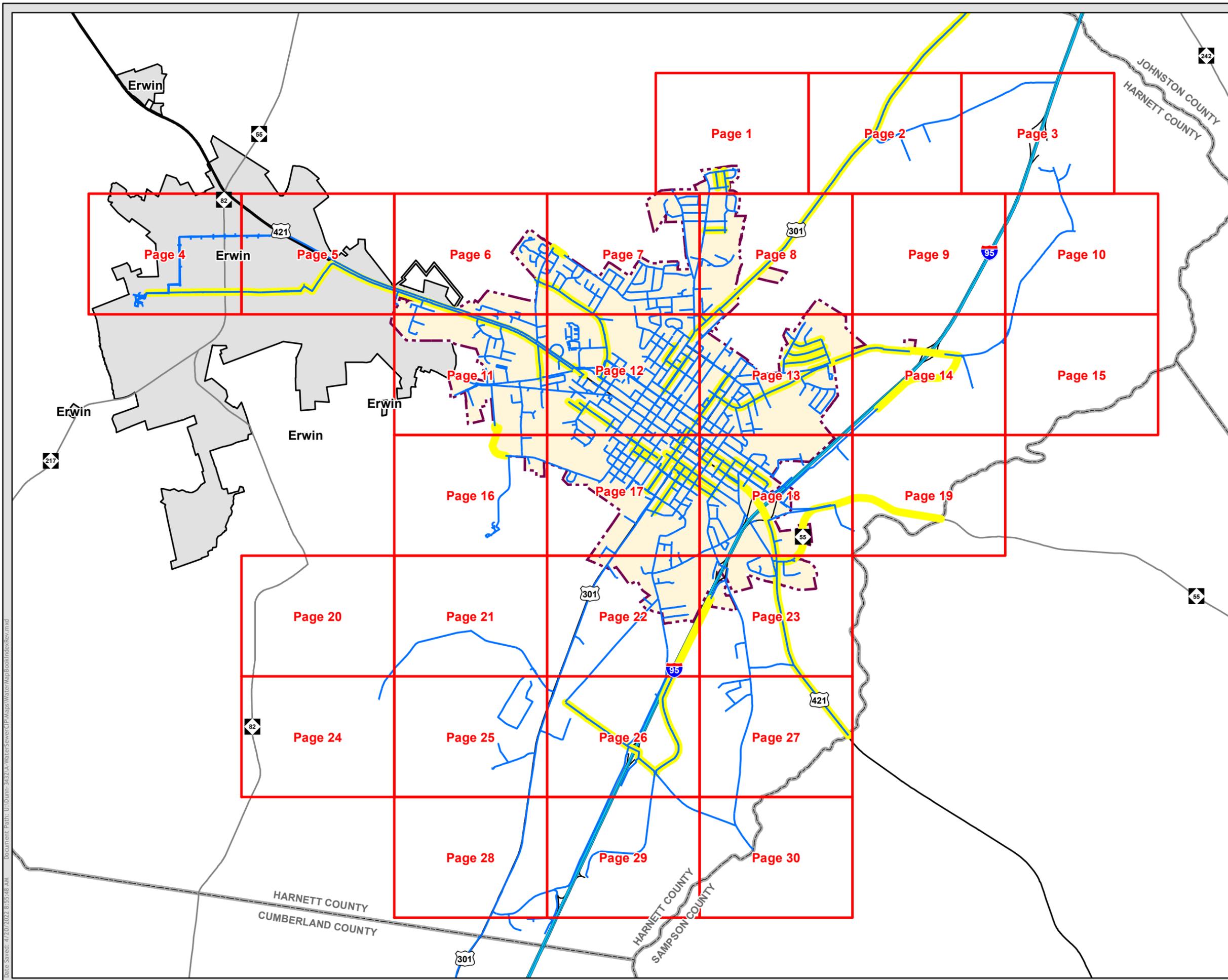
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-  City of Dunn
-  Other Municipality
-  County Boundary
-  Map Book Index



**Wooten**

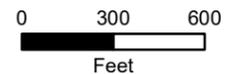
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-  PVC
-  Interstate
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-  Other Municipality
-  County Boundary



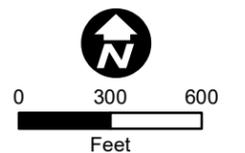
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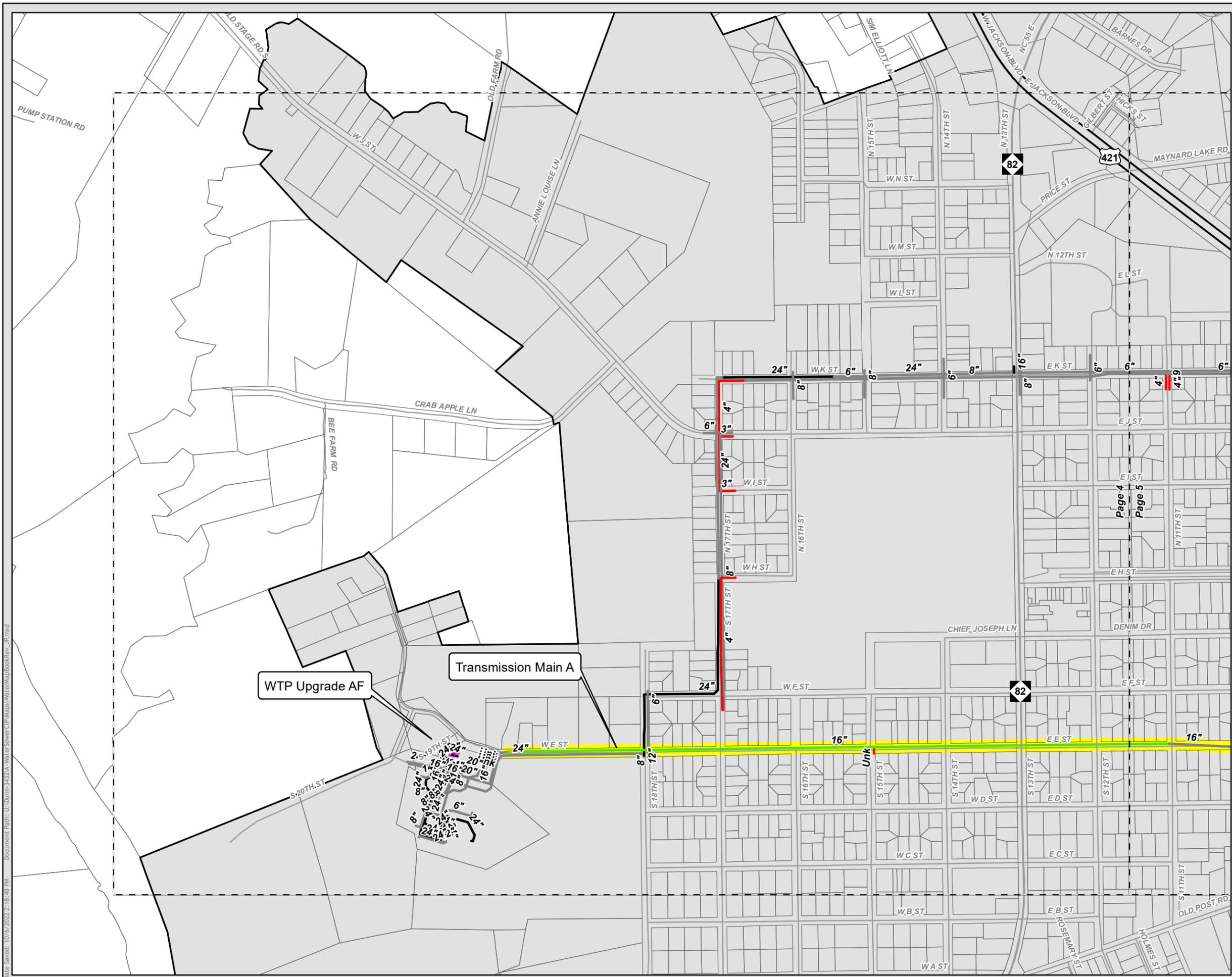
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- PVC
- HDPE
- Interstate
- US Route
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- Rail Road
- Street Repair
- Parcel
- City of Dunn
- Other Municipality
- County Boundary



**Wooten**

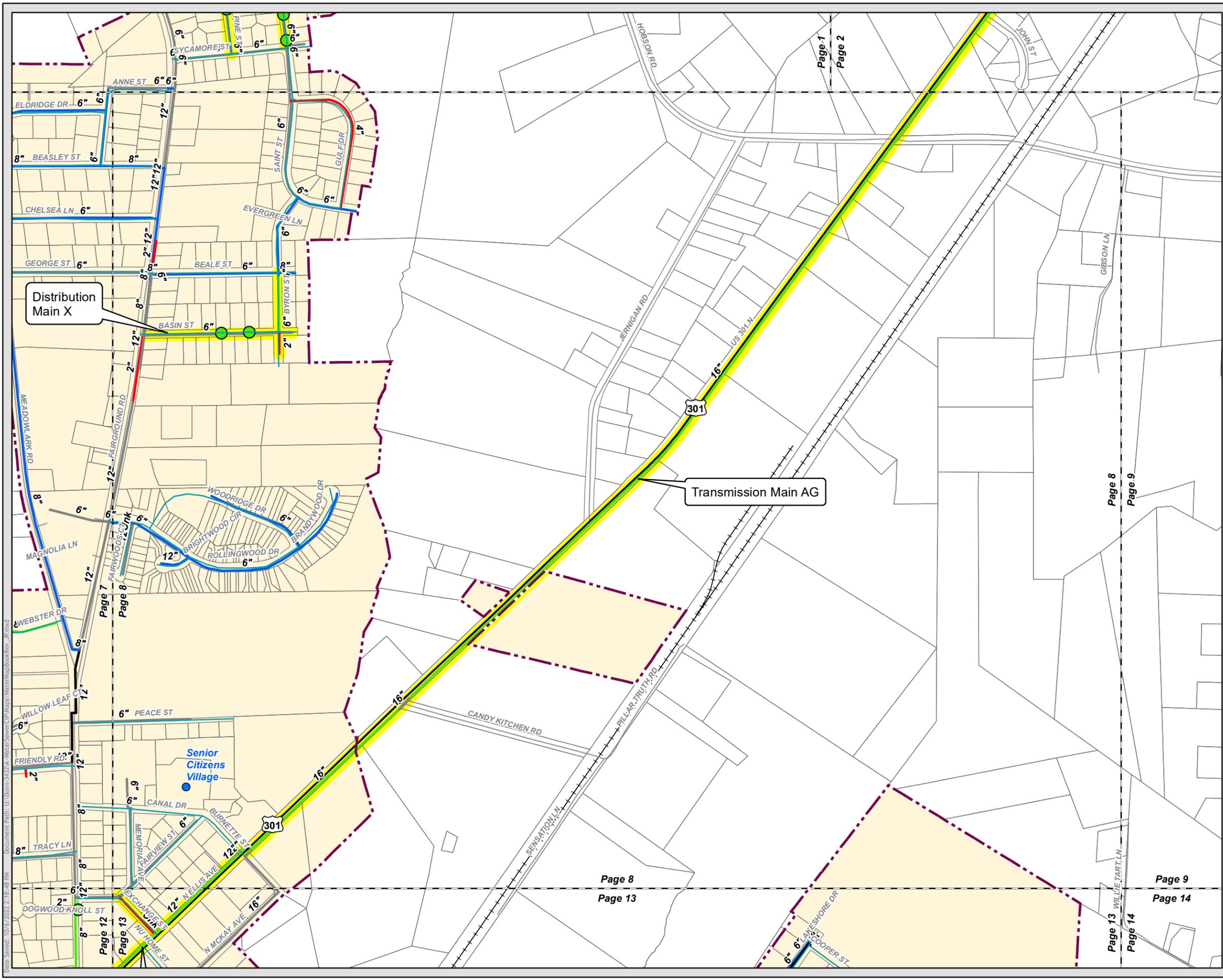
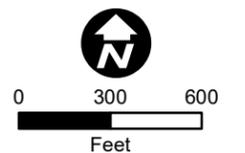
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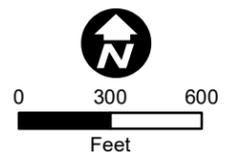
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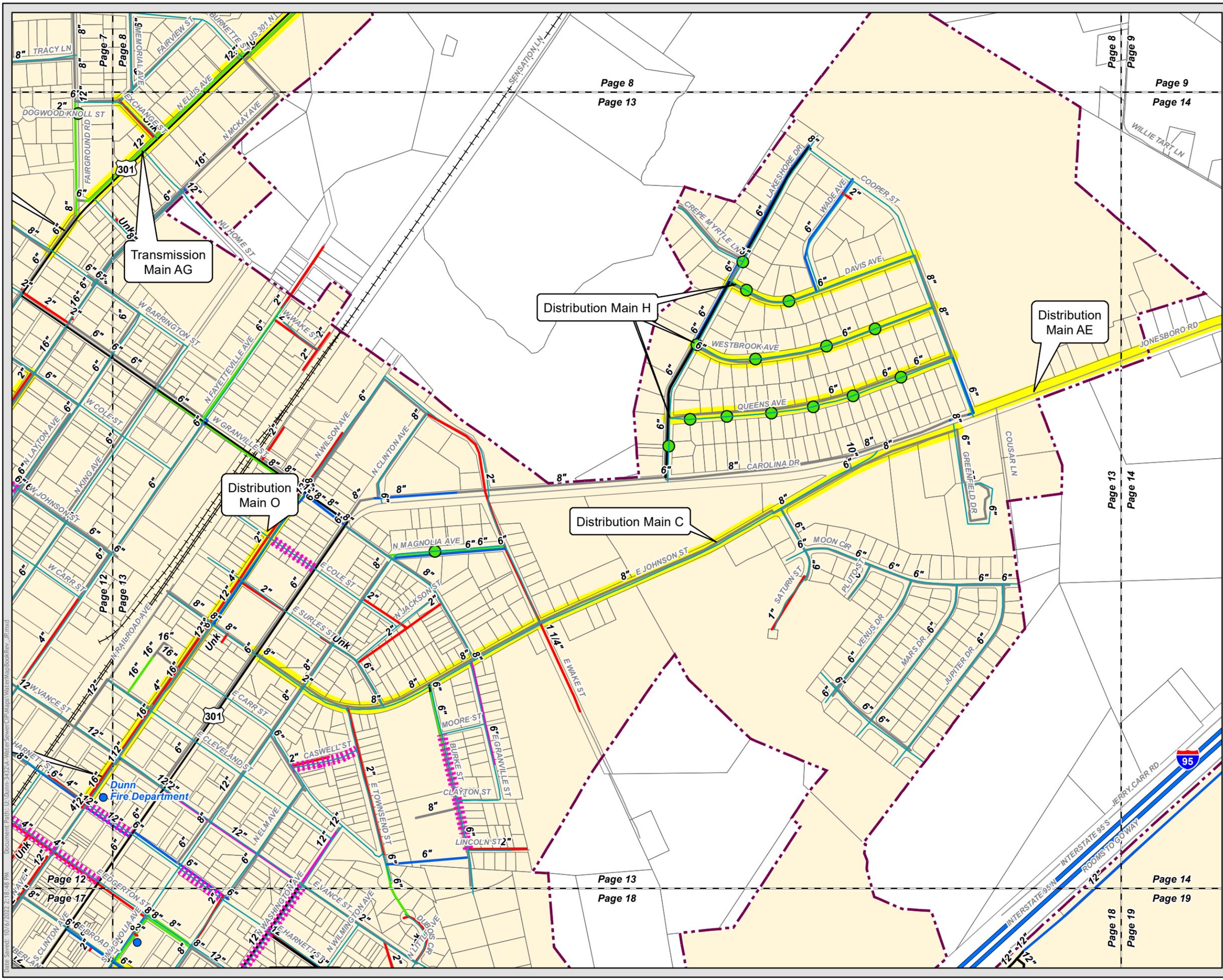
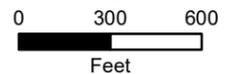
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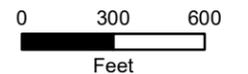
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-  ABS Plastic
-  AC
-  Cast Iron Pipe
-  DIP
-  PVC
-  HDPE
-  Interstate
-  US Route
-  NC Route
-  Ramp
-  Rest Area
-  Street
-  Rail Road
-  Street Repair
-  Parcel
-  City of Dunn
-  Other Municipality
-  County Boundary



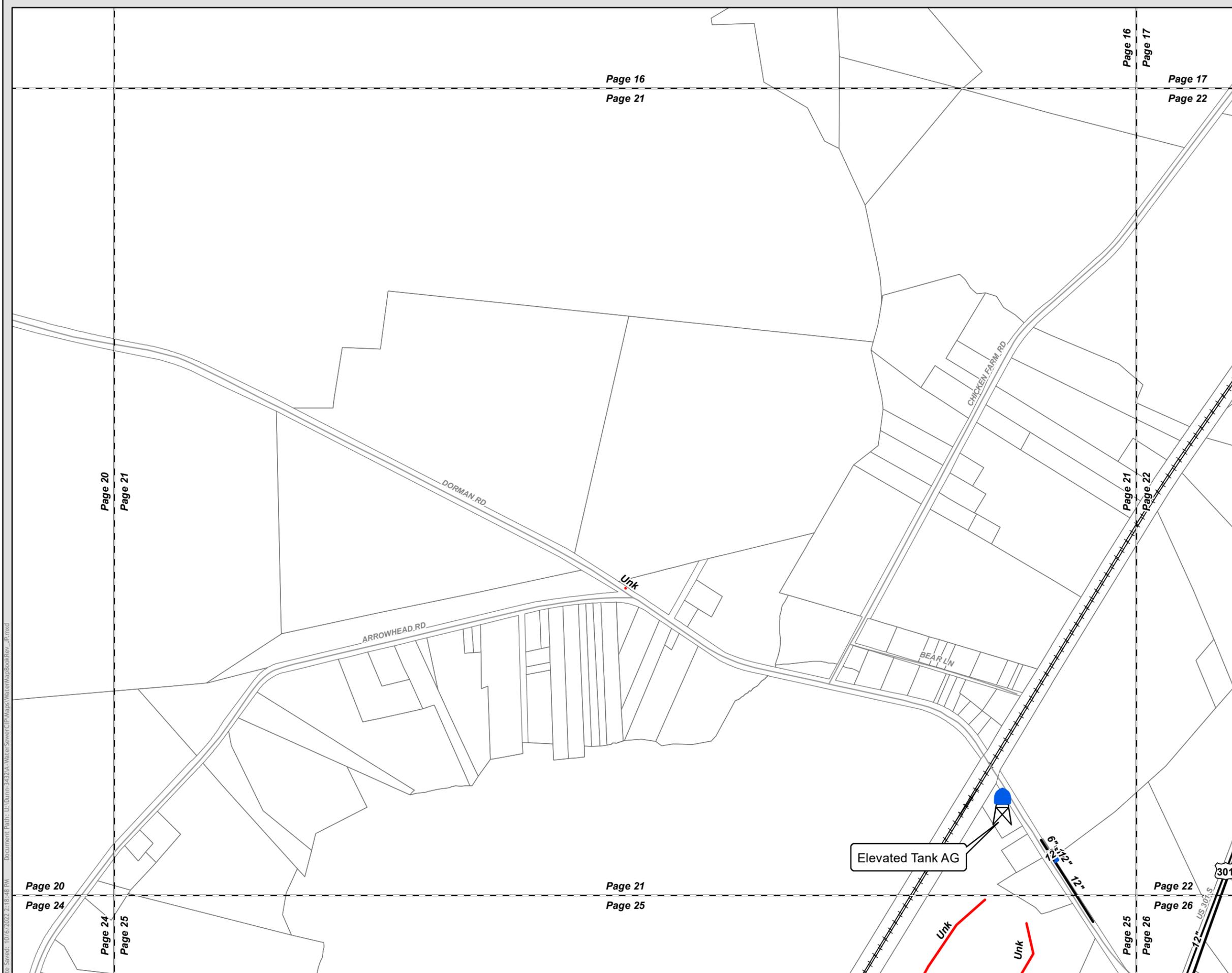
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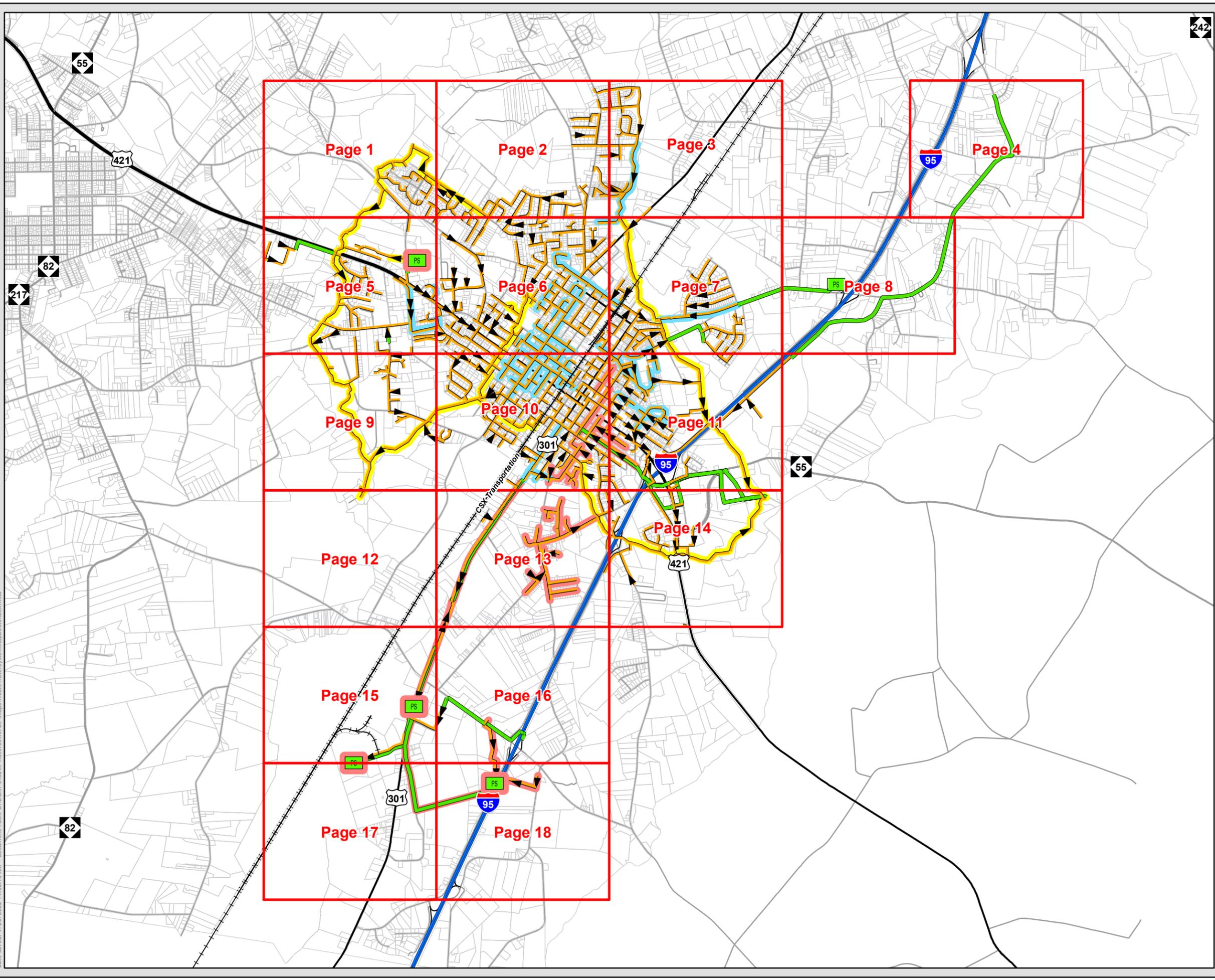
-  Amenity
-  Water Repair
-  Elevated Tank
-  CIP Water Main
-  4" or Less and Unknown
-  Unknown Material
-  ABS Plastic
-  AC
-  Cast Iron Pipe
-  DIP
-  PVC
-  HDPE
-  Interstate
-  US Route
-  NC Route
-  Ramp
-  Rest Area
-  Street
-  Rail Road
-  Street Repair
-  Parcel
-  City of Dunn
-  Other Municipality
-  County Boundary



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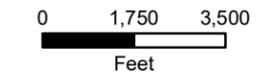
Wastewater System  
CIP Map  
City of Dunn, NC

May 2022

INDEX

Legend

-  Pump Station
-  CIP Pump Station
-  Funded Sewer Rehabilitation
-  CIP Rehabilitation
-  CIP Replace
-  Gravity Main
-  Forcemain
-  Interstate
-  US Route
-  NC Route
-  Ramp
-  Street
-  Rail Road
-  Parcel
-  City of Dunn
-  Other Municipality

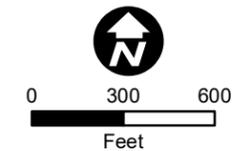


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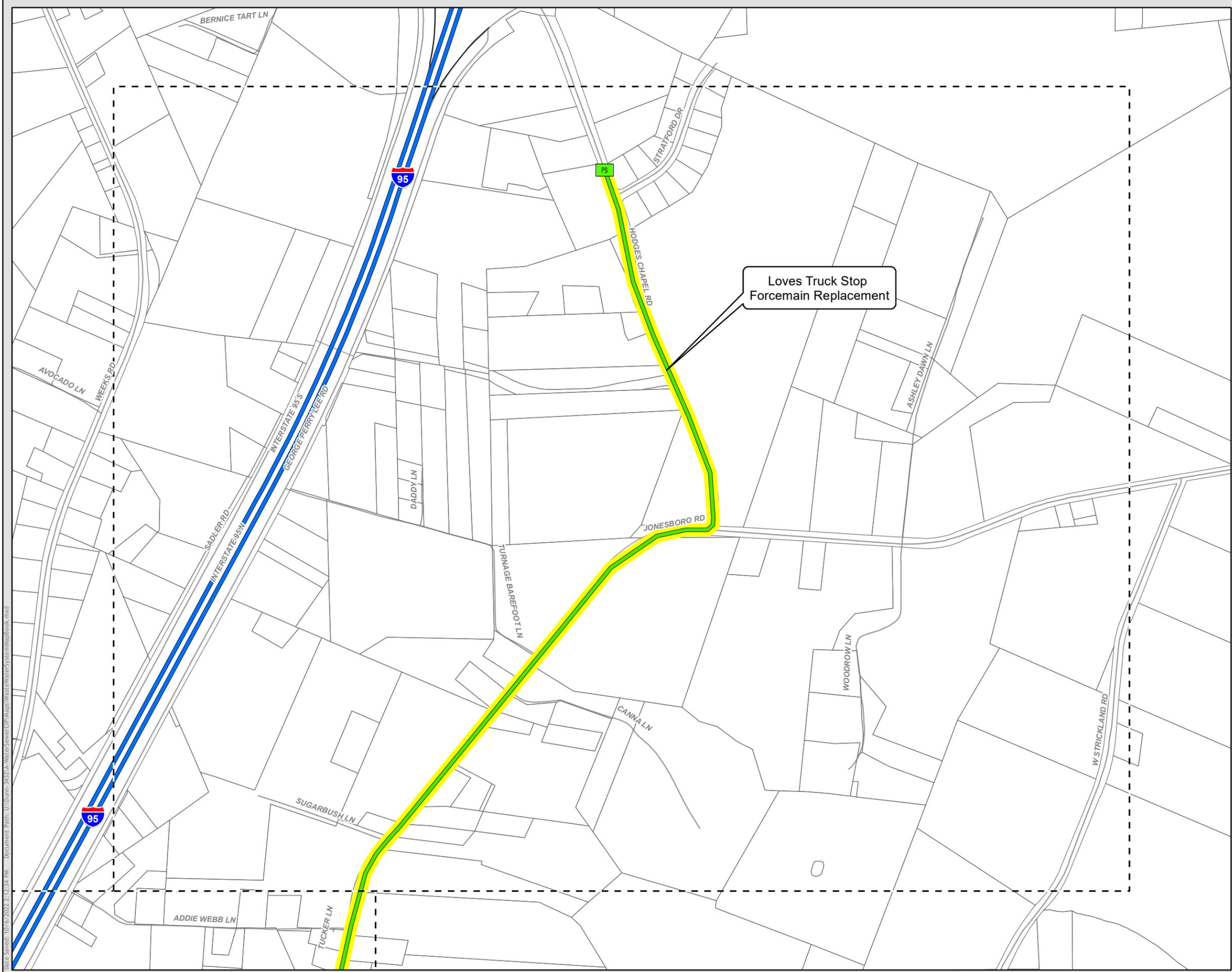
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**Legend**

- Amenity
- Wastewater Repair
- ⊕ Control Valve
- ⊗ Manhole
- WWTP WWTP
- PS Pump Station
- PS CIP Pump Station
- Funded Sewer Rehabilitation
- CIP Rehabilitation
- CIP Replace
- ▶ Gravity Main
- Forcemain
- Interstate
- US Route
- NC Route
- Ramp
- Rest Area
- Street
- +—+— Rail Road
- ||||| Street Repair
- Parcel
- Sewershed
- City of Dunn



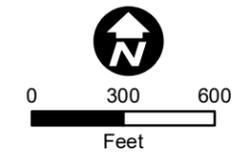
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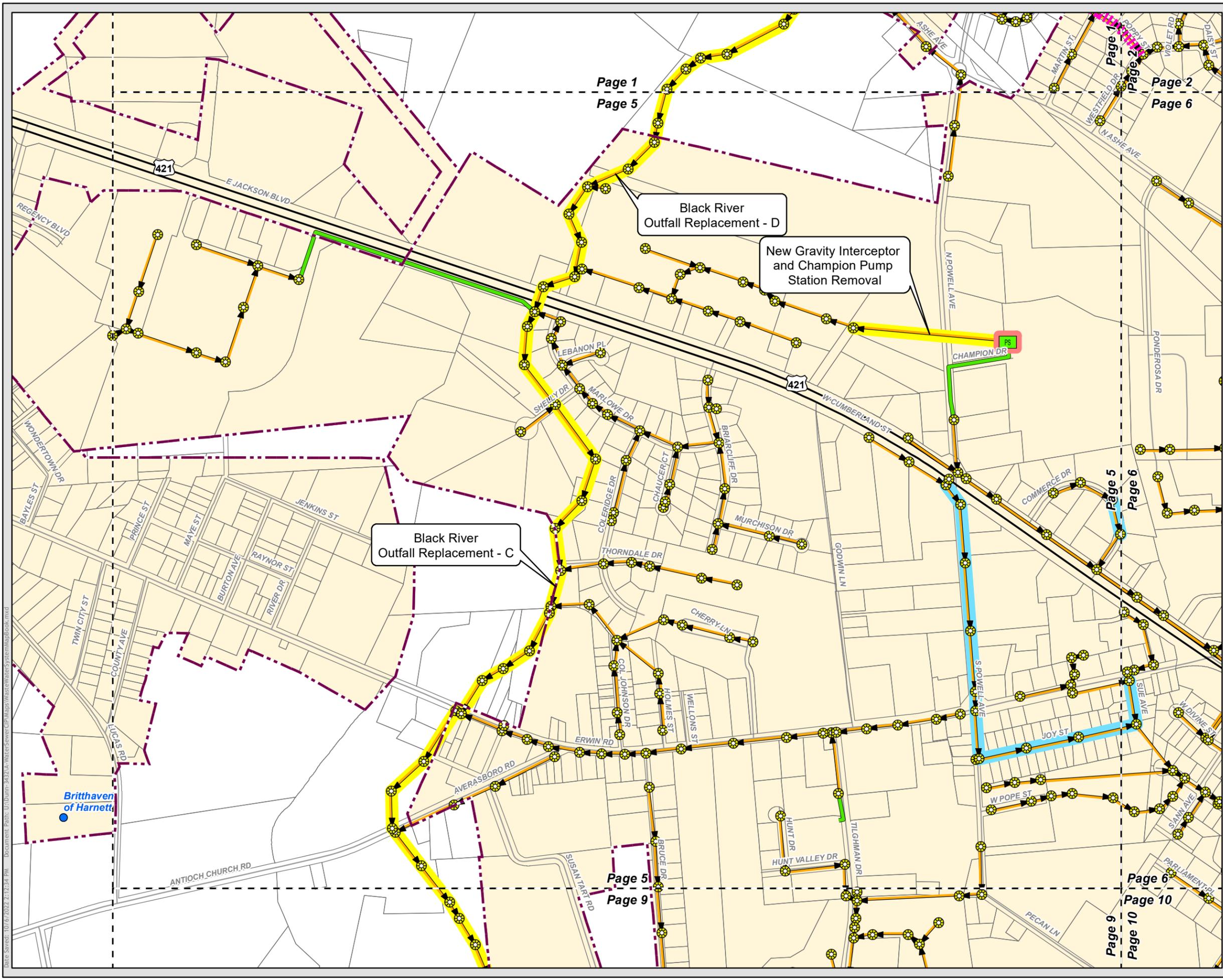
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**Legend**

- Amenity
- Wastewater Repair
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- CIP Pump Station
- Funded Sewer Rehabilitation
- CIP Rehabilitation
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- Gravity Main
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- Parcel
- Sewershed
- City of Dunn



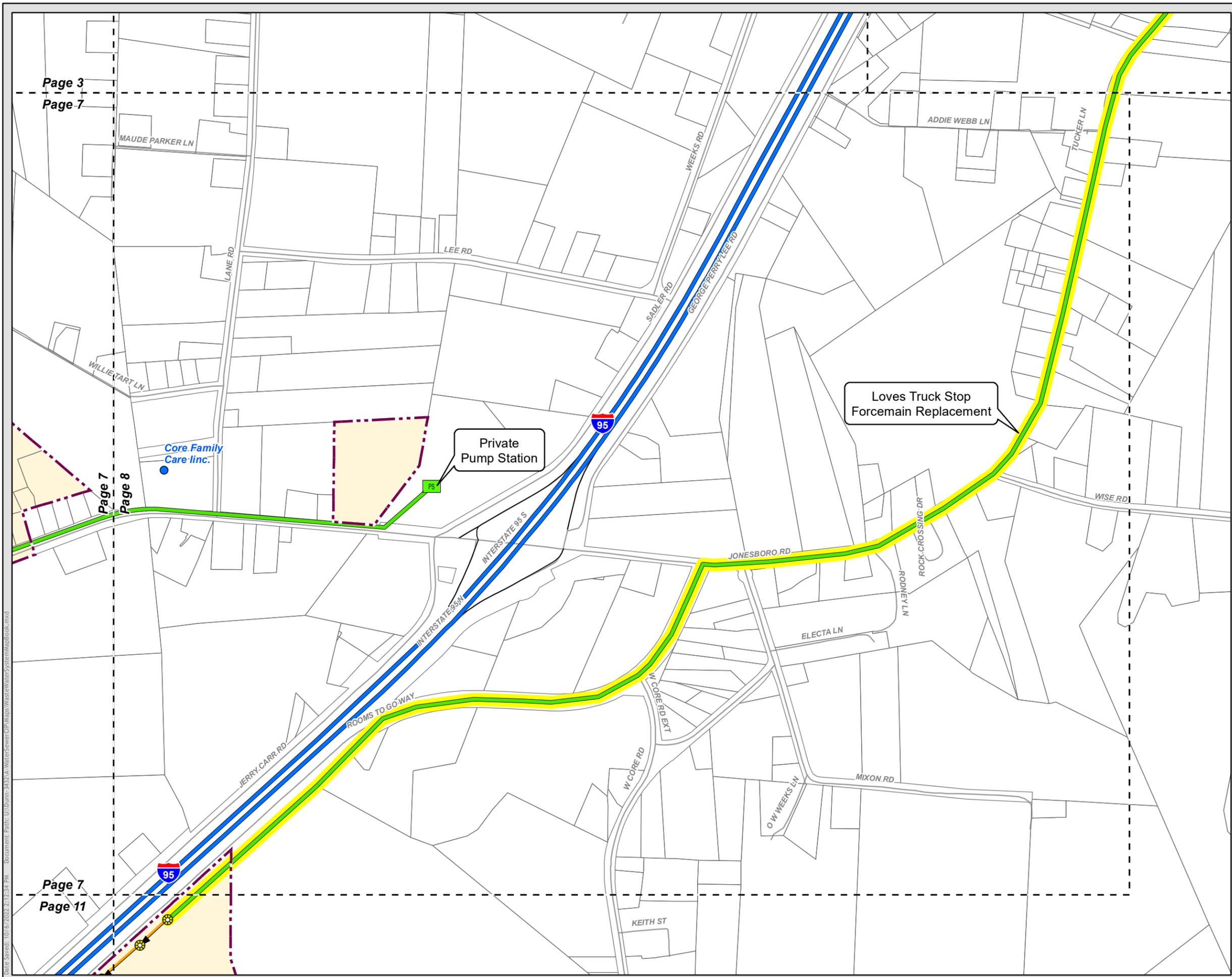
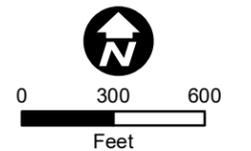
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**Legend**

- Amenity
- Wastewater Repair
- ⊕ Control Valve
- ⊗ Manhole
- WWTP WWTP
- PS Pump Station
- PS CIP Pump Station
- Funded Sewer Rehabilitation
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- +—+— Rail Road
- Street Repair
- Parcel
- Sewershed
- City of Dunn



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## **APPENDIX 2**

### **Water & Sewer Billings Summary**

#### **2015-2020 City of Dunn Local Water Supply Plans**

**2020 Water Billings Summary**

Type	# of Connections*	Metered Average Usage	
		(MGD)*	(gpd/connection)
Residential	3,920	0.395	101
Commercial	791	0.311	393
Institutional	29	0.364	12,552
Industrial	9	0.016	1,778
<b>Total</b>	<b>4,749</b>	<b>1.086</b>	<b>14,823</b>

*\*Taken from Dunn's 2020 Local Water Supply Plan.*

**2022 Sewer Billings Summary**

Type	# of Connections	Metered Average Usage	
		(gpd)	(gpd/connection)
Residential	3,611	418,897	116
Commercial	716	67,160	94
Institutional	29	364,000	12,552
Industrial	9	16,000	1,778
<b>Total</b>	<b>4,365</b>	<b>866,057</b>	<b>14,539</b>

*\*Provided by the City of Dunn.*

# Dunn

2015 ▾

The Division of Water Resources (DWR) provides the data contained within this Local Water Supply Plan (LWSP) as a courtesy and service to our customers. DWR staff does not field verify data. Neither DWR, nor any other party involved in the preparation of this LWSP attests that the data is completely free of errors and omissions. Furthermore, data users are cautioned that LWSPs labeled **PROVISIONAL** have yet to be reviewed by DWR staff. Subsequent review may result in significant revision. Questions regarding the accuracy or limitations of usage of this data should be directed to the water system and/or DWR.

## 1. System Information

### Contact Information

Water System Name: **Dunn** PWSID: **03-43-010**  
 Mailing Address: **Post Office Box 1065** Ownership: **Municipality**  
**Dunn, NC 28335**  
 Contact Person: **Heather Adams** Title: **Public Utilities Director**  
 Phone: **910-892-2948** Cell/Mobile: **--**

**Complete**

### Distribution System

Line Type	Size Range (Inches)	Estimated % of lines
Asbestos Cement	6-16	38.00 %
Cast Iron	4-14	16.00 %
Ductile Iron	4-24	22.00 %
Galvanized Iron	1-2	9.00 %
Polyvinyl Chloride	2-12	15.00 %

What are the estimated total miles of distribution system lines? **87 Miles**

How many feet of distribution lines were replaced during 2015? **1,200 Feet**

How many feet of new water mains were added during 2015? **3,350 Feet**

How many meters were replaced in 2015? **142**

How old are the oldest meters in this system? **20 Year(s)**

How many meters for outdoor water use, such as irrigation, are not billed for sewer services? **256**

What is this system's finished water storage capacity? **6.5000 Million Gallons**

Has water pressure been inadequate in any part of the system since last update? *Line breaks that were repaired quickly should not be included.* **No**

**NOTE** 2 million gallons - above ground storage  
 4.5 million gallons - treated storage at WTP (must be pumped to distribution system)

### Programs

Does this system have a program to work or flush hydrants? **Yes, Annually**

Does this system have a valve exercise program? **Yes, As Needed**

Does this system have a cross-connection program? **Yes**

Does this system have a program to replace meters? **Yes**

Does this system have a plumbing retrofit program? **No**

Does this system have an active water conservation public education program? **Yes**

Does this system have a leak detection program? **Yes**

**NOTE** The City of Dunn monitors distribution system pressure, above ground water tank levels, and water plant pump rates through its SCADA system. If either indicator signals the possibility of a leak in the system, immediate efforts are made to verify, locate, and repair.

## Water Conservation

What type of rate structure is used? Flat/Fixed, Other

How much reclaimed water does this system use? 0.0000 MGD For how many connections? 0

Does this system have an interconnection with another system capable of providing water in an emergency? Yes

**NOTE** The City of Dunn has an industrial user rate of \$4.08 per 1000 gallons up to 500,000 gallons and \$2.10 per 1000 gallons over 500,000 gallons.

## 2. Water Use Information

### Service Area

Sub-Basin(s)	% of Service Population	County(s)	% of Service Population
Cape Fear River (02-3)	62 %	Harnett	48 %
South River (02-4)	19 %	Johnston	19 %
Neuse River (10-1)	19 %	Sampson	19 %
		Cumberland	14 %

What was the year-round population served in 2015? 9,263

Has this system acquired another system since last report? No

### Water Use by Type

Type of Use	Metered Connections	Metered Average Use (MGD)	Non-Metered Connections	Non-Metered Estimated Use (MGD)
Residential	3,879	0.4320	0	0.0000
Commercial	791	0.3550	0	0.0000
Industrial	8	0.0500	0	0.0000
Institutional	23	0.1530	0	0.0000

How much water was used for system processes (backwash, line cleaning, flushing, etc.)? 0.3000 MGD

### Water Sales

Purchaser	PWSID	Average Daily Sold (MGD)	Days Used	Contract			Required to comply with water use restrictions?	Pipe Size(s) (Inches)	Use Type
				MGD	Expiration	Recurring			
Eastover Sanitary District	50-26-027	0.4040	365	1.0000	2031	Yes	No	12	Regular
Harnett County	03-43-045	0.0270	365	1.0000	2050	Yes	No	16	Regular
Sampson County WD II	03-82-070	0.2520	239	0.9000	2036	Yes	No	12	Regular
Town of Benson	03-51-025	0.7590	365	0.9500	2021	Yes	No	16	Regular
Town of Falcon	03-26-035	0.1260	365	0.2000	2030	Yes	No	12	Regular

## 3. Water Supply Sources

### Monthly Withdrawals & Purchases

	Average Daily Use (MGD)	Max Day Use (MGD)		Average Daily Use (MGD)	Max Day Use (MGD)		Average Daily Use (MGD)	Max Day Use (MGD)
Jan	3.1800	3.8100	May	3.0300	3.5800	Sep	3.2200	3.2800
Feb	3.2700	3.9100	Jun	3.1200	3.3600	Oct	3.0900	3.7600
Mar	2.8900	3.4700	Jul	3.1500	3.6100	Nov	2.9400	3.4900
Apr	3.0300	3.5600	Aug	3.3200	4.1300	Dec	2.8900	3.5900



Surface Water Sources							
Stream	Reservoir	Average Daily Withdrawal		Maximum Day Withdrawal (MGD)	Available Raw Water Supply		Usable On-Stream Raw Water Supply Storage (MG)
		MGD	Days Used		MGD	* Qualifier	
Cape Fear River		3.0900	365	4.1300	12.0000	SY20	0.0000

\* Qualifier: C=Contract Amount, SY20=20-year Safe Yield, SY50=50-year Safe Yield, F=20% of 7Q10 or other instream flow requirement, CUA=Capacity Use Area Permit

Surface Water Sources (continued)							
Stream	Reservoir	Drainage Area (sq mi)	Metered?	Sub-Basin	County	Year Offline	Use Type
Cape Fear River		3,700	Yes	Cape Fear River (02-3)	Harnett		Regular

What is this system's off-stream raw water supply storage capacity? 0 Million gallons

Are surface water sources monitored? Yes, As Needed

Are you required to maintain minimum flows downstream of its intake or dam? No

Does this system anticipate transferring surface water between river basins? Yes

**NOTE** The City of Dunn transfers water from sub-basin 02-3 to sub-basins 02-4 and 10-1

Water Purchases From Other Systems									
Seller	PWSID	Average Daily Purchased (MGD)	Days Used	Contract			Required to comply with water use restrictions?	Pipe Size(s) (Inches)	Use Type
				MGD	Expiration	Recurring			
Harnett County	03-43-045	0.0000	0	2.5000		Yes	No	12	Emergency

Water Treatment Plants				
Plant Name	Permitted Capacity (MGD)	Is Raw Water Metered?	Is Finished Water Output Metered?	Source
A.B. Uzzle WTP	8.0000	Yes	Yes	Cape Fear River

Did average daily water production exceed 80% of approved plant capacity for five consecutive days during 2015? No

If yes, was any water conservation implemented?

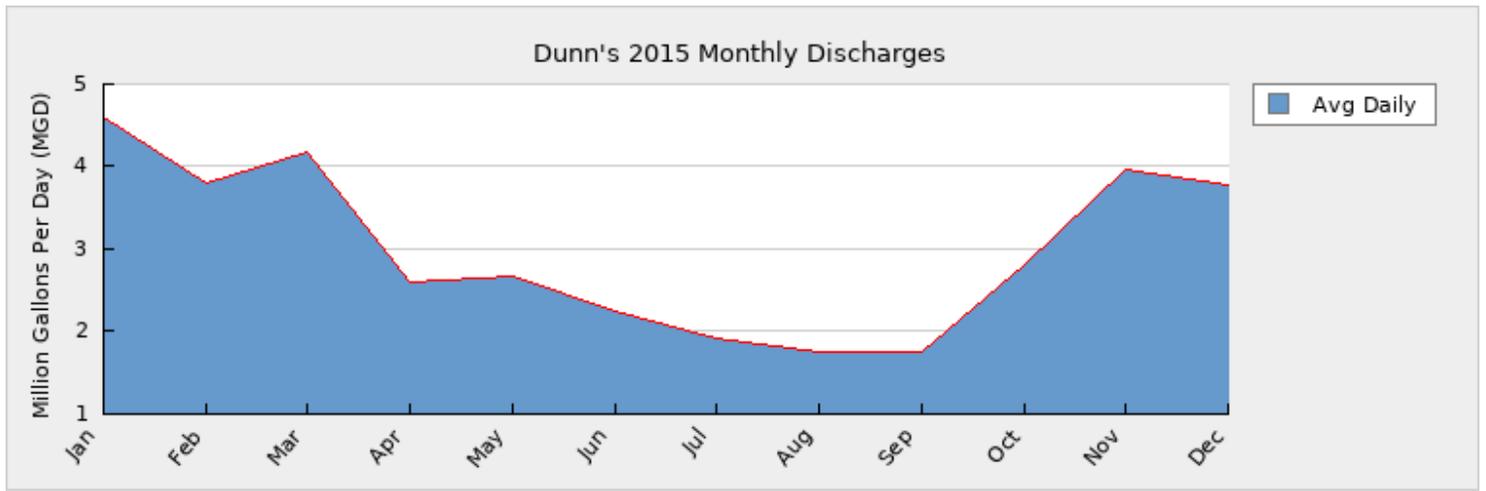
Did average daily water production exceed 90% of approved plant capacity for five consecutive days during 2015? No

If yes, was any water conservation implemented?

Are peak day demands expected to exceed the water treatment plant capacity in the next 10 years? No

## 4. Wastewater Information

Monthly Discharges					
	Average Daily Discharge (MGD)		Average Daily Discharge (MGD)		Average Daily Discharge (MGD)
Jan	4.5990	May	2.6780	Sep	1.7490
Feb	3.8050	Jun	2.2580	Oct	2.8050
Mar	4.1880	Jul	1.9080	Nov	3.9610
Apr	2.5940	Aug	1.7540	Dec	3.7880



How many sewer connections does this system have? 4,383

How many water service connections with septic systems does this system have? 185

Are there plans to build or expand wastewater treatment facilities in the next 10 years? No

Wastewater Permits						
Permit Number	Permitted Capacity (MGD)	Design Capacity (MGD)	Average Annual Daily Discharge (MGD)	Maximum Day Discharge (MGD)	Receiving Stream	Receiving Basin
NC0043176	3.7500	3.7500	2.8950	7.8640	Cape Fear River	Cape Fear River (02-3)
NC0078955	8.0000	0.6900	0.1120	0.3850	Juniper Creek	Cape Fear River (02-3)

## 5. Planning

Projections						
	2015	2020	2030	2040	2050	2060
Year-Round Population	9,263	9,363	9,463	9,563	9,663	9,763
Seasonal Population	0	0	0	0	0	0
Residential	0.4320	0.5530	0.5640	0.5750	0.5870	0.5990
Commercial	0.3550	0.5350	0.5460	0.5570	0.5680	0.5790
Industrial	0.0500	0.0970	0.0990	0.1010	0.1030	0.1050
Institutional	0.1530	0.1700	0.1730	0.1770	0.1810	0.1850
System Process	0.3000	0.2520	0.2540	0.2560	0.2580	0.2600
Unaccounted-for	0.3190	0.3970	0.4050	0.4120	0.4200	0.4270

Demand v/s Percent of Supply						
	2015	2020	2030	2040	2050	2060
Surface Water Supply	12.0000	12.0000	12.0000	12.0000	12.0000	12.0000
Ground Water Supply	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Purchases	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Future Supplies		0.0000	0.0000	0.0000	0.0000	0.0000
Total Available Supply (MGD)	12.0000	12.0000	12.0000	12.0000	12.0000	12.0000
Service Area Demand	1.6090	2.0040	2.0410	2.0780	2.1170	2.1550
Sales	1.4810	4.0500	4.0500	4.0500	4.0500	4.0500
Future Sales		0.0000	0.0000	0.0000	0.0000	0.0000
Total Demand (MGD)	3.0900	6.0540	6.0910	6.1280	6.1670	6.2050
Demand as Percent of Supply	26%	50%	51%	51%	51%	52%



The purpose of the above chart is to show a general indication of how the long-term per capita water demand changes over time. The per capita water demand may actually be different than indicated due to seasonal populations and the accuracy of data submitted. Water systems that have calculated long-term per capita water demand based on a methodology that produces different results may submit their information in the notes field.

Your long-term water demand is **47** gallons per capita per day. What demand management practices do you plan to implement to reduce the per capita water demand (i.e. conduct regular water audits, implement a plumbing retrofit program, employ practices such as rainwater harvesting or reclaimed water)? If these practices are covered elsewhere in your plan, indicate where the practices are discussed here. **See Section 1 of the plan for practices that could reduce per capita water demand.**

Are there other demand management practices you will implement to reduce your future supply needs?

What supplies other than the ones listed in future supplies are being considered to meet your future supply needs?

How does the water system intend to implement the demand management and supply planning components above?

### Additional Information

Has this system participated in regional water supply or water use planning? **Yes, The City of Dunn is an active member of the Middle Cape Fear Association.**

What major water supply reports or studies were used for planning?

Please describe any other needs or issues regarding your water supply sources, any water system deficiencies or needed improvements (storage, treatment, etc.) or your ability to meet present and future water needs. Include both quantity and quality considerations, as well as financial, technical, managerial, permitting, and compliance issues: **Off river storage would lower treatment costs during high turbidity events in the Cape Fear River. This storage would also offer protection from river contamination events.**

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# Dunn

2016 ▾

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## 1. System Information

### Contact Information

Water System Name: **Dunn** PWSID: **03-43-010**  
 Mailing Address: **Post Office Box 1065** Ownership: **Municipality**  
**Dunn, NC 28335**  
 Contact Person: **Heather Adams** Title: **Public Utilities Director**  
 Phone: **910-892-2948** Cell/Mobile: **--**

**Complete**

### Distribution System

Line Type	Size Range (Inches)	Estimated % of lines
Asbestos Cement	6-16	38.00 %
Cast Iron	4-14	16.00 %
Ductile Iron	4-24	22.00 %
Galvanized Iron	1-2	9.00 %
Polyvinyl Chloride	2-12	15.00 %

What are the estimated total miles of distribution system lines? **87 Miles**

How many feet of distribution lines were replaced during 2016? **700 Feet**

How many feet of new water mains were added during 2016? **1,996 Feet**

How many meters were replaced in 2016? **61**

How old are the oldest meters in this system? **20 Year(s)**

How many meters for outdoor water use, such as irrigation, are not billed for sewer services? **257**

What is this system's finished water storage capacity? **6.5000 Million Gallons**

Has water pressure been inadequate in any part of the system since last update? *Line breaks that were repaired quickly should not be included.* **No**

**NOTE** 2 million gallons - above ground storage  
 4.5 million gallons - treated storage at WTP (must be pumped to distribution system)

### Programs

Does this system have a program to work or flush hydrants? **Yes, Annually**

Does this system have a valve exercise program? **Yes, As Needed**

Does this system have a cross-connection program? **Yes**

Does this system have a program to replace meters? **Yes**

Does this system have a plumbing retrofit program? **No**

Does this system have an active water conservation public education program? **Yes**

Does this system have a leak detection program? **Yes**

**NOTE** The City of Dunn monitors distribution system pressure, above ground water tank levels, and water plant pump rates through its SCADA system and 24 hour water plant staff. If either indicator signals the possibility of a water leak in the system, immediate efforts are made to verify, locate, and repair.

### Water Conservation

What type of rate structure is used? Flat/Fixed, Other

How much reclaimed water does this system use? 0.0000 MGD For how many connections? 0

Does this system have an interconnection with another system capable of providing water in an emergency? Yes

**NOTE** The City of Dunn has an industrial user rate of \$4.08 per 1000 gallons up to 500,000 gallons and \$2.10 per 1000 gallons over 500,000 gallons.

## 2. Water Use Information

### Service Area

Sub-Basin(s)	% of Service Population	County(s)	% of Service Population
Cape Fear River (02-3)	78 %	Harnett	44 %
Neuse River (10-1)	22 %	Cumberland	34 %
		Johnston	22 %

What was the year-round population served in 2016? 9,549

Has this system acquired another system since last report? No

### Water Use by Type

Type of Use	Metered Connections	Metered Average Use (MGD)	Non-Metered Connections	Non-Metered Estimated Use (MGD)
Residential	3,891	0.5450	0	0.0000
Commercial	793	0.4920	0	0.0000
Industrial	8	0.0890	0	0.0000
Institutional	23	0.1590	0	0.0000

How much water was used for system processes (backwash, line cleaning, flushing, etc.)? 0.3000 MGD

### Water Sales

Purchaser	PWSID	Average Daily Sold (MGD)	Days Used	Contract			Required to comply with water use restrictions?	Pipe Size(s) (Inches)	Use Type
				MGD	Expiration	Recurring			
Eastover Sanitary District	50-26-027	0.4140	365	1.0000	2031	Yes	No	12	Regular
Harnett County	03-43-045	0.0140	365	1.0000	2050	Yes	No	16	Regular
Town of Benson	03-51-025	0.8520	365	0.9500	2021	Yes	No	16	Regular
Town of Falcon	03-26-035	0.1210	365	0.2000	2030	Yes	No	12	Regular

## 3. Water Supply Sources

### Monthly Withdrawals & Purchases

	Average Daily Use (MGD)	Max Day Use (MGD)		Average Daily Use (MGD)	Max Day Use (MGD)		Average Daily Use (MGD)	Max Day Use (MGD)
Jan	2.9760	3.5340	May	3.1330	3.4310	Sep	3.5760	4.8420
Feb	3.0540	3.4860	Jun	3.3900	4.4870	Oct	3.2760	4.2770
Mar	3.0790	3.4350	Jul	3.4670	4.3330	Nov	3.2830	3.5870
Apr	3.1350	3.8040	Aug	3.5830	4.3400	Dec	3.1300	3.4770



### Surface Water Sources

Stream	Reservoir	Average Daily Withdrawal		Maximum Day Withdrawal (MGD)	Available Raw Water Supply		Usable On-Stream Raw Water Supply Storage (MG)
		MGD	Days Used		MGD	* Qualifier	
Cape Fear River		3.2570	365	4.8420	12.0000	SY20	0.0000

\* Qualifier: C=Contract Amount, SY20=20-year Safe Yield, SY50=50-year Safe Yield, F=20% of 7Q10 or other instream flow requirement, CUA=Capacity Use Area Permit

#### Surface Water Sources (continued)

Stream	Reservoir	Drainage Area (sq mi)	Metered?	Sub-Basin	County	Year Offline	Use Type
Cape Fear River		3,700	Yes	Cape Fear River (02-3)	Harnett		Regular

What is this system's off-stream raw water supply storage capacity? 0 Million gallons

Are surface water sources monitored? Yes, As Needed

Are you required to maintain minimum flows downstream of its intake or dam? No

Does this system anticipate transferring surface water between river basins? Yes

**NOTE** The City of Dunn transfers water from sub-basin 02-3 to sub-basin 10-1

#### Water Purchases From Other Systems

Seller	PWSID	Average Daily Purchased (MGD)	Days Used	Contract			Required to comply with water use restrictions?	Pipe Size(s) (Inches)	Use Type
				MGD	Expiration	Recurring			
Harnett County	03-43-045	0.0000	0	2.5000		Yes	No	12	Emergency

#### Water Treatment Plants

Plant Name	Permitted Capacity (MGD)	Is Raw Water Metered?	Is Finished Water Output Metered?	Source
A.B. Uzzle WTP	8.0000	Yes	Yes	Cape Fear River

Did average daily water production exceed 80% of approved plant capacity for five consecutive days during 2016? No

If yes, was any water conservation implemented?

Did average daily water production exceed 90% of approved plant capacity for five consecutive days during 2016? No

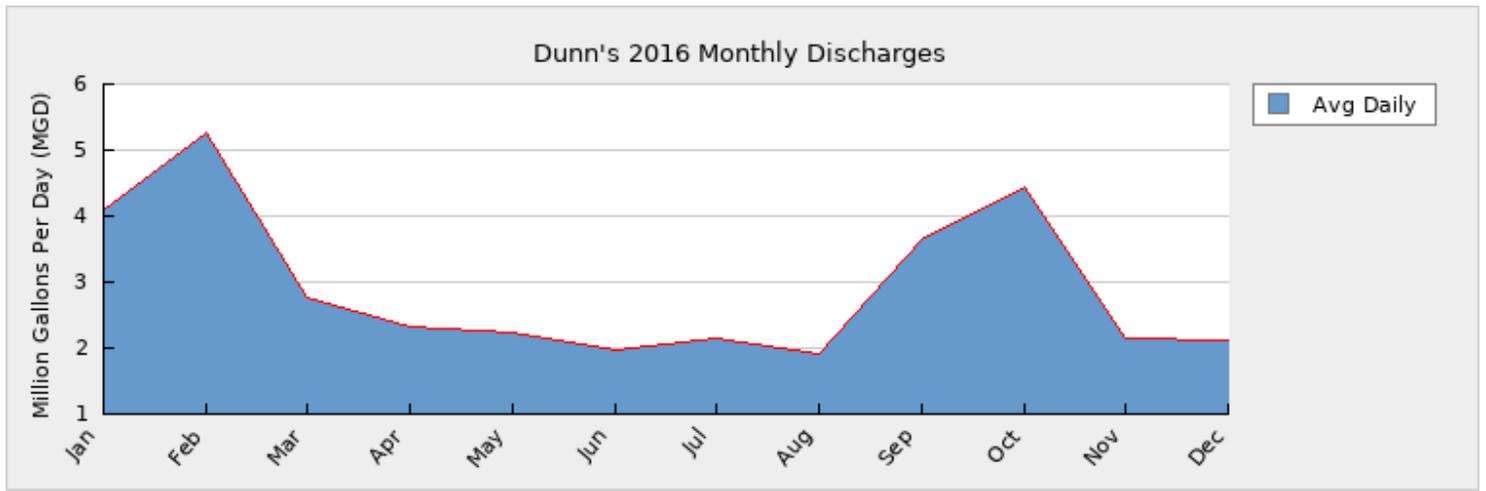
If yes, was any water conservation implemented?

Are peak day demands expected to exceed the water treatment plant capacity in the next 10 years? No

## 4. Wastewater Information

#### Monthly Discharges

	Average Daily Discharge (MGD)		Average Daily Discharge (MGD)		Average Daily Discharge (MGD)
Jan	4.0900	May	2.2400	Sep	3.6500
Feb	5.2500	Jun	1.9800	Oct	4.4400
Mar	2.7700	Jul	2.1600	Nov	2.1600
Apr	2.3300	Aug	1.9100	Dec	2.1100



How many sewer connections does this system have? 4,397

How many water service connections with septic systems does this system have? 182

Are there plans to build or expand wastewater treatment facilities in the next 10 years? No

Wastewater Permits						
Permit Number	Permitted Capacity (MGD)	Design Capacity (MGD)	Average Annual Daily Discharge (MGD)	Maximum Day Discharge (MGD)	Receiving Stream	Receiving Basin
NC0043176	3.7500	3.7500	2.7960	8.5650	Cape Fear River	Cape Fear River (02-3)
NC0078955	8.0000	0.6900	0.1270	0.4100	Juniper Creek	Cape Fear River (02-3)

## 5. Planning

Projections						
	2016	2020	2030	2040	2050	2060
Year-Round Population	9,549	9,599	9,699	9,799	9,899	9,999
Seasonal Population	0	0	0	0	0	0
Residential	0.5450	0.5530	0.5640	0.5750	0.5870	0.5990
Commercial	0.4920	0.5350	0.5460	0.5570	0.5680	0.5790
Industrial	0.0890	0.0970	0.0990	0.1010	0.1030	0.1050
Institutional	0.1590	0.1700	0.1730	0.1770	0.1810	0.1850
System Process	0.3000	0.3100	0.3200	0.3300	0.3400	0.3500
Unaccounted-for	0.2659	0.2790	0.2860	0.2920	0.2990	0.3050

Demand v/s Percent of Supply						
	2016	2020	2030	2040	2050	2060
Surface Water Supply	12.0000	12.0000	12.0000	12.0000	12.0000	12.0000
Ground Water Supply	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Purchases	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Future Supplies		0.0000	0.0000	0.0000	0.0000	0.0000
Total Available Supply (MGD)	12.0000	12.0000	12.0000	12.0000	12.0000	12.0000
Service Area Demand	1.8509	1.9440	1.9880	2.0320	2.0780	2.1230
Sales	1.3972	3.1500	3.1500	3.1500	3.1500	3.1500
Future Sales		0.0000	0.0000	0.0000	0.0000	0.0000
Total Demand (MGD)	3.2481	5.0940	5.1380	5.1820	5.2280	5.2730
Demand as Percent of Supply	27%	42%	43%	43%	44%	44%



The purpose of the above chart is to show a general indication of how the long-term per capita water demand changes over time. The per capita water demand may actually be different than indicated due to seasonal populations and the accuracy of data submitted. Water systems that have calculated long-term per capita water demand based on a methodology that produces different results may submit their information in the notes field.

Your long-term water demand is **57** gallons per capita per day. What demand management practices do you plan to implement to reduce the per capita water demand (i.e. conduct regular water audits, implement a plumbing retrofit program, employ practices such as rainwater harvesting or reclaimed water)? If these practices are covered elsewhere in your plan, indicate where the practices are discussed here.

Are there other demand management practices you will implement to reduce your future supply needs?

What supplies other than the ones listed in future supplies are being considered to meet your future supply needs?

How does the water system intend to implement the demand management and supply planning components above?

#### Additional Information

Has this system participated in regional water supply or water use planning? **Yes, The City of Dunn is an active member of the Middle Cape Fear Association**

What major water supply reports or studies were used for planning?

Please describe any other needs or issues regarding your water supply sources, any water system deficiencies or needed improvements (storage, treatment, etc.) or your ability to meet present and future water needs. Include both quantity and quality considerations, as well as financial, technical, managerial, permitting, and compliance issues:

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# Dunn

2017 ▾

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## 1. System Information

### Contact Information

Water System Name: **Dunn** PWSID: **03-43-010**  
 Mailing Address: **Post Office Box 1065** Ownership: **Municipality**  
**Dunn, NC 28335**  
 Contact Person: **Heather Adams** Title: **Public Utilities Director**  
 Phone: **910-892-2948** Cell/Mobile: **--**

**Complete**

### Distribution System

Line Type	Size Range (Inches)	Estimated % of lines
Asbestos Cement	6-16	38.00 %
Cast Iron	4-14	16.00 %
Ductile Iron	4-24	22.00 %
Galvanized Iron	1-2	9.00 %
Polyvinyl Chloride	2-12	15.00 %

What are the estimated total miles of distribution system lines? **87 Miles**

How many feet of distribution lines were replaced during 2017? **572 Feet**

How many feet of new water mains were added during 2017? **1,325 Feet**

How many meters were replaced in 2017? **60**

How old are the oldest meters in this system? **20 Year(s)**

How many meters for outdoor water use, such as irrigation, are not billed for sewer services? **260**

What is this system's finished water storage capacity? **6.5000 Million Gallons**

Has water pressure been inadequate in any part of the system since last update? *Line breaks that were repaired quickly should not be included.* **No**

### Programs

Does this system have a program to work or flush hydrants? **Yes, Annually**

Does this system have a valve exercise program? **Yes, As Needed**

Does this system have a cross-connection program? **Yes**

Does this system have a program to replace meters? **Yes**

Does this system have a plumbing retrofit program? **No**

Does this system have an active water conservation public education program? **Yes**

Does this system have a leak detection program? **Yes**

**NOTE** The City of Dunn monitors distribution system pressure, above water ground tank levels, and water plant pump rates through its SCADA system and 24 hour water plant staff. If either indicator signals the possibility of a water leak in the system, immediate efforts are made to verify, locate and repair.

### Water Conservation

What type of rate structure is used? Flat/Fixed, Other

How much reclaimed water does this system use? 0.0000 MGD For how many connections? 0

Does this system have an interconnection with another system capable of providing water in an emergency? Yes

**NOTE** The City of Dunn has an industrial user rate of \$4.08 per 1,000 gallons up to 500,000 gallons and \$2.10 per 1,000 gallons over 500,000 gallons.

## 2. Water Use Information

Service Area							
Sub-Basin(s)		% of Service Population		County(s)		% of Service Population	
Cape Fear River (02-3)		62 %		Harnett		48 %	
Neuse River (10-1)		19 %		Johnston		19 %	
South River (02-4)		19 %		Sampson		19 %	
				Cumberland		14 %	

What was the year-round population served in 2017? 9,873

Has this system acquired another system since last report? No

Water Use by Type				
Type of Use	Metered Connections	Metered Average Use (MGD)	Non-Metered Connections	Non-Metered Estimated Use (MGD)
Residential	3,902	0.5300	0	0.0000
Commercial	795	0.4510	0	0.0000
Industrial	8	0.0480	0	0.0000
Institutional	23	0.1630	0	0.0000

How much water was used for system processes (backwash, line cleaning, flushing, etc.)? 0.1000 MGD

Water Sales									
Purchaser	PWSID	Average Daily Sold (MGD)	Days Used	Contract			Required to comply with water use restrictions?	Pipe Size(s) (Inches)	Use Type
				MGD	Expiration	Recurring			
Eastover Sanitary District	50-26-027	0.4230	365	1.0000	2031	Yes	No	12	Regular
Harnett County	03-43-045	0.2270	365	1.0000	2050	Yes	No	16	Regular
Sampson County WD II	03-82-070	0.0000	0	0.1160	2036	Yes	No	12	Regular
Town of Benson	03-51-025	0.7230	365	1.2000	2027	Yes	No	16	Regular
Town of Falcon	03-26-035	0.1070	365	0.2000	2030	Yes	No	12	Regular

## 3. Water Supply Sources

Monthly Withdrawals & Purchases								
	Average Daily Use (MGD)	Max Day Use (MGD)		Average Daily Use (MGD)	Max Day Use (MGD)		Average Daily Use (MGD)	Max Day Use (MGD)
Jan	3.0700	3.5180	May	2.9800	3.5360	Sep	3.4600	4.0020
Feb	2.8200	3.1080	Jun	3.0200	3.4910	Oct	3.4300	4.7030
Mar	2.7600	3.4840	Jul	3.0500	3.6430	Nov	3.0600	4.2210
Apr	2.8600	3.1420	Aug	3.2500	4.2910	Dec	2.9400	3.3810



Surface Water Sources					
Stream	Reservoir	Average Daily Withdrawal	Maximum Day Withdrawal (MGD)	Available Raw Water Supply	Usable On-Stream Raw Water Supply

	MGD	Days Used		MGD	* Qualifier	Storage (MG)
Cape Fear River	3.0600	365	0.0000	12.0000	SY20	0.0000

\* Qualifier: C=Contract Amount, SY20=20-year Safe Yield, SY50=50-year Safe Yield, F=20% of 7Q10 or other instream flow requirement, CUA=Capacity Use Area Permit

**Surface Water Sources (continued)**

Stream	Reservoir	Drainage Area (sq mi)	Metered?	Sub-Basin	County	Year Offline	Use Type
Cape Fear River		3,700	Yes	Cape Fear River (02-3)	Harnett		Regular

What is this system's off-stream raw water supply storage capacity? 0 Million gallons

Are surface water sources monitored? Yes, As Needed

Are you required to maintain minimum flows downstream of its intake or dam? No

Does this system anticipate transferring surface water between river basins? Yes

**NOTE** The City of Dunn transfers water from sub-basin 02-3 to sub-basins 02-4 and 10-1

**Water Purchases From Other Systems**

Seller	PWSID	Average Daily Purchased (MGD)	Days Used	Contract			Required to comply with water use restrictions?	Pipe Size(s) (Inches)	Use Type
				MGD	Expiration	Recurring			
Harnett County	03-43-045	0.0000	0	2.5000		Yes	No	12	Emergency

**Water Treatment Plants**

Plant Name	Permitted Capacity (MGD)	Is Raw Water Metered?	Is Finished Water Output Metered?	Source
A.B. Uzzle WTP	8.0000	Yes	Yes	Cape Fear River

Did average daily water production exceed 80% of approved plant capacity for five consecutive days during 2017? No

If yes, was any water conservation implemented?

Did average daily water production exceed 90% of approved plant capacity for five consecutive days during 2017? No

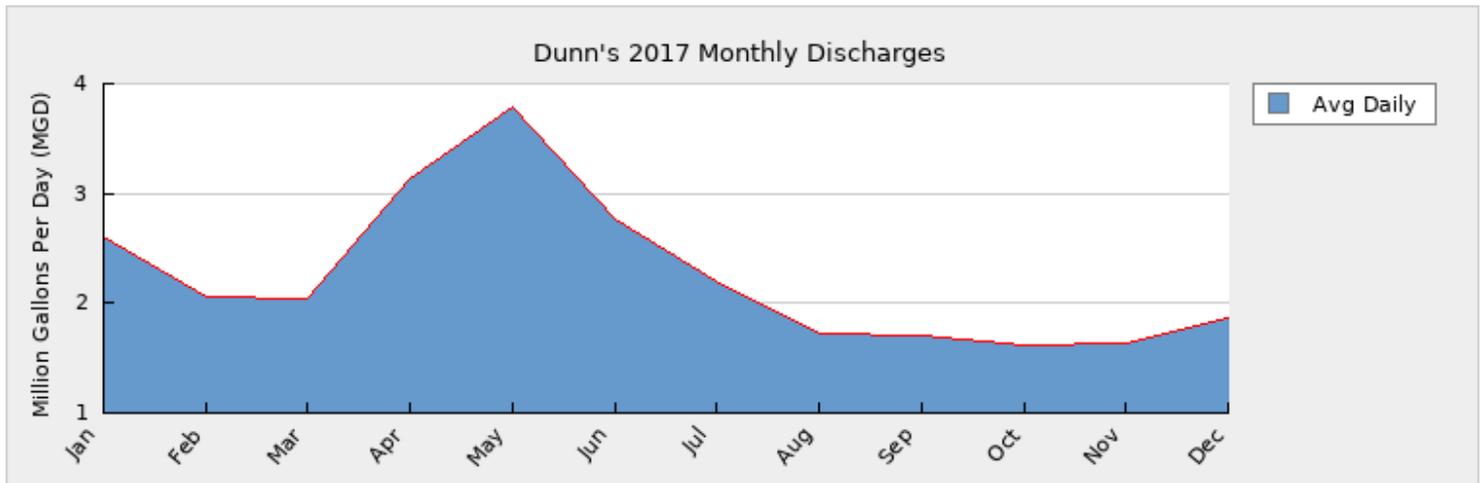
If yes, was any water conservation implemented?

Are peak day demands expected to exceed the water treatment plant capacity in the next 10 years? No

**4. Wastewater Information**

**Monthly Discharges**

	Average Daily Discharge (MGD)		Average Daily Discharge (MGD)		Average Daily Discharge (MGD)
Jan	2.6030	May	3.7970	Sep	1.7020
Feb	2.0640	Jun	2.7710	Oct	1.6240
Mar	2.0460	Jul	2.2080	Nov	1.6300
Apr	3.1360	Aug	1.7180	Dec	1.8690



How many sewer connections does this system have? **4,399**

How many water service connections with septic systems does this system have? **180**

Are there plans to build or expand wastewater treatment facilities in the next 10 years? **No**

Wastewater Permits						
Permit Number	Permitted Capacity (MGD)	Design Capacity (MGD)	Average Annual Daily Discharge (MGD)	Maximum Day Discharge (MGD)	Receiving Stream	Receiving Basin
NC0043176	3.7500	3.7500	2.1330		Cape Fear River	Cape Fear River (02-3)
NC0078955	8.0000	0.6900	0.1320		Juniper Creek	Cape Fear River (02-3)

## 5. Planning

Projections						
	2017	2020	2030	2040	2050	2060
Year-Round Population	9,873	9,900	10,000	10,100	10,200	10,300
Seasonal Population	0	0	0	0	0	0
Residential	0.5300	0.5530	0.5640	0.5750	0.5870	0.5990
Commercial	0.4510	0.5350	0.5460	0.5570	0.5680	0.5790
Industrial	0.0480	0.0970	0.0990	0.1010	0.1030	0.1050
Institutional	0.1630	0.1700	0.1730	0.1770	0.1810	0.1850
System Process	0.1000	0.1100	0.1200	0.1300	0.1400	0.1500
Unaccounted-for	0.2880	0.3270	0.3350	0.3430	0.3520	0.3610

Demand v/s Percent of Supply						
	2017	2020	2030	2040	2050	2060
Surface Water Supply	12.0000	12.0000	12.0000	12.0000	12.0000	12.0000
Ground Water Supply	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Purchases	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Future Supplies		0.0000	0.0000	0.0000	0.0000	0.0000
Total Available Supply (MGD)	12.0000	12.0000	12.0000	12.0000	12.0000	12.0000
Service Area Demand	1.5800	1.7920	1.8370	1.8830	1.9310	1.9790
Sales	1.4800	3.5160	3.5160	3.5160	3.5160	3.5160
Future Sales		0.0000	0.0000	0.0000	0.0000	0.0000
Total Demand (MGD)	3.0600	5.3080	5.3530	5.3990	5.4470	5.4950
Demand as Percent of Supply	26%	44%	45%	45%	45%	46%



The purpose of the above chart is to show a general indication of how the long-term per capita water demand changes over time. The per capita water demand may actually be different than indicated due to seasonal populations and the accuracy of data submitted. Water systems that have calculated long-term per capita water demand based on a methodology that produces different results may submit their information in the notes field.

Your long-term water demand is **54** gallons per capita per day. What demand management practices do you plan to implement to reduce the per capita water demand (i.e. conduct regular water audits, implement a plumbing retrofit program, employ practices such as rainwater harvesting or reclaimed water)? If these practices are covered elsewhere in your plan, indicate where the practices are discussed here. **See Section 1 of the plan for practices that could reduce the per capita water demand.**

Are there other demand management practices you will implement to reduce your future supply needs?

What supplies other than the ones listed in future supplies are being considered to meet your future supply needs?

How does the water system intend to implement the demand management and supply planning components above?

Additional Information
------------------------

Has this system participated in regional water supply or water use planning? Yes, The City of Dunn is an active member of the Middle Cape Fear Association.

What major water supply reports or studies were used for planning?

Please describe any other needs or issues regarding your water supply sources, any water system deficiencies or needed improvements (storage, treatment, etc.) or your ability to meet present and future water needs. Include both quantity and quality considerations, as well as financial, technical, managerial, permitting, and compliance issues: Off river storage is needed at the water treatment facility. A 500,000 gallon above ground water tank is needed on the south side of our water distribution system.

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# Dunn

2018 ▾

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## 1. System Information

### Contact Information

Water System Name: **Dunn** PWSID: **03-43-010**  
 Mailing Address: **Post Office Box 1065** Ownership: **Municipality**  
**Dunn, NC 28335**  
 Contact Person: **Heather Adams** Title: **Public Utilities Director**  
 Phone: **910-892-2948** Cell/Mobile: **--**

**Complete**

### Distribution System

Line Type	Size Range (Inches)	Estimated % of lines
Asbestos Cement	6-16	38.00 %
Cast Iron	4-14	16.00 %
Ductile Iron	4-24	22.00 %
Galvanized Iron	1-2	9.00 %
Polyvinyl Chloride	2-12	15.00 %

What are the estimated total miles of distribution system lines? **87 Miles**

How many feet of distribution lines were replaced during 2018? **660 Feet**

How many feet of new water mains were added during 2018? **0 Feet**

How many meters were replaced in 2018? **22**

How old are the oldest meters in this system? **21 Year(s)**

How many meters for outdoor water use, such as irrigation, are not billed for sewer services? **260**

What is this system's finished water storage capacity? **6.5000 Million Gallons**

Has water pressure been inadequate in any part of the system since last update? *Line breaks that were repaired quickly should not be included.* **No**

### Programs

Does this system have a program to work or flush hydrants? **Yes, Monthly**

Does this system have a valve exercise program? **Yes, As Needed**

Does this system have a cross-connection program? **Yes**

Does this system have a program to replace meters? **Yes**

Does this system have a plumbing retrofit program? **No**

Does this system have an active water conservation public education program? **Yes**

Does this system have a leak detection program? **Yes**

**NOTE** The City of Dunn is in the process of changing all meters out to AMI. Project is expected to be completed August 2019. If leaks are detected, the City ensures repairs are completed as soon as possible.

### Water Conservation

What type of rate structure is used? Flat/Fixed

How much reclaimed water does this system use? 0.0000 MGD For how many connections? 0

Does this system have an interconnection with another system capable of providing water in an emergency? Yes

**NOTE** In emergency situations, the City can purchase water from Harnett County on the east side of Town.

## 2. Water Use Information

Service Area							
Sub-Basin(s)		% of Service Population		County(s)		% of Service Population	
Cape Fear River (02-3)		62 %		Harnett		48 %	
Neuse River (10-1)		19 %		Johnston		19 %	
South River (02-4)		19 %		Sampson		19 %	
				Cumberland		14 %	

What was the year-round population served in 2018? 9,873

Has this system acquired another system since last report? No

**NOTE** Population is based on latest League of Municipality census.

Water Use by Type				
Type of Use	Metered Connections	Metered Average Use (MGD)	Non-Metered Connections	Non-Metered Estimated Use (MGD)
Residential	3,902	0.4460	0	0.0000
Commercial	795	0.3180	0	0.0000
Industrial	8	0.0800	0	0.0000
Institutional	23	0.0500	0	0.0000

How much water was used for system processes (backwash, line cleaning, flushing, etc.)? 0.1600 MGD

Water Sales									
Purchaser	PWSID	Average Daily Sold (MGD)	Days Used	Contract			Required to comply with water use restrictions?	Pipe Size(s) (Inches)	Use Type
				MGD	Expiration	Recurring			
Eastover Sanitary District	50-26-027	0.4220	365	1.0000	2031	Yes	No	12	Regular
Harnett County	03-43-045	0.0240	365	1.0000	2050	Yes	No	16	Regular
Sampson County WD II	03-82-070	0.2570	365	0.1160	2036	Yes	No	12	Regular
Town of Benson	03-51-025	0.7190	365	1.2000	2027	Yes	No	16	Regular
Town of Falcon	03-26-035	0.0980	365	0.2000	2030	Yes	No	12	Regular

## 3. Water Supply Sources

Monthly Withdrawals & Purchases								
	Average Daily Use (MGD)	Max Day Use (MGD)		Average Daily Use (MGD)	Max Day Use (MGD)		Average Daily Use (MGD)	Max Day Use (MGD)
Jan	3.0800	3.8200	May	3.1100	3.9400	Sep	3.0900	3.7900
Feb	2.8500	3.4700	Jun	3.1500	3.7700	Oct	3.0700	3.8700
Mar	2.8600	3.6200	Jul	3.2000	3.8900	Nov	2.8600	3.3600
Apr	2.9200	3.5400	Aug	3.0600	3.7500	Dec	2.8300	2.8300



### Surface Water Sources

Stream	Reservoir	Average Daily Withdrawal		Maximum Day Withdrawal (MGD)	Available Raw Water Supply		Usable On-Stream Raw Water Supply Storage (MG)
		MGD	Days Used		MGD	* Qualifier	
Cape Fear River		3.0100	365	3.9400	12.0000	SY20	0.0000

\* Qualifier: C=Contract Amount, SY20=20-year Safe Yield, SY50=50-year Safe Yield, F=20% of 7Q10 or other instream flow requirement, CUA=Capacity Use Area Permit

**Surface Water Sources (continued)**

Stream	Reservoir	Drainage Area (sq mi)	Metered?	Sub-Basin	County	Year Offline	Use Type
Cape Fear River		3,700	Yes	Cape Fear River (02-3)	Harnett		Regular

What is this system's off-stream raw water supply storage capacity? 0 Million gallons

Are surface water sources monitored? Yes, Daily

Are you required to maintain minimum flows downstream of its intake or dam? No

Does this system anticipate transferring surface water between river basins? No

**Water Purchases From Other Systems**

Seller	PWSID	Average Daily Purchased (MGD)	Days Used	Contract			Required to comply with water use restrictions?	Pipe Size(s) (Inches)	Use Type
				MGD	Expiration	Recurring			
Harnett County	03-43-045	0.0000	0	2.5000		Yes	No	12	Emergency

**Water Treatment Plants**

Plant Name	Permitted Capacity (MGD)	Is Raw Water Metered?	Is Finished Water Output Metered?	Source
A.B. Uzzle WTP	8.0000	Yes	Yes	Cape Fear River

Did average daily water production exceed 80% of approved plant capacity for five consecutive days during 2018? No

If yes, was any water conservation implemented?

Did average daily water production exceed 90% of approved plant capacity for five consecutive days during 2018? No

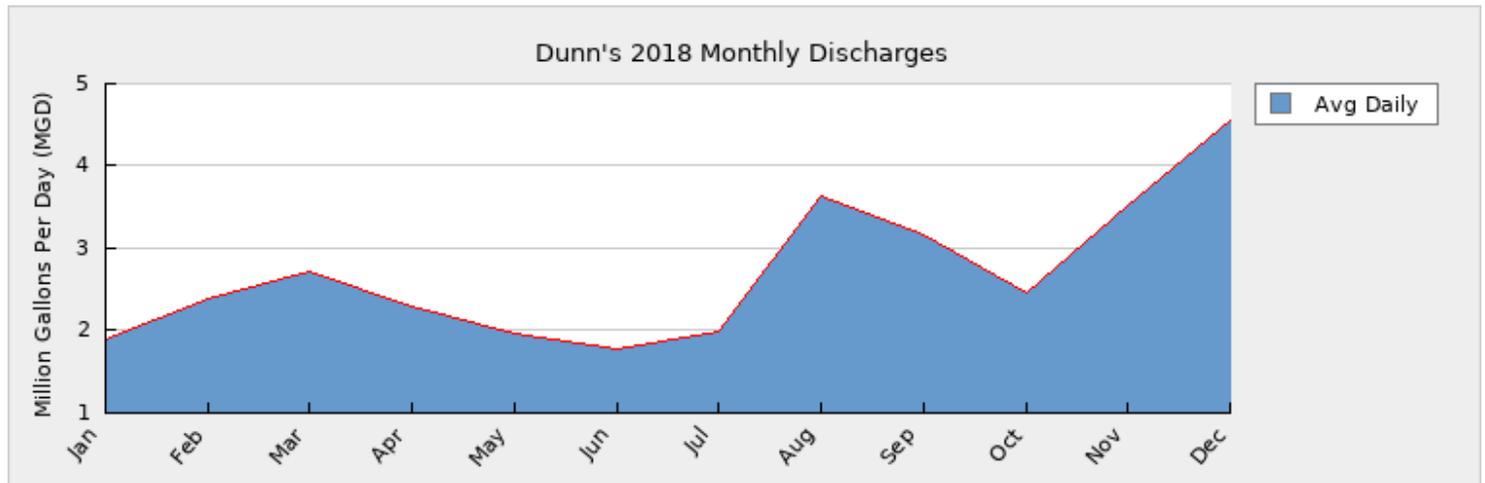
If yes, was any water conservation implemented?

Are peak day demands expected to exceed the water treatment plant capacity in the next 10 years? No

**4. Wastewater Information**

**Monthly Discharges**

	Average Daily Discharge (MGD)		Average Daily Discharge (MGD)		Average Daily Discharge (MGD)
Jan	1.9010	May	1.9540	Sep	3.1570
Feb	2.3890	Jun	1.7710	Oct	2.4620
Mar	2.7170	Jul	1.9800	Nov	3.5080
Apr	2.2920	Aug	3.6440	Dec	4.5550



How many sewer connections does this system have? 4,399

How many water service connections with septic systems does this system have? 180

Are there plans to build or expand wastewater treatment facilities in the next 10 years? No

**NOTE** It is noted that the discrepancy between the average monthly and average annual discharge values is about 5%. Requested monthly data in gallons in attempt to reduce discrepancy; sent same data that was already in plan.

Wastewater Permits						
Permit Number	Permitted Capacity (MGD)	Design Capacity (MGD)	Average Annual Daily Discharge (MGD)	Maximum Day Discharge (MGD)	Receiving Stream	Receiving Basin
NC0043176	3.7500	3.7500	2.6940		Cape Fear River	Cape Fear River (02-3)
NC0078955	8.0000	0.6900	0.1410		Juniper Creek	Cape Fear River (02-3)

## 5. Planning

Projections						
	2018	2020	2030	2040	2050	2060
Year-Round Population	9,873	9,900	10,000	10,100	10,200	10,300
Seasonal Population	0	0	0	0	0	0
Residential	0.4460	0.4650	0.4740	0.4840	0.4940	0.5030
Commercial	0.3180	0.3240	0.3300	0.3370	0.3440	0.3510
Industrial	0.0800	0.0820	0.0830	0.0850	0.0870	0.0890
Institutional	0.0500	0.0510	0.0520	0.0530	0.0540	0.0550
System Process	0.1600	0.1630	0.1660	0.1700	0.1730	0.1770
Unaccounted-for	0.4360	0.4488	0.4571	0.4670	0.4765	0.4861

Demand v/s Percent of Supply						
	2018	2020	2030	2040	2050	2060
Surface Water Supply	12.0000	12.0000	12.0000	12.0000	12.0000	12.0000
Ground Water Supply	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Purchases	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Future Supplies		0.0000	0.0000	0.0000	0.0000	0.0000
Total Available Supply (MGD)	12.0000	12.0000	12.0000	12.0000	12.0000	12.0000
Service Area Demand	1.4900	1.5338	1.5621	1.5960	1.6285	1.6611
Sales	1.5200	3.6570	3.6570	3.6570	3.6570	3.6570
Future Sales		0.0000	0.0000	0.0000	0.0000	0.0000
Total Demand (MGD)	3.0100	5.1908	5.2191	5.2530	5.2855	5.3181
Demand as Percent of Supply	25%	43%	43%	44%	44%	44%



The purpose of the above chart is to show a general indication of how the long-term per capita water demand changes over time. The per capita water demand may actually be different than indicated due to seasonal populations and the accuracy of data submitted. Water systems that have calculated long-term per capita water demand based on a methodology that produces different results may submit their information in the notes field.

Your long-term water demand is 45 gallons per capita per day. What demand management practices do you plan to implement to reduce the per capita water demand (i.e. conduct regular water audits, implement a plumbing retrofit program, employ practices such as rainwater harvesting or reclaimed water)? If these practices are covered elsewhere in your plan, indicate where the practices are discussed here.

Are there other demand management practices you will implement to reduce your future supply needs?

What supplies other than the ones listed in future supplies are being considered to meet your future supply needs?

How does the water system intend to implement the demand management and supply planning components above?

**Additional Information**

Has this system participated in regional water supply or water use planning? **No**

What major water supply reports or studies were used for planning?

Please describe any other needs or issues regarding your water supply sources, any water system deficiencies or needed improvements (storage, treatment, etc.) or your ability to meet present and future water needs. Include both quantity and quality considerations, as well as financial, technical, managerial, permitting, and compliance issues:

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# Dunn

2019 ▾

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## 1. System Information

### Contact Information

Water System Name: **Dunn** PWSID: **03-43-010**  
 Mailing Address: **Post Office Box 1065** Ownership: **Municipality**  
**Dunn, NC 28335**  
 Contact Person: **Heather Adams** Title: **Public Utilities Director**  
 Phone: **910-892-2948** Cell/Mobile: **--**

**Complete**

### Distribution System

Line Type	Size Range (Inches)	Estimated % of lines
Asbestos Cement	6-16	38.00 %
Cast Iron	4-14	16.00 %
Ductile Iron	4-24	22.00 %
Galvanized Iron	1-2	9.00 %
Polyvinyl Chloride	2-12	15.00 %

What are the estimated total miles of distribution system lines? **87 Miles**

How many feet of distribution lines were replaced during 2019? **0 Feet**

How many feet of new water mains were added during 2019? **0 Feet**

How many meters were replaced in 2019? **4,728**

How old are the oldest meters in this system? **0 Year(s)**

How many meters for outdoor water use, such as irrigation, are not billed for sewer services? **260**

What is this system's finished water storage capacity? **6.5000 Million Gallons**

Has water pressure been inadequate in any part of the system since last update? *Line breaks that were repaired quickly should not be included.* **Yes**

### Programs

Does this system have a program to work or flush hydrants? **Yes, Monthly**

Does this system have a valve exercise program? **No, As Needed**

Does this system have a cross-connection program? **Yes**

Does this system have a program to replace meters? **Yes**

Does this system have a plumbing retrofit program? **No**

Does this system have an active water conservation public education program? **Yes**

Does this system have a leak detection program? **Yes**

**NOTE** The City of Dunn monitors distribution system pressure, elevated storage tanks, and water plant pump rates through our SCADA system and 24 hour water plant staff. If either indicator signals the possibility of a water leak in the system, immediate efforts are made to verify, locate and repair.

### Water Conservation

What type of rate structure is used? **Increasing Block**

How much reclaimed water does this system use? **0.0000 MGD** For how many connections? **0**

Does this system have an interconnection with another system capable of providing water in an emergency? **Yes**

## 2. Water Use Information

Service Area							
Sub-Basin(s)		% of Service Population		County(s)		% of Service Population	
Cape Fear River (02-3)		62 %		Harnett		48 %	
Neuse River (10-1)		19 %		Johnston		19 %	
South River (02-4)		19 %		Sampson		19 %	
				Cumberland		14 %	

What was the year-round population served in 2019? **9,541**

Has this system acquired another system since last report? **No**

Water Use by Type				
Type of Use	Metered Connections	Metered Average Use (MGD)	Non-Metered Connections	Non-Metered Estimated Use (MGD)
Residential	3,902	0.4850	0	0.0000
Commercial	795	0.3710	0	0.0000
Industrial	8	0.0250	0	0.0000
Institutional	23	0.0450	0	0.0000

How much water was used for system processes (backwash, line cleaning, flushing, etc.)? **0.1500 MGD**

Water Sales									
Purchaser	PWSID	Average Daily Sold (MGD)	Days Used	Contract			Required to comply with water use restrictions?	Pipe Size(s) (Inches)	Use Type
				MGD	Expiration	Recurring			
Eastover Sanitary District	50-26-027	0.3920	365	1.0000	2031	Yes	No	12	Regular
Harnett County	03-43-045	0.0260	365	1.0000	2050	Yes	No	16	Regular
Sampson County WD II	03-82-070	0.1620	365	0.1170	2036	Yes	No	12	Regular
Town of Benson	03-51-025	0.7560	365	1.2000	2027	Yes	No	16	Regular
Town of Falcon	03-26-035	0.0880	365	0.2000	2030	Yes	No	12	Regular

## 3. Water Supply Sources

Monthly Withdrawals & Purchases								
	Average Daily Use (MGD)	Max Day Use (MGD)		Average Daily Use (MGD)	Max Day Use (MGD)		Average Daily Use (MGD)	Max Day Use (MGD)
Jan	2.6560	3.2910	May	2.9880	3.5540	Sep	3.1570	3.7540
Feb	2.5850	3.0300	Jun	3.0440	3.5770	Oct	3.1150	3.5470
Mar	2.6430	3.2340	Jul	2.9270	3.6580	Nov	2.9440	3.3390
Apr	2.6720	3.1840	Aug	3.0430	3.3940	Dec	2.8530	3.2860



Surface Water Sources							
Stream	Reservoir	Average Daily Withdrawal		Maximum Day Withdrawal (MGD)	Available Raw Water Supply		Usable On-Stream Raw Water Supply Storage (MG)
		MGD	Days Used		MGD	* Qualifier	
Cape Fear River		2.8860	365	3.7540	12.0000	SY20	0.0000

\* Qualifier: C=Contract Amount, SY20=20-year Safe Yield, SY50=50-year Safe Yield, F=20% of 7Q10 or other instream flow requirement, CUA=Capacity Use Area Permit

Surface Water Sources (continued)							
Stream	Reservoir	Drainage Area (sq mi)	Metered?	Sub-Basin	County	Year Offline	Use Type
Cape Fear River		3,700	Yes	Cape Fear River (02-3)	Harnett		Regular

What is this system's off-stream raw water supply storage capacity? 0 Million gallons

Are surface water sources monitored? Yes, Daily

Are you required to maintain minimum flows downstream of its intake or dam? No

Does this system anticipate transferring surface water between river basins? No

Water Purchases From Other Systems									
Seller	PWSID	Average Daily Purchased (MGD)	Days Used	Contract			Required to comply with water use restrictions?	Pipe Size(s) (Inches)	Use Type
				MGD	Expiration	Recurring			
Harnett County	03-43-045	0.0000	0	2.5000		Yes	No	12	Emergency

Water Treatment Plants				
Plant Name	Permitted Capacity (MGD)	Is Raw Water Metered?	Is Finished Water Output Metered?	Source
A.B. Uzzle WTP	8.0000	Yes	Yes	Cape Fear River

Did average daily water production exceed 80% of approved plant capacity for five consecutive days during 2019? No

If yes, was any water conservation implemented?

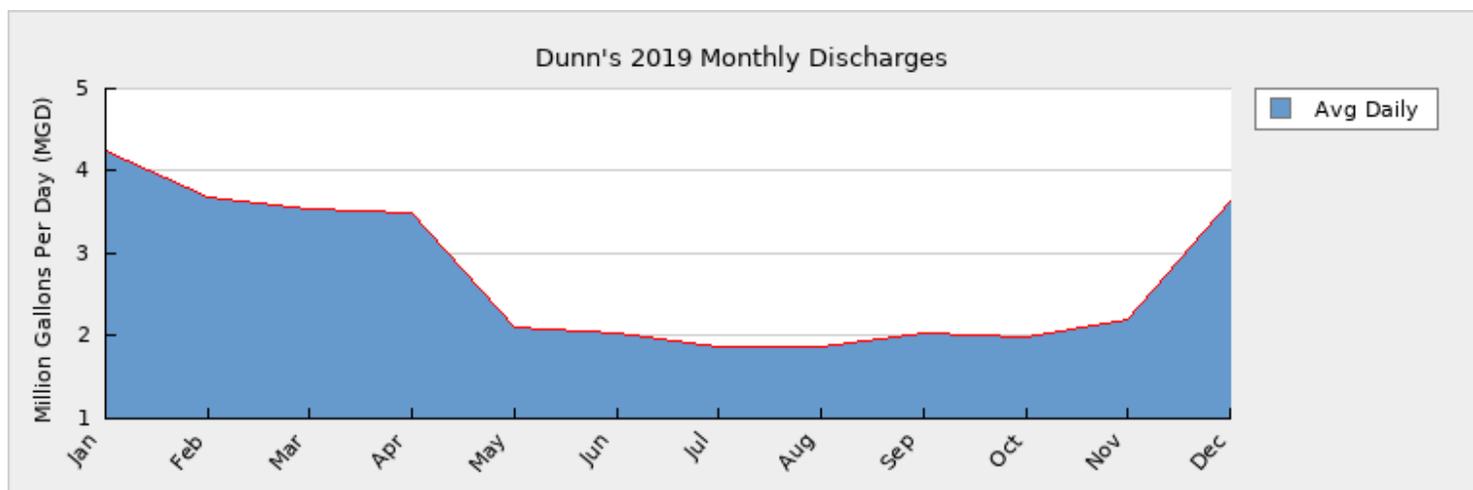
Did average daily water production exceed 90% of approved plant capacity for five consecutive days during 2019? No

If yes, was any water conservation implemented?

Are peak day demands expected to exceed the water treatment plant capacity in the next 10 years? No

#### 4. Wastewater Information

Monthly Discharges					
	Average Daily Discharge (MGD)		Average Daily Discharge (MGD)		Average Daily Discharge (MGD)
Jan	4.2390	May	2.1080	Sep	2.0410
Feb	3.6780	Jun	2.0260	Oct	1.9790
Mar	3.5490	Jul	1.8730	Nov	2.2030
Apr	3.4960	Aug	1.8690	Dec	3.6250



How many sewer connections does this system have? 4,399

How many water service connections with septic systems does this system have? 180

Are there plans to build or expand wastewater treatment facilities in the next 10 years? No

Wastewater Permits						
Permit Number	Permitted Capacity (MGD)	Design Capacity (MGD)	Average Annual Daily Discharge (MGD)	Maximum Day Discharge (MGD)	Receiving Stream	Receiving Basin
NC0043176	3.7500	3.7500	2.6240	6.9420	Cape Fear River	Cape Fear River (02-3)
NC0078955	8.0000	0.6900	0.1000		Juniper Creek	Cape Fear River (02-3)

## 5. Planning

Projections						
	2019	2020	2030	2040	2050	2060
Year-Round Population	9,541	9,900	10,000	10,100	10,200	10,300
Seasonal Population	0	0	0	0	0	0
Residential	0.4850	0.5000	0.5150	0.5250	0.5350	0.5450
Commercial	0.3710	0.3800	0.4000	0.4200	0.4400	0.4600
Industrial	0.0250	0.0300	0.0350	0.0400	0.0450	0.0500
Institutional	0.0450	0.0500	0.0550	0.0600	0.0650	0.0700
System Process	0.1500	0.1550	0.1600	0.1650	0.1700	0.1750
Unaccounted-for	0.3860	0.4000	0.4179	0.4341	0.4502	0.4664

Demand v/s Percent of Supply						
	2019	2020	2030	2040	2050	2060
Surface Water Supply	12.0000	12.0000	12.0000	12.0000	12.0000	12.0000
Ground Water Supply	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Purchases	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Future Supplies		0.0000	0.0000	0.0000	0.0000	0.0000
Total Available Supply (MGD)	12.0000	12.0000	12.0000	12.0000	12.0000	12.0000
Service Area Demand	1.4620	1.5150	1.5829	1.6441	1.7052	1.7664
Sales	1.4240	3.5620	3.5620	3.5620	3.5620	3.5620
Future Sales		0.0000	0.0000	0.0000	0.0000	0.0000
Total Demand (MGD)	2.8860	5.0770	5.1449	5.2061	5.2672	5.3284
Demand as Percent of Supply	24%	42%	43%	43%	44%	44%



The purpose of the above chart is to show a general indication of how the long-term per capita water demand changes over time. The per capita water demand may actually be different than indicated due to seasonal populations and the accuracy of data submitted. Water systems that have calculated long-term per capita water demand based on a methodology that produces different results may submit their information in the notes field.

Your long-term water demand is 51 gallons per capita per day. What demand management practices do you plan to implement to reduce the per capita water demand (i.e. conduct regular water audits, implement a plumbing retrofit program, employ practices such as rainwater harvesting or reclaimed water)? If these practices are covered elsewhere in your plan, indicate where the practices are discussed here.

Are there other demand management practices you will implement to reduce your future supply needs?

What supplies other than the ones listed in future supplies are being considered to meet your future supply needs?

How does the water system intend to implement the demand management and supply planning components above?

### Additional Information

Has this system participated in regional water supply or water use planning? No

What major water supply reports or studies were used for planning?

Please describe any other needs or issues regarding your water supply sources, any water system deficiencies or needed improvements (storage, treatment, etc.) or your ability to meet present and future water needs. Include both quantity and quality considerations, as well as financial, technical, managerial,

permitting, and compliance issues:

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# Dunn

2020 ▾

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## 1. System Information

### Contact Information

Water System Name: **Dunn** PWSID: **03-43-010**  
 Mailing Address: **Post Office Box 1065** Ownership: **Municipality**  
**Dunn, NC 28335**  
 Contact Person: **Heather Adams** Title: **Public Utilities Director**  
 Phone: **910-892-2948** Cell/Mobile: **--**

**Complete**

### Distribution System

Line Type	Size Range (Inches)	Estimated % of lines
Asbestos Cement	6-16	42.00 %
Cast Iron	4-14	15.00 %
Ductile Iron	4-24	22.00 %
Galvanized Iron	1-2	5.00 %
Other	12	2.00 %
Polyvinyl Chloride	2-12	14.00 %

What are the estimated total miles of distribution system lines? **115 Miles**

How many feet of distribution lines were replaced during 2020? **3,220 Feet**

How many feet of new water mains were added during 2020? **0 Feet**

How many meters were replaced in 2020? **90**

How old are the oldest meters in this system? **1 Year(s)**

How many meters for outdoor water use, such as irrigation, are not billed for sewer services? **209**

What is this system's finished water storage capacity? **6.0000 Million Gallons**

Has water pressure been inadequate in any part of the system since last update? *Line breaks that were repaired quickly should not be included.* **No**

**NOTE** Replaced 2420 LF of 6" Asbestos with DIP on Lakeshore Drive and replaced 800 LF of asbestos 6" on N. Orange Ave with PVC in 2020.

\*Total footage was changed due to completion of GIS data.

### Programs

Does this system have a program to work or flush hydrants? **Yes, Monthly**

Does this system have a valve exercise program? **No, As Needed**

Does this system have a cross-connection program? **Yes**

Does this system have a program to replace meters? **Yes**

Does this system have a plumbing retrofit program? **No**

Does this system have an active water conservation public education program? **Yes**

Does this system have a leak detection program? **Yes**

## Water Conservation

What type of rate structure is used? **Increasing Block**

How much reclaimed water does this system use? **0.0000 MGD** For how many connections? **0**

Does this system have an interconnection with another system capable of providing water in an emergency? **No**

## 2. Water Use Information

### Service Area

Sub-Basin(s)	% of Service Population	County(s)	% of Service Population
Cape Fear River (02-3)	62 %	Harnett	48 %
Neuse River (10-1)	19 %	Johnston	19 %
South River (02-4)	19 %	Sampson	19 %
		Cumberland	14 %

What was the year-round population served in 2020? **12,334**

Has this system acquired another system since last report? **No**

### Water Use by Type

Type of Use	Metered Connections	Metered Average Use (MGD)	Non-Metered Connections	Non-Metered Estimated Use (MGD)
Residential	3,920	0.3950	0	0.0000
Commercial	791	0.3110	0	0.0000
Industrial	9	0.0160	0	0.0000
Institutional	7	0.0170	22	0.3470

How much water was used for system processes (backwash, line cleaning, flushing, etc.)? **0.2000 MGD**

### Water Sales

Purchaser	PWSID	Average Daily Sold (MGD)	Days Used	Contract			Required to comply with water use restrictions?	Pipe Size(s) (Inches)	Use Type
				MGD	Expiration	Recurring			
Eastover Sanitary District	50-26-027	0.4290	366	1.0000	2031	Yes	Yes	12	Regular
Harnett County	03-43-045	0.0260	366	1.0000	2050	Yes	Yes	16	Regular
Sampson County WD II	03-82-070	0.2010	366	0.6000	2036	Yes	Yes	12	Regular
Town of Benson	03-51-025	0.8200	366	1.2000	2027	Yes	Yes	16	Regular
Town of Falcon	03-26-035	0.0880	366	0.2000	2030	Yes	Yes	12	Regular

## 3. Water Supply Sources

### Monthly Withdrawals & Purchases

	Average Daily Use (MGD)	Max Day Use (MGD)		Average Daily Use (MGD)	Max Day Use (MGD)		Average Daily Use (MGD)	Max Day Use (MGD)
Jan	3.1200	3.8900	May	3.1800	3.9500	Sep	3.4900	3.9200
Feb	3.0200	3.4100	Jun	3.2200	4.0800	Oct	3.5500	3.9900
Mar	3.0200	3.8400	Jul	3.4500	3.9200	Nov	3.4300	4.3800
Apr	3.1200	3.7200	Aug	3.5000	3.9700	Dec	3.2100	4.0600



### Surface Water Sources

Stream	Reservoir	Average Daily Withdrawal	Maximum Day Withdrawal (MGD)	Available Raw Water Supply	Usable On-Stream Raw Water Supply

	MGD	Days Used	MGD	* Qualifier	Storage (MG)	
Cape Fear River	3.2800	366	4.0800	12.0000	SY20	0.0000

\* Qualifier: C=Contract Amount, SY20=20-year Safe Yield, SY50=50-year Safe Yield, F=20% of 7Q10 or other instream flow requirement, CUA=Capacity Use Area Permit

**Surface Water Sources (continued)**

Stream	Reservoir	Drainage Area (sq mi)	Metered?	Sub-Basin	County	Year Offline	Use Type
Cape Fear River		3,700	Yes	Cape Fear River (02-3)	Harnett		Regular

What is this system's off-stream raw water supply storage capacity? 0 Million gallons

Are surface water sources monitored? Yes, Daily

Are you required to maintain minimum flows downstream of its intake or dam? No

Does this system anticipate transferring surface water between river basins? No

**Water Purchases From Other Systems**

Seller	PWSID	Average Daily Purchased (MGD)	Days Used	Contract			Required to comply with water use restrictions?	Pipe Size(s) (Inches)	Use Type
				MGD	Expiration	Recurring			
Harnett County	03-43-045	0.0000	0	0.0000		Yes	No	12	Emergency

**Water Treatment Plants**

Plant Name	Permitted Capacity (MGD)	Is Raw Water Metered?	Is Finished Water Output Metered?	Source
A.B. Uzzle WTP	8.0000	Yes	Yes	Cape Fear River

Did average daily water production exceed 80% of approved plant capacity for five consecutive days during 2020? No

If yes, was any water conservation implemented?

Did average daily water production exceed 90% of approved plant capacity for five consecutive days during 2020? No

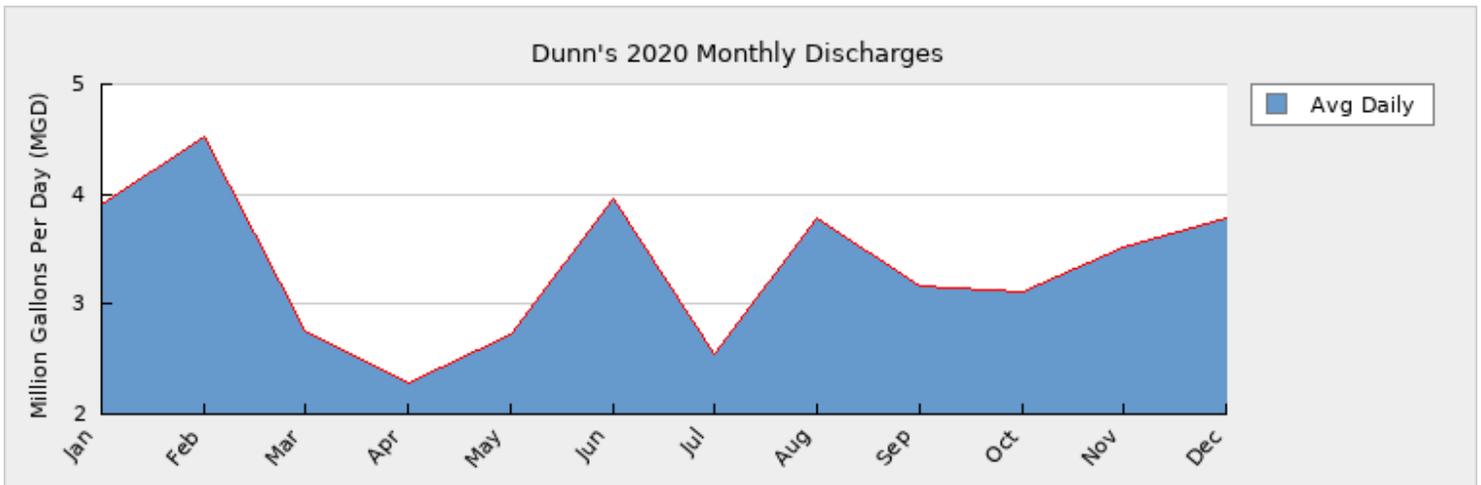
If yes, was any water conservation implemented?

Are peak day demands expected to exceed the water treatment plant capacity in the next 10 years? No

**4. Wastewater Information**

**Monthly Discharges**

	Average Daily Discharge (MGD)		Average Daily Discharge (MGD)		Average Daily Discharge (MGD)
Jan	3.9100	May	2.7300	Sep	3.1700
Feb	4.5300	Jun	3.9500	Oct	3.1200
Mar	2.7500	Jul	2.5400	Nov	3.5100
Apr	2.2800	Aug	3.7900	Dec	3.7900



How many sewer connections does this system have? 4,399

How many water service connections with septic systems does this system have? 180

Are there plans to build or expand wastewater treatment facilities in the next 10 years? Yes

**NOTE** The City has been rehabbing the collection system to reduce the wastewater flows. With flows nearing 80/90 rule, the City is continuing to plan for wet weather capital improvements or expanding the wastewater plant if needed.

Wastewater Permits						
Permit Number	Permitted Capacity (MGD)	Design Capacity (MGD)	Average Annual Daily Discharge (MGD)	Maximum Day Discharge (MGD)	Receiving Stream	Receiving Basin
NC0043176	3.7500	3.7500	3.3400	7.8500	Cape Fear River	Cape Fear River (02-3)
NC0078955	8.0000	0.6900	0.0430		Juniper Creek	Cape Fear River (02-3)

## 5. Planning

Projections						
	2020	2030	2040	2050	2060	2070
Year-Round Population	12,334	12,580	12,830	13,086	13,350	13,617
Seasonal Population	0	0	0	0	0	0
Residential	0.3950	0.4030	0.4110	0.4190	0.4280	0.4360
Commercial	0.3110	0.3130	0.3150	0.3170	0.3190	0.3210
Industrial	0.0160	0.0180	0.0200	0.0220	0.0240	0.0260
Institutional	0.3640	0.3650	0.3680	0.3700	0.3720	0.3740
System Process	0.2000	0.2500	0.3000	0.3500	0.4000	0.4500
Unaccounted-for	0.4300	0.4511	0.4728	0.4942	0.5159	0.5373

Demand v/s Percent of Supply						
	2020	2030	2040	2050	2060	2070
Surface Water Supply	12.0000	12.0000	12.0000	12.0000	12.0000	12.0000
Ground Water Supply	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Purchases	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Future Supplies		0.0000	0.0000	0.0000	0.0000	0.0000
Total Available Supply (MGD)	12.0000	12.0000	12.0000	12.0000	12.0000	12.0000
Service Area Demand	1.7160	1.8001	1.8868	1.9722	2.0589	2.1443
Sales	1.5640	4.0000	4.0000	4.0000	4.0000	4.0000
Future Sales		0.0000	0.0000	0.0000	0.0000	0.0000
Total Demand (MGD)	3.2800	5.8001	5.8868	5.9722	6.0589	6.1443
Demand as Percent of Supply	27%	48%	49%	50%	50%	51%



The purpose of the above chart is to show a general indication of how the long-term per capita water demand changes over time. The per capita water demand may actually be different than indicated due to seasonal populations and the accuracy of data submitted. Water systems that have calculated long-term per capita water demand based on a methodology that produces different results may submit their information in the notes field.

Your long-term water demand is 32 gallons per capita per day. What demand management practices do you plan to implement to reduce the per capita water demand (i.e. conduct regular water audits, implement a plumbing retrofit program, employ practices such as rainwater harvesting or reclaimed water)? If these practices are covered elsewhere in your plan, indicate where the practices are discussed here.

Are there other demand management practices you will implement to reduce your future supply needs?

What supplies other than the ones listed in future supplies are being considered to meet your future supply needs?

How does the water system intend to implement the demand management and supply planning components above?

### Additional Information

Has this system participated in regional water supply or water use planning? Yes, The City was awarded in February 2021 a \$50,000 grant to conduct a Merger, Regionalization Feasibility Study. Study will begin in the Spring of 2021.

What major water supply reports or studies were used for planning?

Please describe any other needs or issues regarding your water supply sources, any water system deficiencies or needed improvements (storage, treatment, etc.) or your ability to meet present and future water needs. Include both quantity and quality considerations, as well as financial, technical, managerial, permitting, and compliance issues:

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**APPENDIX 3**  
**City of Dunn**  
**2020 Depreciation Schedule**  
**2022 Water and Sewer Capital Improvements Plan**

**Book Asset Detail 7/01/21 - 6/30/22**

FYE: 6/30/2022

Asset	Property Description	Date In Service	Book Cost	Book Sec 179 Exp	Book Sal Value	Book Prior Depreciation	Book Current Depreciation	Book End Depr	Book Net Book Value	Book Method	Book Period
1	East-side pumping station	7/01/68	35,150.00	0.00	0.00	35,150.00	0.00	35,150.00	0.00	S/L	50.00
2	Water filtering plant	7/01/70	653,875.00	0.00	0.00	653,875.00	0.00	653,875.00	0.00	S/L	50.00
5	Conference Room	5/15/95	8,398.61	0.00	0.00	4,395.22	167.97	4,563.19	3,835.42	S/L	50.00
11	City Garage	10/21/98	11,351.27	0.00	0.00	6,432.35	283.78	6,716.13	4,635.14	S/L	40.00
522	Major Repairs to WWTP Bridge	10/04/10	65,133.88	0.00	0.00	23,339.65	2,171.13	25,510.78	39,623.10	S/L	30.00
527	New Roof at Recirculation and Chlorine Bldg	3/28/11	48,976.50	0.00	0.00	16,733.64	1,632.55	18,366.19	30,610.31	S/L	30.00
576	Automatic Transfer Switch Gen. (WTTP)	5/15/17	29,503.17	0.00	0.00	8,195.33	1,966.88	10,162.21	19,340.96	S/L	15.00
577	New Roof Water Plant	9/29/17	24,100.00	0.00	0.00	3,012.49	803.33	3,815.82	20,284.18	S/L	30.00
590	Fund 63 WWTP Aeration Replacement	6/30/19	152,200.00	0.00	0.00	0.00	0.00	0.00	152,200.00	Land	0.00
591	Fund 64 Automated Meter Reading System	6/30/19	1,761,239.81	0.00	0.00	0.00	0.00	0.00	1,761,239.81	Land	0.00
3	Land-various	6/01/81	117,373.50	0.00	0.00	0.00	0.00	0.00	117,373.50	Land	0.00
4	1.06 Acres of land ABJO	6/01/90	7,943.02	0.00	0.00	0.00	0.00	0.00	7,943.02	Land	0.00
6	Land 301 N Water Tank	11/04/93	25,648.75	0.00	0.00	0.00	0.00	0.00	25,648.75	Land	0.00
537	Land-WWTP	3/31/12	12,100.00	0.00	0.00	0.00	0.00	0.00	12,100.00	Land	0.00
553	10.69 Acres WWTP-Donated Charles Carpenter	12/28/12	7,140.00	0.00	0.00	0.00	0.00	0.00	7,140.00	Land	0.00
554	Land-(Arrowhead Rd) Future Water Tank Site	1/01/13	11,541.00	0.00	0.00	0.00	0.00	0.00	11,541.00	Land	0.00
598	.49 Acres Lot E. Cleveland Street	6/14/19	13,804.92	0.00	0.00	0.00	0.00	0.00	13,804.92	Land	0.00
612	104 S Elm Ave 32 A.	12/17/19	13,712.25	0.00	0.00	0.00	0.00	0.00	13,712.25	Land	0.00
613	108 S Elm Ave .32 A.	12/17/19	27,757.84	0.00	0.00	0.00	0.00	0.00	27,757.84	Land	0.00
614	4060E Broad St .33 A.	12/17/19	15,462.82	0.00	0.00	0.00	0.00	0.00	15,462.82	Land	0.00
626	501,501 Lot Broad street	9/17/20	34,022.84	0.00	0.00	0.00	0.00	0.00	34,022.84	Land	0.00
223	Portable Doppler Flowmeter	6/30/95	5,884.00	0.00	0.00	5,884.00	0.00	5,884.00	0.00	S/L	10.00
235	Case Trencher Auger Chain Attachment	11/13/95	7,529.55	0.00	0.00	7,529.55	0.00	7,529.55	0.00	S/L	10.00
249	Particle Counting System	3/17/97	21,318.00	0.00	0.00	21,318.00	0.00	21,318.00	0.00	S/L	10.00
255	GIS/GPS Project-Programming	6/15/98	16,334.00	0.00	0.00	16,334.00	0.00	16,334.00	0.00	S/L	10.00
267	Dialgrade Cordless Pipe Lazer	6/30/98	6,130.00	0.00	0.00	6,130.00	0.00	6,130.00	0.00	S/L	10.00
268	Amida Arrow Board (DLB25FACH	3/13/98	5,142.49	0.00	0.00	5,142.49	0.00	5,142.49	0.00	S/L	10.00
273	Spectrophotometer Model DR/4000	2/27/98	5,365.00	0.00	0.00	5,365.00	0.00	5,365.00	0.00	S/L	10.00
343	Zeta-meter sys 3.0 w	7/01/87	7,483.02	0.00	0.00	7,483.02	0.00	7,483.02	0.00	S/L	15.00
362	Inverter panel	9/01/89	5,025.64	0.00	0.00	5,025.64	0.00	5,025.64	0.00	S/L	5.00
369	TV Inspection sewer	2/01/90	44,787.21	0.00	0.00	44,787.21	0.00	44,787.21	0.00	S/L	5.00
393	model 360d trencher	5/01/91	20,855.00	0.00	0.00	20,855.00	0.00	20,855.00	0.00	S/L	15.00
403	graphiet furnace & auto sampler	3/27/92	25,115.50	0.00	0.00	25,115.50	0.00	25,115.50	0.00	S/L	10.00
424	Telespector Mini Camera	2/15/94	10,150.00	0.00	0.00	10,150.00	0.00	10,150.00	0.00	S/L	10.00
427	Ingersoll Rand Compressor #24197	4/15/94	11,770.00	0.00	0.00	11,770.00	0.00	11,770.00	0.00	S/L	10.00
467	VIT Pipeline Trailer w/ camera	5/15/01	59,056.00	0.00	0.00	59,056.00	0.00	59,056.00	0.00	S/L	10.00
482	Sterilizer w/ Tray	6/30/04	7,552.59	0.00	0.00	7,552.59	0.00	7,552.59	0.00	S/L	10.00
511	Trane Heat Pump City Hall	3/24/09	5,609.00	0.00	0.00	5,609.00	0.00	5,609.00	0.00	S/L	7.00
512	8x10 Alum. Trench Box	11/14/08	7,411.00	0.00	0.00	7,411.00	0.00	7,411.00	0.00	S/L	7.00
513	Covers for Basins	8/28/08	10,697.00	0.00	0.00	10,697.00	0.00	10,697.00	0.00	S/L	7.00
514	Upgrade water plant generator	5/22/09	19,450.59	0.00	0.00	11,751.40	972.53	12,723.93	6,726.66	S/L	20.00
515	Rebuilding 6MGD Raw Pump	10/31/08	26,729.76	0.00	0.00	16,928.87	1,336.49	18,265.36	8,464.40	S/L	20.00
516	Scada System for Lift Station	1/01/09	45,538.00	0.00	0.00	45,538.00	0.00	45,538.00	0.00	S/L	7.00

Buildings, land, equipment, vehicles, machinery, stormwater related, etc.

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	518	Scada System for Lift Stations	3/15/10	31,000.00	0.00	0.00	31,000.00	0.00	31,000.00	0.00 S/L	7.00
	523	Nexus Software for Gov. Channel	3/18/11	10,939.00	0.00	0.00	10,939.00	0.00	10,939.00	0.00 S/L	3.00
	524	Rebuild 8MGD Raw Pumb	5/13/11	31,508.00	0.00	0.00	31,508.00	0.00	31,508.00	0.00 S/L	10.00
	525	Booster Pump for Carr St. Water Tower	1/01/11	65,499.45	0.00	0.00	65,499.45	0.00	65,499.45	0.00 S/L	10.00
	546	B95C New Holland Backhoe (3940)	11/26/12	82,789.20	0.00	0.00	82,789.20	0.00	82,789.20	0.00 S/L	7.00
	547	GIS Software	2/12/13	12,420.00	0.00	0.00	12,420.00	0.00	12,420.00	0.00 S/L	5.00
	548	225 KVA Pad Mount Transformer	5/31/13	7,881.00	0.00	0.00	4,246.98	525.40	4,772.38	3,108.62 S/L	15.00
	549	4RB-F16 Booster Pump	12/07/12	6,944.16	0.00	0.00	3,973.57	462.94	4,436.51	2,507.65 S/L	15.00
	551	T-10 Pump	11/21/12	6,896.56	0.00	0.00	3,946.36	459.77	4,406.13	2,490.43 S/L	15.00
	552	T-10 Self Cleaning Wear Plate and Impeller	9/26/12	6,896.56	0.00	0.00	4,022.99	459.77	4,482.76	2,413.80 S/L	15.00
	557	TURBO CHAIN CUTTER KIT	3/05/14	7,070.00	0.00	0.00	7,070.00	0.00	7,070.00	0.00 S/L	5.00
	560	LMX 100 GPR LOCATOR SYSTEM	9/24/14	12,950.00	0.00	0.00	12,950.00	0.00	12,950.00	0.00 S/L	5.00
	561	REBUILD CLARIFIER #2	12/03/14	118,500.00	0.00	0.00	78,012.50	11,850.00	89,862.50	28,637.50 S/L	10.00
	562	#2 EFF VFD DRIVE	4/01/15	12,322.94	0.00	0.00	7,701.81	1,232.29	8,934.10	3,388.84 S/L	10.00
	563	738 Hydro-Jet	8/17/15	11,869.25	0.00	0.00	9,891.06	1,695.61	11,586.67	282.58 S/L	7.00
	564	1/2 Cost of Cannon Plotter	9/09/15	5,055.17	0.00	0.00	4,212.66	722.17	4,934.83	120.34 S/L	7.00
	566	T8A71S-B 8 inch Pump	1/09/16	10,300.00	0.00	0.00	2,832.50	515.00	3,347.50	6,952.50 S/L	20.00
	568	T-4 Grit Pump	8/18/15	5,692.00	0.00	0.00	1,660.17	284.60	1,944.77	3,747.23 S/L	20.00
	571	Hydro Jet	5/10/17	10,345.50	0.00	0.00	4,310.63	1,034.55	5,345.18	5,000.32 S/L	10.00
	578	Mono Pump	6/12/18	10,971.00	0.00	0.00	1,691.36	548.55	2,239.91	8,731.09 S/L	20.00
	579	AS950 All Weather Sampler	5/22/18	6,598.90	0.00	0.00	2,034.66	659.89	2,694.55	3,904.35 S/L	10.00
	580	TA71S-B/ Pump 8inch	3/16/18	10,824.00	0.00	0.00	1,758.90	541.20	2,300.10	8,523.90 S/L	20.00
	581	T6 Holding Tank Pump	10/05/17	9,635.00	0.00	0.00	1,806.56	481.75	2,288.31	7,346.69 S/L	20.00
	582	JD 5055E Utility Tractor	3/15/18	34,558.06	0.00	0.00	16,456.23	4,936.87	21,393.10	13,164.96 S/L	7.00
	583	JCB Backhoe/Loader (4274)	1/31/18	83,253.00	0.00	0.00	40,635.41	11,893.29	52,528.70	30,724.30 S/L	7.00
	587	"TRACER" Ground Penetrating Radar LMX 100	1/24/19	12,975.00	0.00	0.00	6,271.25	2,595.00	8,866.25	4,108.75 S/L	5.00
	588	Mower EXM Radius X Series 60"	11/19/18	7,224.00	0.00	0.00	2,666.00	1,032.00	3,698.00	3,526.00 S/L	7.00
	589	Mower EXM Radius X Series 60"	11/19/18	7,224.00	0.00	0.00	3,732.40	1,444.80	5,177.20	2,046.80 S/L	5.00
	592	Traveling Water Screen	6/11/19	181,863.00	0.00	0.00	18,944.06	9,093.15	28,037.21	153,825.79 S/L	20.00
	593	Turbidity Meter	4/25/19	5,601.70	0.00	0.00	606.84	280.08	886.92	4,714.78 S/L	20.00
	594	Digester Sludge Pump	12/27/18	10,667.00	0.00	0.00	3,809.65	1,523.86	5,333.51	5,333.49 S/L	7.00
	595	T-6 Holding Tank Pump	12/20/18	9,697.00	0.00	0.00	3,463.22	1,385.29	4,848.51	4,848.49 S/L	7.00
	600	2019 Trailer for Kubota	11/21/19	6,064.00	0.00	0.00	960.13	606.40	1,566.53	4,497.47 S/L	10.00
	601	Kubota Mini Excavator	12/10/19	53,552.00	0.00	0.00	8,479.07	5,355.20	13,834.27	39,717.73 S/L	10.00
	604	KNAPHEIDE TRK BED	10/03/19	12,283.00	0.00	0.00	2,149.52	1,228.30	3,377.82	8,905.18 S/L	10.00
	607	TRANSFER SWITCH AUTO	1/21/20	40,064.89	0.00	0.00	5,675.86	4,006.49	9,682.35	30,382.54 S/L	10.00
	609	KUBOTA UTILITY TRACTOR	12/10/19	27,859.00	0.00	0.00	4,411.01	2,785.90	7,196.91	20,662.09 S/L	10.00
	610	JD80-02 80 KW GENERATOR AT FL LIFT STATION	5/06/20	43,387.00	0.00	0.00	5,061.82	4,338.70	9,400.52	33,986.48 S/L	10.00
615	Hatch-DR-900	8/22/19	1,464.00	0.00	0.00	536.80	292.80	829.60	634.40 S/L	5.00	
616	Motor EFL#1 PLC Drive	3/10/20	2,500.00	0.00	0.00	666.67	500.00	1,166.67	1,333.33 S/L	5.00	
618	SC200 digital Dual controllers (2)	10/17/19	3,984.30	0.00	0.00	1,328.10	796.86	2,124.96	1,859.34 S/L	5.00	
619	Hach TU5200 Turbidimeter	10/17/19	3,725.90	0.00	0.00	1,241.97	745.18	1,987.15	1,738.75 S/L	5.00	
620	Hach TU5300SC Online Turbidimeter (3)	10/17/19	5,637.30	0.00	0.00	1,879.10	1,127.46	3,006.56	2,630.74 S/L	5.00	
621	Pumps A2V24-SNGG 19.3 GPH (3)	1/21/20	6,030.07	0.00	0.00	854.26	603.01	1,457.27	4,572.80 S/L	10.00	
622	Pumps A4V24-MNJ 44.4 GPH (3)	1/21/20	14,569.72	0.00	0.00	2,064.04	1,456.97	3,521.01	11,048.71 S/L	10.00	
623	Motor TECO 200 HP EFF Drive	10/03/19	7,705.00	0.00	0.00	1,348.38	770.50	2,118.88	5,586.12 S/L	10.00	
627	Solar Powered LED directional sign	10/16/20	4,173.56	0.00	0.00	556.47	834.71	1,391.18	2,782.38 S/L	5.00	
630	Elgin Sweeper Repair	5/21/21	10,872.65	0.00	0.00	181.21	2,174.53	2,355.74	8,516.91 S/L	5.00	
639	2022 Bobcat T770 Skid Steer (3086)	2/01/22	52,427.00	0.00 c	0.00	0.00	2,184.46	2,184.46	50,242.54 S/L	10.00	

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	605	WATER PLANT FENCE	11/07/19	11,521.00	0.00	0.00	1,920.17	1,152.10	3,072.27	8,448.73 S/L	10.00
	606	WATER PLANT BRIDGE	1/15/20	38,973.00	0.00	0.00	11,691.90	7,794.60	19,486.50	19,486.50 S/L	5.00
	608	WASTEWATER PLANT FENCE	9/12/19	16,514.56	0.00	0.00	3,027.67	1,651.46	4,679.13	11,835.43 S/L	10.00
	629	Drainage System Improvements	6/24/21	265,009.94	0.00	0.00	0.00	26,500.99	26,500.99	238,508.95 S/L	10.00
	526	2010 Ford F-150 4WD (3920)	9/24/10	18,541.88	0.00	0.00	18,541.88	0.00	18,541.88	0.00 S/L	5.00
	545	2013 Ford F-150 (9593)	10/27/12	15,942.16	0.00	0.00	15,942.16	0.00	15,942.16	0.00 S/L	5.00
	559	2013 FORD F-150 (9210)	10/16/13	19,497.72	0.00	0.00	19,497.72	0.00	19,497.72	0.00 S/L	5.00
	565	2016 Ford F150(2333)	5/19/16	20,673.00	0.00	0.00	20,673.00	0.00	20,673.00	0.00 S/L	5.00
	584	2019 Ford F350 (7445)	3/26/19	29,262.00	0.00	0.00	13,167.90	5,852.40	19,020.30	10,241.70 S/L	5.00
	585	2019 Ford F650 (7620)	4/01/19	70,897.00	0.00	0.00	31,903.65	14,179.40	46,083.05	24,813.95 S/L	5.00
	586	2019 Chev Equinox (8837)	3/28/19	20,223.00	0.00	0.00	9,100.35	4,044.60	13,144.95	7,078.05 S/L	5.00
	602	2020 CHEVROLET SILVERADO 1500	2/13/20	25,600.00	0.00	0.00	3,626.67	2,560.00	6,186.67	19,413.33 S/L	10.00
	603	2020 FORD F350 CHAS CAB DUAL REAR	4/29/20	40,481.00	0.00	0.00	4,722.78	4,048.10	8,770.88	31,710.12 S/L	10.00
	611	2007 Ford Ranger (6111)	1/12/07	10,835.42	0.00	0.00	8,635.42	0.00	8,635.42	2,200.00 S/L	5.00
	631	2001 Chevorlet Silverado 4X2	2/01/02	24,500.00	0.00	0.00	3,500.00	3,500.00	7,000.00	17,500.00 S/L	7.00
	632	2021 Freightliner Vac Truck (4639)	1/01/22	416,960.00	0.00 c	0.00	0.00	20,848.00	20,848.00	396,112.00 S/L	10.00
	633	1995 International Dump Truck (6592)	1/01/96	35,095.00	0.00	0.00	0.00	3,509.50	3,509.50	31,585.50 S/L	10.00
	634	2007 Chevrolet Silverado (3538)	6/01/08	22,500.00	0.00	0.00	0.00	2,250.00	2,250.00	20,250.00 S/L	10.00
	635	2021 Mercedes Sprinter Camera Truck (9262)	2/01/22	178,500.00	0.00 c	0.00	0.00	7,437.50	7,437.50	171,062.50 S/L	10.00
	636	2003 Catpiliar Sterling Truck (4021)	4/01/04	25,500.00	0.00	0.00	0.00	2,550.00	2,550.00	22,950.00 S/L	10.00
	637	2005 Ford F150 (9314)	1/01/06	22,500.00	0.00	0.00	0.00	2,250.00	2,250.00	20,250.00 S/L	10.00
	638	2011 Ford F350 Utility (2224)	1/01/12	42,500.00	0.00	0.00	0.00	4,250.00	4,250.00	38,250.00 S/L	10.00
	640	2019 Dodge Ram 1500 (4082)	9/01/19	23,500.00	0.00	0.00	0.00	3,357.14	3,357.14	20,142.86 S/L	7.00
	641	1996 Ford E350 Van (7679)	8/01/96	35,250.00	0.00	0.00	0.00	5,035.71	5,035.71	30,214.29 S/L	7.00
	20	Alum sludge-concrete	7/01/79	536,401.00	0.00	0.00	450,576.80	10,728.02	461,304.82	75,096.18 S/L	50.00
	25	Various equipment	7/01/80	730,250.00	0.00	0.00	730,250.00	0.00	730,250.00	0.00 S/L	25.00
	46	Storm drains	7/01/82	7,783.52	0.00	0.00	4,670.27	119.75	4,790.02	2,993.50 S/L	65.00
	50	Meters	7/01/83	10,754.82	0.00	0.00	10,754.82	0.00	10,754.82	0.00 S/L	30.00
	51	Handrails-alum sludge	7/01/83	24,349.70	0.00	0.00	18,505.60	486.99	18,992.59	5,357.11 S/L	50.00
	52	Clean out pond	7/01/84	5,800.00	0.00	0.00	5,800.00	0.00	5,800.00	0.00 S/L	30.00
	617	Outdoor Cameras (3)	9/17/19	1,865.71	0.00	0.00	1,088.33	621.90	1,710.23	155.48 S/L	3.00
	72	Engineering services	1/01/86	14,434.41	0.00	0.00	7,883.56	222.07	8,105.63	6,328.78 S/L	65.00
	79	Portable air compressor	9/01/86	9,542.58	0.00	0.00	9,542.58	0.00	9,542.58	0.00 S/L	15.00
	95	Engineering design	9/01/87	19,660.00	0.00	0.00	10,233.23	302.46	10,535.69	9,124.31 S/L	65.00
	98	Engineering design	2/01/88	19,660.00	0.00	0.00	10,082.00	302.46	10,384.46	9,275.54 S/L	65.00
	108	Inverter panel-control	4/01/89	14,474.36	0.00	0.00	14,474.36	0.00	14,474.36	0.00 S/L	15.00
109	City of Dunn contributed capital	4/01/89	71,056.00	0.00	0.00	35,163.64	1,093.17	36,256.81	34,799.19 S/L	65.00	
125	Automatic absorption	6/01/91	13,978.00	0.00	0.00	13,978.00	0.00	13,978.00	0.00 S/L	15.00	
137	Sludge tank holding facility	5/31/92	403,726.58	0.00	0.00	180,641.82	6,211.18	186,853.00	216,873.58 S/L	65.00	

Buildings, land, equipment, vehicles, machinery, stormwater related, etc.	140	Engineering/sludge tank	5/31/92	22,049.29	0.00	0.00	9,865.65	339.22	10,204.87	11,844.42 S/L	65.00
	141	Bids for sludge tank	5/31/92	195.00	0.00	0.00	87.25	3.00	90.25	104.75 S/L	65.00
	143	Sludge holding facility	6/30/92	14,458.44	0.00	0.00	6,450.76	222.44	6,673.20	7,785.24 S/L	65.00
	149	250 ft 36" storm drain Bay St	2/09/94	5,535.00	0.00	0.00	2,334.53	85.15	2,419.68	3,115.32 S/L	65.00
	155	Ammonia Feed System	6/30/95	20,640.90	0.00	0.00	20,640.90	0.00	20,640.90	0.00 S/L	20.00
	163	Ammonia Feed System (Chloramine)	9/12/95	79,063.00	0.00	0.00	31,781.94	1,216.35	32,998.29	46,064.71 S/L	65.00
	175	Water Meters-143-3/4"	4/06/47	4,647.50	0.00	0.00	3,588.98	154.92	3,743.90	903.60 S/L	30.00
	176	Water Meters-5.1"	5/01/98	465.00	0.00	0.00	359.08	15.50	374.58	90.42 S/L	30.00
	318	306 Fire hydrants	7/01/55	61,200.00	0.00	0.00	61,200.00	0.00	61,200.00	0.00 S/L	50.00
	479	12" Parshall Flume (Sewer Plant)	12/31/02	24,663.75	0.00	0.00	7,019.64	379.44	7,399.08	17,264.67 S/L	65.00
	494	Engineering Filter Rehab	6/30/06	22,267.65	0.00	0.00	11,133.90	742.26	11,876.16	10,391.49 S/L	30.00
	497	3-16" GA 250-D Air Cushion Check	5/08/07	18,550.00	0.00	0.00	18,550.00	0.00	18,550.00	0.00 S/L	10.00
	499	Effluent Drives #1 & #3	11/28/06	7,610.00	0.00	0.00	7,610.00	0.00	7,610.00	0.00 S/L	10.00
	503	36" Tube Settlers	10/29/07	100,869.83	0.00	0.00	91,903.68	6,724.66	98,628.34	2,241.49 S/L	15.00
	504	4 Trac-Vacs including Installation	12/27/07	35,891.72	0.00	0.00	35,891.72	0.00	35,891.72	0.00 S/L	12.00
	505	SCADA System Water Plant	1/25/08	10,537.73	0.00	0.00	10,537.73	0.00	10,537.73	0.00 S/L	5.00
	506	Backwash Line	2/11/08	15,928.98	0.00	0.00	10,685.70	796.45	11,482.15	4,446.83 S/L	20.00
	507	Dewatering Pump	2/11/08	15,235.48	0.00	0.00	15,235.48	0.00	15,235.48	0.00 S/L	5.00
	508	Dechlorination Pump	5/01/08	15,067.11	0.00	0.00	9,919.24	753.36	10,672.60	4,394.51 S/L	20.00
	509	6000 Gallon Fluoride Tank	5/15/08	9,979.51	0.00	0.00	6,569.90	498.98	7,068.88	2,910.63 S/L	20.00
	510	Acculator Valve (Mary Stewart) Water Tank	6/11/08	103,254.26	0.00	0.00	90,060.69	6,883.62	96,944.31	6,309.95 S/L	15.00
	519	Cavity Pump	4/08/10	9,432.12	0.00	0.00	5,305.61	471.61	5,777.22	3,654.90 S/L	20.00
	531	Warren Rd Meter Vault	1/31/12	54,504.14	0.00	0.00	17,108.20	1,816.80	18,925.00	35,579.14 S/L	30.00
	534	Replacement of Headworks Valves WTP	12/14/11	17,880.00	0.00	0.00	5,711.67	596.00	6,307.67	11,572.33 S/L	30.00
	535	Streaming Current Monitor WTP	6/01/12	7,543.00	0.00	0.00	4,567.74	502.87	5,070.61	2,472.39 S/L	15.00
	536	6" RPZ Backflow for WWTP	12/14/11	14,962.50	0.00	0.00	9,559.38	997.50	10,556.88	4,405.62 S/L	15.00
	538	Self Priming Trash Pump	1/19/12	18,490.00	0.00	0.00	11,607.64	1,232.67	12,840.31	5,649.69 S/L	15.00
	539	3 Million Gal Equal Basin WWTP	10/01/11	5,232,086.72	0.00	0.00	1,020,256.87	104,641.73	1,124,898.60	4,107,188.12 S/L	50.00
	540	Machine Welding/Grove Pk/Eastside Lift Stat.	7/01/11	1,874,128.91	0.00	0.00	624,709.60	62,470.96	687,180.56	1,186,948.35 S/L	30.00
	542	Walkways over basin WTP	6/22/12	7,000.00	0.00	0.00	4,200.03	466.67	4,666.70	2,333.30 S/L	15.00
	550	Rebuild Claifier at WWTP	7/24/12	179,000.00	0.00	0.00	53,202.80	5,966.67	59,169.47	119,830.53 S/L	30.00
	572	6,500 gallon Storage Tank (Water Plant)	2/08/17	8,812.00	0.00	0.00	1,945.98	440.60	2,386.58	6,425.42 S/L	20.00
	573	10,150 gallon Cl2 Tank (Water Plant)	5/10/17	27,465.00	0.00	0.00	5,721.88	1,373.25	7,095.13	20,369.87 S/L	20.00
574	T-8 (A71S-B) pumb (WTTP)	2/02/17	10,775.00	0.00	0.00	2,379.48	538.75	2,918.23	7,856.77 S/L	20.00	
575	2 EZ Strip Pumbs (WWTP)	5/02/17	15,498.20	0.00	0.00	3,228.79	774.91	4,003.70	11,494.50 S/L	20.00	
Lines are too small or not otherwise Main Lines	8	5.4 Mis. 4" water	7/01/55	86,400.00	0.00	0.00	86,400.00	0.00	86,400.00	0.00 S/L	50.00
	48	8" Gravity sewer	7/01/82	88,716.23	0.00	0.00	53,219.01	1,364.87	54,583.88	34,132.35 S/L	65.00
	60	1200 ft. of 6" C-900	9/01/85	11,323.44	0.00	0.00	6,242.58	174.21	6,416.79	4,906.65 S/L	65.00
	76	958 ft. of 8" sewer	3/01/86	9,605.07	0.00	0.00	5,221.14	147.77	5,368.91	4,236.16 S/L	65.00
	103	Water line-N. Layton	5/01/88	6,116.88	0.00	0.00	3,121.32	94.11	3,215.43	2,901.45 S/L	65.00
	145	596 linear ft 8" sewer Maple St	5/14/93	7,764.85	0.00	0.00	3,364.79	119.46	3,484.25	4,280.60 S/L	65.00
	148	615 ft 8" sewer line Maple Ave	2/01/94	6,180.75	0.00	0.00	2,607.05	95.09	2,702.14	3,478.61 S/L	65.00
	158	1050' 6" C900 Water Line	6/27/95	5,775.00	0.00	0.00	2,310.10	88.85	2,398.95	3,376.05 S/L	65.00
	160	Sewer line-Tilghman Drive	12/27/95	8,150.00	0.00	0.00	3,756.69	125.38	3,882.07	4,267.93 S/L	65.00
	166	1065 LE 8" Sanitary Sewer	12/12/96	28,502.47	0.00	0.00	10,779.79	438.50	11,218.29	17,284.18 S/L	65.00
	173	Pecan Ln & Powell Ave 1080 LF 8" sewer	11/18/97	15,120.00	0.00	0.00	5,485.95	232.62	5,718.57	9,401.43 S/L	65.00
	312	8.56 Mis. 2" water	7/01/30	85,600.00	0.00	0.00	85,600.00	0.00	85,600.00	0.00 S/L	50.00
	317	24.37 Mis. 6" water	7/01/48	511,770.00	0.00	0.00	511,770.00	0.00	511,770.00	0.00 S/L	65.00
	520	1552 ft 8" Sewer Line Broad St.	11/06/09	60,622.42	0.00	0.00	10,880.92	932.65	11,813.57	48,808.85 S/L	65.00
	544	8" Sewer Line Tyler Park	8/07/12	77,179.08	0.00	0.00	13,763.59	1,543.58	15,307.17	61,871.91 S/L	50.00

SDF Eligible	13	Clearwell (tank)	7/01/66	107,000.00	0.00	0.00	107,000.00	0.00	107,000.00	0.00 S/L	50.00
	14	Can St (tank)	7/01/67	450,000.00	0.00	0.00	450,000.00	0.00	450,000.00	0.00 S/L	50.00
	15	14.1 Mis. 16" water	7/01/70	521,700.00	0.00	0.00	311,819.26	6,521.25	318,340.51	203,359.49 S/L	80.00
	16	Can St	7/01/70	80,560.00	0.00	0.00	80,560.00	0.00	80,560.00	0.00 S/L	50.00
	18	Powell avenue (tank)	7/01/74	250,000.00	0.00	0.00	235,000.08	5,000.00	240,000.08	9,999.92 S/L	50.00
	19	Various	7/01/76	31,075.00	0.00	0.00	27,967.46	621.50	28,588.96	2,486.04 S/L	50.00
	23	Water mains:8"/4,850	7/01/80	301,586.23	0.00	0.00	181,682.02	4,639.79	186,321.81	115,264.42 S/L	65.00
	24	Water mains:12"/3,920	7/01/80	118,164.23	0.00	0.00	71,181.19	1,817.91	72,999.10	45,165.13 S/L	65.00
	27	1.67 Mis. 14" sewer	7/01/80	210,000.00	0.00	0.00	130,957.56	3,230.77	134,188.33	75,811.67 S/L	65.00
	28	4.5 Mis 15" sewer	7/01/80	689,039.85	0.00	0.00	429,690.17	10,600.61	440,290.78	248,749.07 S/L	65.00
	29	.26 Mis. 16" sewer	7/01/80	42,560.00	0.00	0.00	26,540.68	654.77	27,195.45	15,364.55 S/L	65.00
	30	1.03 Mis. 18" sewer	7/01/80	201,220.00	0.00	0.00	125,482.11	3,095.69	128,577.80	72,642.20 S/L	65.00
	31	3.13 Mis. 20" sewer	7/01/80	363,580.00	0.00	0.00	226,731.29	5,593.54	232,324.83	131,255.17 S/L	65.00
	32	1.79 Mis. 21" sewer	7/01/80	425,304.00	0.00	0.00	265,222.77	6,543.14	271,765.91	153,538.09 S/L	65.00
	33	1.11 Mis. 24" sewer	7/01/80	363,370.00	0.00	0.00	226,600.33	5,590.31	232,190.64	131,179.36 S/L	65.00
	34	.93 Mis. 27" sewer	7/01/80	202,752.00	0.00	0.00	126,437.63	3,119.26	129,556.89	73,195.11 S/L	65.00
	35	.23 Mis. 30" sewer	7/01/80	72,850.00	0.00	0.00	45,429.92	1,120.77	46,550.69	26,299.31 S/L	65.00
	37	Westside sewer plant	7/01/81	3,479,802.26	0.00	0.00	2,814,086.05	69,596.05	2,883,682.10	596,120.16 S/L	50.00
	38	Additional westside	7/01/81	469,718.51	0.00	0.00	359,073.68	9,394.37	368,468.05	101,250.46 S/L	50.00
	41	12" Waterline	3/01/82	11,249.00	0.00	0.00	5,246.78	140.61	5,387.39	5,861.61 S/L	80.00
	45	12" Water line	7/01/82	38,471.12	0.00	0.00	23,082.50	591.86	23,674.36	14,796.76 S/L	65.00
	47	Improvements @ raw water plant	7/01/82	26,148.70	0.00	0.00	26,148.70	0.00	26,148.70	0.00 S/L	10.00
	49	Waterline	7/01/83	133,547.72	0.00	0.00	67,664.37	1,780.64	69,445.01	64,102.71 S/L	75.00
	62	1319 ft. of 12" water	8/01/85	35,654.17	0.00	0.00	19,701.35	548.53	20,249.88	15,404.29 S/L	65.00
	73	Sewer rehab '85-86	1/01/86	228,459.80	0.00	0.00	124,774.38	3,514.77	128,289.15	100,170.65 S/L	65.00
	78	New water facility	6/01/86	10,527.86	0.00	0.00	5,669.82	161.97	5,831.79	4,696.07 S/L	65.00
	92	Westside wastewater	1/01/87	18,702.96	0.00	0.00	10,049.86	287.74	10,337.60	8,365.36 S/L	65.00
	99	Water line-N. Ellis	2/01/88	5,774.70	0.00	0.00	2,961.33	88.84	3,050.17	2,724.53 S/L	65.00
	110	Food Lion water line	8/01/89	44,317.00	0.00	0.00	21,653.03	681.80	22,334.83	21,982.17 S/L	65.00
	111	Funworld project sewer	1/01/90	42,783.83	0.00	0.00	20,736.13	658.21	21,394.34	21,389.49 S/L	65.00
	112	Falcon waterline	6/01/90	9,986.00	0.00	0.00	4,775.35	153.63	4,928.98	5,057.02 S/L	65.00
	120	Harnett/Sampson 12"	2/01/91	51,628.11	0.00	0.00	24,159.35	794.28	24,953.63	26,674.48 S/L	65.00
	122	Falcon water line	3/01/91	216,138.94	0.00	0.00	100,864.70	3,325.21	104,189.91	111,949.03 S/L	65.00
	123	Engineering Black river	3/01/91	14,683.00	0.00	0.00	6,550.81	225.89	6,776.70	7,906.30 S/L	65.00
	131	Raw water capital project	1/01/87	184,631.51	0.00	0.00	97,996.58	2,840.48	100,837.06	83,794.45 S/L	65.00
	135	Water trtmt plant expansion	6/30/92	781,419.90	0.00	0.00	781,419.90	0.00	781,419.90	0.00 S/L	20.00
136	1,000,000 Gal ground	12/01/88	89,302.00	0.00	0.00	89,302.00	0.00	89,302.00	0.00 S/L	20.00	
138	Water treatment plant	6/01/90	176,964.73	0.00	0.00	176,964.73	0.00	176,964.73	0.00 S/L	20.00	
139	Water plant expansion	1/01/91	2,557,266.47	0.00	0.00	2,557,266.47	0.00	2,557,266.47	0.00 S/L	20.00	
142	1,000,000 Gal ground	12/01/88	553,876.65	0.00	0.00	553,876.65	0.00	553,876.65	0.00 S/L	20.00	
144	3550 linear ft 12" water Broad St to	10/06/92	53,915.60	0.00	0.00	23,847.26	829.47	24,676.73	29,238.87 S/L	65.00	
152	Glover Water System	10/19/93	176,633.83	0.00	0.00	75,182.51	2,717.44	77,899.95	98,733.88 S/L	65.00	
153	301 N. Water Tank	11/04/93	77,065.40	0.00	0.00	32,802.15	1,185.62	33,987.77	43,077.63 S/L	65.00	
154	301 N. Water Tank	11/04/93	336,347.18	0.00	0.00	143,426.17	5,174.57	148,600.74	187,746.44 S/L	65.00	
159	1360' 12" Water Main	9/30/94	21,880.01	0.00	0.00	9,004.58	336.62	9,341.20	12,538.81 S/L	65.00	
161	Water & Sewer line-Interstate Drive	12/27/95	52,566.23	0.00	0.00	20,658.90	808.71	21,467.61	31,098.62 S/L	65.00	
162	Sewer line-Edgerton Industrial Park	12/12/95	89,515.77	0.00	0.00	36,513.12	1,377.17	37,890.29	51,625.48 S/L	65.00	
164	Western Steer Job-652 LF 8" PVC	6/11/97	13,819.22	0.00	0.00	5,120.12	212.60	5,332.72	8,486.50 S/L	65.00	
165	1110 LF 8" Water Main	1/14/96	23,033.10	0.00	0.00	8,740.88	354.36	9,095.24	13,937.86 S/L	65.00	
177	I-95 Connector-Water (I-95 & Hwy	1/12/99	138,124.49	0.00	0.00	47,812.28	2,124.99	49,937.27	88,187.22 S/L	65.00	

SDF Eligible	178	Hwy 421 & 55 Sewer Improvements	12/26/98	14,685.34	0.00	0.00	5,083.42	225.93	5,309.35	9,375.99 S/L	65.00
	179	I-95 Spring Branch Road-Sewer	5/20/99	91,366.39	0.00	0.00	31,041.22	1,405.64	32,446.86	58,919.53 S/L	65.00
	184	Glover/Ponderosa-Water & Sewer	7/01/98	626,967.51	0.00	0.00	221,849.95	9,645.65	231,495.60	395,471.91 S/L	65.00
	185	Glover/Ponderosa-Water & Sewer	7/01/98	120,164.67	0.00	0.00	42,519.87	1,848.69	44,368.56	75,796.11 S/L	65.00
	186	Blackriver Wastewater Improv. (Fd	7/01/98	1,765,654.56	0.00	0.00	812,201.07	35,313.09	847,514.16	918,140.40 S/L	50.00
	187	Blackriver Wastewater SE Outfall	7/01/98	619,084.00	0.00	0.00	219,060.51	9,524.37	228,584.88	390,499.12 S/L	65.00
	188	Finish Water Main-Capital Project	7/01/99	1,901,856.98	0.00	0.00	643,705.48	29,259.34	672,964.82	1,228,892.16 S/L	65.00
	311	4.4 Mis. 14" water	7/01/30	149,600.00	0.00	0.00	149,600.00	0.00	149,600.00	0.00 S/L	70.00
	313	48 Mis. 8" Water	7/01/35	1,392,000.00	0.00	0.00	1,392,000.00	0.00	1,392,000.00	0.00 S/L	50.00
	314	13.21 Mis. 8" water	7/01/43	317,040.00	0.00	0.00	317,040.00	0.00	317,040.00	0.00 S/L	75.00
	315	.28 Mis. 15" Sewer	7/01/43	8,120.00	0.00	0.00	8,120.00	0.00	8,120.00	0.00 S/L	75.00
	316	2.5 Mis. 15" Sewer	7/01/48	382,800.15	0.00	0.00	382,800.15	0.00	382,800.15	0.00 S/L	50.00
	319	8.53 Mis. 12" water	7/01/60	264,430.00	0.00	0.00	185,126.10	3,305.38	188,431.48	75,998.52 S/L	80.00
	459	Water sys. improv. Granvill & Kin	2/21/01	196,448.90	0.00	0.00	61,453.23	3,022.29	64,475.52	131,973.38 S/L	65.00
	475	Sewer project Hwy 55/421	11/27/01	138,712.57	0.00	0.00	41,791.62	2,134.04	43,925.66	94,786.91 S/L	65.00
	481	12" Water Powell Ave 1550 linear	5/25/04	14,172.50	0.00	0.00	3,724.85	218.04	3,942.89	10,229.61 S/L	65.00
	487	Purdie Road Water & Sewer	12/15/05	159,671.77	0.00	0.00	38,280.30	2,456.49	40,736.79	118,934.98 S/L	65.00
	500	Water & Sewer Project	1/01/04	2,794,641.39	0.00	0.00	844,275.83	55,892.83	900,168.66	1,894,472.73 S/L	50.00
	501	Eastside Forcemain	6/30/06	849,025.00	0.00	0.00	254,707.50	16,980.50	271,688.00	577,337.00 S/L	50.00
	502	McKay Ave Sewer	6/30/06	731,069.00	0.00	0.00	219,320.70	14,621.38	233,942.08	497,126.92 S/L	50.00
	529	12" Water Main Wilson Ave 1121 LF	6/30/11	336,137.79	0.00	0.00	51,713.50	5,171.35	56,884.85	279,252.94 S/L	65.00
	532	Replace 8" Water Line Broad St.	9/29/11	57,757.33	0.00	0.00	8,663.56	888.57	9,552.13	48,205.20 S/L	65.00
	533	Replace 8" Water Line Carolina Dr	5/30/12	82,338.01	0.00	0.00	11,506.22	1,266.74	12,772.96	69,565.05 S/L	65.00
	541	Gravity Sewer Replacement-2009	3/01/12	1,252,913.27	0.00	0.00	179,905.51	19,275.59	199,181.10	1,053,732.17 S/L	65.00
	543	2% Loan Orgination Fee-SRF 2009 WWTP Project	6/30/12	100,000.00	0.00	0.00	45,000.00	5,000.00	50,000.00	50,000.00 S/L	20.00
	569	Water/Sewer Line Ext. for Rooms to Go	6/30/16	2,339,465.39	0.00	0.00	179,958.90	35,991.78	215,950.68	2,123,514.71 S/L	65.00
	570	Sewer Line Extention I-95	6/30/16	1,161,849.13	0.00	0.00	89,373.00	17,874.60	107,247.60	1,054,601.53 S/L	65.00
	596	Magnolia St. Water Line Project	6/30/19	67,592.50	0.00	0.00	13,518.50	6,759.25	20,277.75	47,314.75 S/L	10.00
	597	Bay St. Infrastructure Improvements	1/29/19	115,598.57	0.00	0.00	5,587.26	2,311.97	7,899.23	107,699.34 S/L	50.00
	599	Magnolia Ave Waterline Replacement	5/06/20	124,310.00	0.00	0.00	3,625.71	3,107.75	6,733.46	117,576.54 S/L	40.00
625	2020 Sewer, Water, Drainage systems improveme	6/30/21	754,238.82	0.00	0.00	0.00	75,423.88	75,423.88	678,814.94 S/L	10.00	
628	Sewer Treatment Plant Improvements	6/14/21	123,534.00	0.00	0.00	1,029.45	12,353.40	13,382.85	110,151.15 S/L	10.00	

Table 14: Water System Projects

Map Number	Water Project	Description	Estimated Cost	Project Score	Priority
4	WTP Upgrade AF	Replace 8 MGD WTP and New 5-Day Reservoir	\$92,500,000	23	1
2/8/12/13/21	Transmission Main AG*	Replace 16" AC Watermain with 18" DI, New Elevated Tank, New Booster Pump Station - Dunn Four Oaks Water Main	\$33,931,000	27	2
18/19/23	Distribution Main AD	New 12" PVC on NC 55 between US 421 & County Line	\$1,628,250	18	3
12	Distribution Main K	Reconnect 2" to 8" on N Orange between W Johnson & W Cole	\$65,750	22	4
12	Transmission Main AH	Replace 16" AC Watermain with 18" DI from W. Broad to W. Barrington	\$2,665,000	22	5
13/14	Distribution Main AE	New 12" PVC on Jonesboro between E Johnson & Saddlebred	\$2,225,250	13	6
18	Distribution Main U*	Replace 4" Unknown on E Broad between S Elm & S Little	\$567,750	17	7
12/13	Distribution Main O*	Replace 4" Unknown on N Wilson between E Harnett & E Granville	\$385,375	18	8
18	Distribution Main R*	Replace 2" & 4" PVC/CI with 6" PVC on E Cumberland between Sampson & Wilmington	\$194,000	16	9
12	Distribution Main Q*	Replace 2" Unknown on N McKay between W Vance & W Cole	\$263,750	16	10
13	Distribution Main H	Replace 6" AC on Davis, Westbrook, & Queens between Lake Shore &	\$825,125	22	11
18	Distribution Main T	Replace 2" Unknown on E Edgerton between S Little & N Holland	\$302,125	17	12
13	Distribution Main C	Replace 2" & 6" AC & Unknown on E Johnson between N Clinton & Carolina	\$681,375	15	13
12	Distribution Main J	Replace 1.25" Unknown on W Johnson between N Ellis & N Orange	\$601,375	16	14
17	Distribution Main N	Replace 4" Unknown on W Pope between S McKay & RR	\$221,000	16	15
17	Distribution Main P	Replace 4" CI on Wilson between E Duke & E Edgerton	\$461,250	14	16
17/18	Distribution Main L	Replace 4" Unknown on E Pearsall between RR & S Little	\$515,500	13	17
12	Distribution Main Z	Replace 6" Unknown on W Pope between S Watauga & S General Lee	\$268,375	16	18
11/16	Distribution Main W	New 8" PVC on Susan Tart between Tilghman & Bruce	\$312,750	12	19
1	Distribution Main Y	Replace 6" Unknown on Pine & Saints between Holly & Sycamore	\$415,000	12	20
8	Distribution Main X	Replace 6" Unknown on Basin between Fairground & Byron	\$230,500	14	21
17	Distribution Main G	6" on Magnolia between Best & E Pearsall	\$445,000	17	22
12	Distribution Main AA	Replace 6" Unknown on Parliament between S Ann & S Watauga	\$112,375	19	23
22/23/26	Distribution Main AB	New 12" PVC on Long Branch between US 301 & I-95	\$2,898,750	11	24
17	Distribution Main I	Replace 12" AC on W Bay between S Layton & S Fayetteville	\$239,500	14	25
7	Distribution Main F	Replace 6" Unknown with 6" PVC on Friendly between Moses Tripp & N	\$68,125	6	26
6/7/12	Distribution Main D	Replace 12" Unknown on N Ashe between N Powell & W Cole	\$685,250	15	27
12	Distribution Main E*	Replace 12" Unknown on N Ashe between W Cole & W Broad	\$622,375	11	28
4/5/6/11/12	Transmission Main A	Replace 16" AC on US 421 between WTP & Sunny	\$6,142,500	18	29
18/23/27	Distribution Main AC	New 12" PVC on US 421 between I-95 & County Line	\$2,629,875	11	30

\* Impacts Priority Street Re-Pavement Project

*Water System – Project Cost Opinions*

**ESTIMATE OF PROBABLE PROJECT COST<sup>1</sup>**  
**WTP Upgrade AF**  
**Water Treatment Plant Upgrades**  
**City of Dunn**  
**Harnett County**

**THE WOOTEN COMPANY**

**2022**

	DESCRIPTION	UNITS	TOTAL QUANTITY	UNIT COST	EXTENDED COST
1	New 8 MGD Water Treatment Plant	LS	1	\$ 54,000,000.00	\$54,000,000.00
2	New 5-Day Reservoir	LS	1	\$ 20,000,000.00	\$20,000,000.00
Construction Cost Subtotal					<b>\$74,000,000.00</b>
Contingency (10%)					\$7,400,000.00
Engineering (Design) <sup>2</sup>					\$11,100,000.00
<b>ESTIMATED TOTAL PROJECT COST</b>					<b>\$92,500,000.00</b>

**PRELIMINARY**

NOTES:

<sup>1</sup>-Pricing for project to be constructed in 2022.

<sup>2</sup>-CA/CO not included in this cost.

**ESTIMATE OF PROBABLE PROJECT COST<sup>1</sup>**

**Replace 16 " AC Watermain with 18" DI, New Elevated Tank, New Booster Pump Station**  
**Dunn Four Oaks Water Main**  
**City of Dunn**  
**Harnett County**

**THE WOOTEN COMPANY**

**2022**

	DESCRIPTION	UNITS	TOTAL QUANTITY	UNIT COST	EXTENDED COST
1	500,000 Gallon Spheroid Tank	GAL	500,000	\$ 5.00	\$2,500,000.00
2	18" Meter and Vault	EA	1	\$ 200,000.00	\$200,000.00
3	18" DI Watermain and Appurtenances	LF	83,000	\$ 250.00	\$20,750,000.00
4	18" Gate Valves	EA	40	\$ 15,000.00	\$600,000.00
5	18" Check Valve	EA	1	\$ 16,000.00	\$16,000.00
6	Watermain Connection	EA	2	\$ 15,000.00	\$30,000.00
7	Fire Hydrant Assembly	EA	80	\$ 7,600.00	\$608,000.00
8	18" HDPE HDD Mingo Swamp and Hannah Creek	LF	4,800	\$ 700.00	\$3,360,000.00
9	36" Steel Casing with 18" DI Carrier Pipe	LF	900	\$ 1,600.00	\$1,440,000.00
10	Booster Pump Station	EA	1	\$2,500,000.00	\$2,500,000.00
Construction Cost Subtotal					<b>\$32,004,000.00</b>
Contingency (10%)					\$3,200,400.00
Engineering (Design) <sup>2</sup>					\$4,800,600.00
<b>ESTIMATED TOTAL PROJECT COST</b>					<b>\$40,005,000.00</b>

**PRELIMINARY**

NOTES:

<sup>1</sup>-Pricing for project to be constructed in 2022.

<sup>2</sup>-CA/CO not included in this cost.

**Table 7: Wastewater Capital Improvement Project Summary**

Map Number	Waste Water Project	Description	Estimated Cost	Project Score	Priority
5	Gravity Interceptor, Champion PS Removal	Remove Champion Pump Station and Replace with Sanitary Sewer to manhole BRF13	\$601,000.00	18	1
4/8	Loves Truck Stop PS Forcemain Replacement	Replace Force Main from Loves Truck PS	\$1,038,000.00	22	2
10/13/15	Area 8 and 20 Sewer Rehabilitation	Sanitary Sewer Replace in Place and CIPP Liner Manholes PC1 to P20A	\$1,514,000.00	26	3
13	Area 9 Sewer Rehabilitation*	Sanitary Sewer Replace in Place and CIPP Liner (All Manholes)	\$1,383,000.00	26	4
10/11	Area 11 Sewer Rehabilitation*	Sanitary Sewer Replace in Place and CIPP Liner Manholes P116 to P121, P23 to P28, P82A to P24	\$540,000.00	29	5
12/15	Food Lion PS and Force Main Upgrade	Upgrade Food Lion PS and Force Main	\$3,525,000.00	23	6
16/17/18	Copart Road Sewer	New Copart Rd Pump Station, Forcemain, and Gravity Sewer to Edgerton PS	\$1,474,000.00	24	7
15	Edgerton PS Upgrade and Forcemain	Upgrade Edgerton PS due to adjacent Development	\$1,051,000.00	25	8
9	WWTP Upgrade	3.75 to 5.5 MGD	\$55,000,000.00	34	9
10	Juniper Creek Outfall Replacement F	Replace 24 Inch Sanitary Sewer with 30 Inch Sanitary Sewer JC16 to JC28	\$1,341,000.00	27	10
9/10	Juniper Creek Outfall Replacement E	Replace 27 Inch Sanitary Sewer with 30 Inch Sanitary Sewer from Manhole BR5 to JC16	\$1,838,000.00	26	11
10/13/14	Eastern Outfall Replacement I*	Replace 24 and 15 Inch with 30 and 18 inch Sanitary Sewer from Manhole EON1 to P19	\$2,696,000.00	29	12
1/2/5	Black River Outfall Replacement D	Replace 15 Inch Sanitary Sewer with 18 Inch Sanitary Sewer from manhole BR49 to BR91	\$4,385,000.00	25	13
9/12	Black River Outfall Replacement A	Replace 30 Inch Sanitary Sewer with 36 Inch Sanitary Sewer from Manhole BR1 to BR5	\$706,000.00	24	14
5	Black River Outfall Replacement C	Replace 21 Inch Sanitary Sewer with 24 Inch Sanitary Sewer from Manhole BR48 to BR28	\$1,057,000.00	19	15
9	Black River Outfall Replacement B	Replace 24 Inch Sanitary Sewer with 30 Inch Sanitary Sewer from Manhole BR5 to BR28	\$1,798,000.00	19	16
7/11	Northern Outfall Replacement J	Replace 18 and 15 Inch with 24 and 18 Inch Sanitary Sewer from manhole EO1 to NO59	\$3,693,000.00	25	17
6/10	Juniper Creek Outfall Replacement G	Replace 15 Inch Sanitary Sewer with 18 Inch Sanitary Sewer from Manhole JC16 to F15	\$1,311,000.00	23	18

\*Impacts Priority Street Re-Pavement Project

2.1. Wastewater System – Project Cost Opinions

**ESTIMATE OF PROBABLE PROJECT COST<sup>1</sup>**  
**Gravity Interceptor and Champion PS Removal**  
**New Gravity Sewer to Manhole BRF13**  
**Replace Love's PS Force main**  
**City of Dunn**

THE WOOTEN COMPANY

2022

	DESCRIPTION	UNITS	TOTAL QUANTITY	UNIT COST	EXTENDED COST
1	8 Inch PVC Sanitary Sewer	LF	1,040	\$60.00	\$62,400.00
2	16 Inch Steel Encasement by Bore and Jack with 8" Carrier Pipe	LF	60	\$1,500.00	\$90,000.00
3	4 ft Dia. Manhole	EA	4	\$4,000.00	\$16,000.00
4	Abandone Existing Pump Station	EA	1	\$10,200.00	\$10,200.00
5	Pavement Patching	SY	100	\$80.00	\$8,000.00
6	4 inch PVC Force Main and Apurtenances	LF	4,200	\$70.00	\$294,000.00
Construction Cost Subtotal					\$480,600.00
Contingency (10%)					\$48,160.00
Engineering (Design) <sup>2</sup>					\$72,240.00
<b>ESTIMATED TOTAL PROJECT COST</b>					<b>\$601,000.00</b>

**PRELIMINARY**

NOTES:

<sup>1</sup>-Pricing for project to be constructed in 2022.

<sup>2</sup>-CA/CO has not been included.

**ESTIMATE OF PROBABLE PROJECT COST<sup>1</sup>**  
**Loves Travel Stop Force Main**  
**City of Dunn**

THE WOOTEN COMPANY

2022

	DESCRIPTION	UNITS	TOTAL QUANTITY	UNIT COST	EXTENDED COST
1	6 inch HDPE Force Main and Appurtenances	LF	15,000	\$40.00	\$600,000.00
2	6 Inch HDPE Directional Drill	LF	700	\$200.00	\$140,000.00
3	12 inch Steel Encasement with 6 inch Carrier Pipe	LF	300	\$300.00	\$90,000.00
Construction Cost Subtotal					\$830,000.00
Contingency (10%)					\$83,200.00
Engineering (Design) <sup>2</sup>					\$124,800.00
<b>ESTIMATED TOTAL PROJECT COST</b>					<b>\$1,038,000.00</b>

**PRELIMINARY**

NOTES:

<sup>1</sup>-Pricing for project to be constructed in 2022.

<sup>2</sup>-CA/CO has not been included.

**APPENDIX 4**  
**System Development Fee Worksheets**

System Development Fees

Summary Worksheet

Client:

Accounting Methodology:  
 Buy-In Cost Pay proportional share of past and current investments (for existing utilities/facilities to support existing/new growth)  
 Incremental Cost Pay increase in total costs resulting from increase in production (for new utilities/facilities to support new growth only)  
 Combined Cost Combination of Buy-in and Incremental Costs

BUY-IN METHOD

Asset ID/Ref.	Asset Description	Asset Group	Construction Cost	Engineering Fees	Land Acquisition Cost	Debt Principal and Interest Pmts	Project Costs		Project Credits				Design Capacity, MGD	Net Total Cost per Gal Capacity, \$/GPD	% SDF Eligible	% Water System Affiliation	% Sewer System Affiliation	% Sewer System Affiliation	Comment
							Total Costs	Accumulated Depreciation	Debt Credits	Principal Forgiveness / Grants	Total Credits	Net Total Cost							
<b>WATER</b>																			
13	Clearwell (tank)	Water - Storage	\$ 107,000				\$ 107,000	\$ 107,000			\$ 107,000	\$ -	\$ -	100%					Fully depreciated.
14	Carr St (tank)	Water - Storage	\$ 450,000				\$ 450,000	\$ 450,000			\$ 450,000	\$ -	\$ -	100%					Fully depreciated.
15	14.1 Mis. 16" water	Water - Distribution	\$ 521,700				\$ 521,700	\$ 318,341			\$ 318,341	\$ 203,359	\$ 4,460	100%	0.05				
18	Powell avenue (tank)	Water - Storage	\$ 250,000				\$ 250,000	\$ 240,000			\$ 240,000	\$ 10,000	\$ 4,460	100%					Tank discharges to 16" water main
23	Water mains:8"/4,850	Water - Distribution	\$ 301,586				\$ 301,586	\$ 186,322			\$ 186,322	\$ 115,264	\$ 1,010	100%	0.11				
24	Water mains:12"/3,920	Water - Distribution	\$ 118,164				\$ 118,164	\$ 72,999			\$ 72,999	\$ 45,165	\$ 2,450	100%	0.02				
41	12" Waterline	Water - Distribution	\$ 11,249				\$ 11,249	\$ 5,387			\$ 5,387	\$ 5,862	\$ 2,450	100%	0.00				
45	12" Water line	Water - Distribution	\$ 38,471				\$ 38,471	\$ 23,674			\$ 23,674	\$ 14,797	\$ 2,450	100%	0.01				
47	Improvements @ raw water plant	Water - Supply	\$ 26,149				\$ 26,149	\$ 26,149			\$ 26,149	\$ -	\$ -	100%					Fully depreciated.
49	Waterline	Water - Distribution	\$ 133,548				\$ 133,548	\$ 69,445			\$ 69,445	\$ 64,103	\$ -	100%					Unknown
62	1319 ft. of 12" water	Water - Distribution	\$ 35,654				\$ 35,654	\$ 20,250			\$ 20,250	\$ 15,404	\$ 2,450	100%	0.01				
78	New water facility (A.B. Uzzle WTP)	Water - Supply	\$ 10,528				\$ 10,528	\$ 5,832			\$ 5,832	\$ 4,696	\$ 8,000	100%	0.00				
99	Water line-N. Ellis (6")	Water - Distribution	\$ 5,775				\$ 5,775	\$ 3,050			\$ 3,050	\$ 2,725	\$ -	100%					Ineligible - 6" water lines are too small.
110	Food Lion water line (12")	Water - Distribution	\$ 44,317				\$ 44,317	\$ 22,335			\$ 22,335	\$ 21,982	\$ -	100%					Ineligible - only serves Food Lion
112	Falcon waterline (8")	Water - Distribution	\$ 9,986				\$ 9,986	\$ 4,929			\$ 4,929	\$ 5,057	\$ 1,010	100%	0.01				
120	Harnett/Sampson 12"	Water - Distribution	\$ 51,628				\$ 51,628	\$ 24,954			\$ 24,954	\$ 26,674	\$ 2,450	100%	0.01				
122	Falcon water line (8")	Water - Distribution	\$ 216,139				\$ 216,139	\$ 104,190			\$ 104,190	\$ 111,949	\$ 1,010	100%	0.11				
131	Raw water capital project (24")	Water - Supply	\$ 184,632				\$ 184,632	\$ 100,837			\$ 100,837	\$ 83,794	\$ 10,080	100%	0.01				
135	Water trtmt plant expansion	Water - Supply	\$ 781,420				\$ 781,420	\$ 781,420			\$ 781,420	\$ -	\$ -	100%					Fully depreciated.
136	1,000,000 Gal ground	Water - Storage	\$ 89,302				\$ 89,302	\$ 89,302			\$ 89,302	\$ -	\$ -	100%					Fully depreciated.
138	Water treatment plant	Water - Supply	\$ 176,965				\$ 176,965	\$ 176,965			\$ 176,965	\$ -	\$ -	100%					Fully depreciated.
139	Water plant expansion	Water - Supply	\$ 2,557,266				\$ 2,557,266	\$ 2,557,266			\$ 2,557,266	\$ -	\$ -	100%					Fully depreciated.
142	1,000,000 Gal ground	Water - Storage	\$ 553,877				\$ 553,877	\$ 553,877			\$ 553,877	\$ -	\$ -	100%					Fully depreciated.
144	3550 LF 12" water line Broad St to	Water - Distribution	\$ 53,916				\$ 53,916	\$ 24,677			\$ 24,677	\$ 29,239	\$ 2,450	100%	0.01				
152	Glover Water System	Water - Distribution	\$ 176,634				\$ 176,634	\$ 77,900			\$ 77,900	\$ 98,734	\$ -	100%					Ineligible - only serves a portion of the City
153	301 N. Water Tank	Water - Storage	\$ 77,065				\$ 77,065	\$ 33,988			\$ 33,988	\$ 43,078	\$ 4,460	100%	0.01				Tank discharges to 16" water main
154	301 N. Water Tank	Water - Storage	\$ 336,347				\$ 336,347	\$ 148,601			\$ 148,601	\$ 187,746	\$ 4,460	100%	0.04				Tank discharges to 16" water main
159	1360 LF 12" Water Main	Water - Distribution	\$ 21,880				\$ 21,880	\$ 9,341			\$ 9,341	\$ 12,539	\$ 1,450	100%	0.01				
165	1110 LF 8" Water Main	Water - Distribution	\$ 23,033				\$ 23,033	\$ 9,095			\$ 9,095	\$ 13,938	\$ 1,010	100%	0.01				
177	I-95 Connector-Water (I-95 & Hwy) (12")	Water - Distribution	\$ 138,124				\$ 138,124	\$ 49,937			\$ 49,937	\$ 88,187	\$ 2,450	100%	0.04				
188	Finish Water Main-Capital Project (24")	Water - Distribution	\$ 1,901,857				\$ 1,901,857	\$ 672,965			\$ 672,965	\$ 1,228,892	\$ 10,080	100%	0.12				
311	4.4 Mis. 14" water	Water - Distribution	\$ 149,600				\$ 149,600	\$ 149,600			\$ 149,600	\$ -	\$ -	100%					Fully depreciated.
313	48 Mis. 8" Water	Water - Distribution	\$ 1,392,000				\$ 1,392,000	\$ 1,392,000			\$ 1,392,000	\$ -	\$ -	100%					Fully depreciated.
314	13.21 Mis. 8" water	Water - Distribution	\$ 317,040				\$ 317,040	\$ 317,040			\$ 317,040	\$ -	\$ -	100%					Fully depreciated.
319	8.53 Mis. 12" water	Water - Distribution	\$ 264,430				\$ 264,430	\$ 188,431			\$ 188,431	\$ 75,999	\$ 2,450	100%	0.03				
459	Water sys. improv. Granvill & Kin	Water - Distribution	\$ 196,449				\$ 196,449	\$ 64,476			\$ 64,476	\$ 131,973	\$ -	100%					Ineligible - 6" water lines are too small.
481	12" Water Powell Ave 1550 linear	Water - Distribution	\$ 14,173				\$ 14,173	\$ 3,943			\$ 3,943	\$ 10,230	\$ 2,450	100%	0.00				
529	12" Water Main Wilson Ave 1121 LF	Water - Distribution	\$ 336,138				\$ 336,138	\$ 56,885			\$ 56,885	\$ 279,253	\$ 2,450	100%	0.11				
532	Replace 8" Water Line Broad St.	Water - Distribution	\$ 57,757				\$ 57,757	\$ 9,552			\$ 9,552	\$ 48,205	\$ 1,010	100%	0.05				
533	Replace 8" Water Line Carolina Dr	Water - Distribution	\$ 82,338				\$ 82,338	\$ 12,773			\$ 12,773	\$ 69,565	\$ 1,010	100%	0.07				
597	Bay St. Infrastructure Improvements (12")	Water - Distribution	\$ 115,599				\$ 115,599	\$ 7,899			\$ 7,899	\$ 107,699	\$ 2,450	100%	0.04				
599	Magnolia Ave Waterline Replacement (6")	Water - Distribution	\$ 124,310				\$ 124,310	\$ 6,733			\$ 6,733	\$ 117,577	\$ -	100%					Ineligible - 6" water lines are too small.
CIP-W1	Dunn-Erwin Abandonment and East Wake Rehab	Water - Distribution	\$ 963,325				\$ 963,325	\$ -			\$ -	\$ 963,325	\$ -	100%					Ineligible - 6" water lines are too small.
<b>SEWER</b>																			
27	1.67 Mis. 14" sewer	Sewer - Collection	\$ 210,000				\$ 210,000	\$ 134,188			\$ 134,188	\$ 75,812	\$ 0.589	100%	0.13				
28	4.5 Mis 15" sewer	Sewer - Collection	\$ 689,040				\$ 689,040	\$ 440,291			\$ 440,291	\$ 248,749	\$ 0.665	100%	0.37				
29	.26 Mis. 16" sewer	Sewer - Collection	\$ 42,560				\$ 42,560	\$ 27,195			\$ 27,195	\$ 15,365	\$ 0.763	100%	0.02				
30	1.03 Mis. 18" sewer	Sewer - Collection	\$ 201,220				\$ 201,220	\$ 128,578			\$ 128,578	\$ 72,642	\$ 0.967	100%	0.08				
31	3.13 Mis. 20" sewer	Sewer - Collection	\$ 363,580				\$ 363,580	\$ 232,325			\$ 232,325	\$ 131,255	\$ 1.226	100%	0.11				
32	1.79 Mis. 21" sewer	Sewer - Collection	\$ 425,304				\$ 425,304	\$ 271,766			\$ 271,766	\$ 153,538	\$ 1.331	100%	0.12				
33	1.11 Mis. 24" sewer	Sewer - Collection	\$ 363,370				\$ 363,370	\$ 232,191			\$ 232,191	\$ 131,179	\$ 1.700	100%	0.08				
34	.93 Mis. 27" sewer	Sewer - Collection	\$ 202,752				\$ 202,752	\$ 129,557			\$ 129,557	\$ 73,195	\$ 2.177	100%	0.03				
35	.23 Mis. 30" sewer	Sewer - Collection	\$ 72,850				\$ 72,850	\$ 46,551			\$ 46,551	\$ 26,299	\$ 2.670	100%	0.01				
37	Westside sewer plant	Sewer - Treatment	\$ 3,479,802				\$ 3,479,802	\$ 2,883,682			\$ 2,883,682	\$ 596,120	\$ 2.275	100%	0.26				Ineligible - Original 2.75-MGD WWTP. No capacity left to give to new developers.
38	Additional westside	Sewer - Treatment	\$ 469,719				\$ 469,719	\$ 368,468			\$ 368,468	\$ 101,250	\$ 2.275	100%	0.04				Ineligible - Original 2.75-MGD WWTP. No capacity left to give to new developers.
73	Sewer rehab '85-86	Sewer - Collection	\$ 228,460				\$ 228,460	\$ 128,289			\$ 128,289	\$ 100,171	\$ -	100%					Unknown
92	Sewer wastewater	Sewer - Treatment	\$ 18,703				\$ 18,703	\$ 10,338			\$ 10,338	\$ 8,365	\$ 3,000	100%	0.00				Ineligible - Re-permitting WWTP to 3.0 MGD. No capacity left to give to new developers.
111	Funworld project sewer (8")	Sewer - Collection	\$ 42,784				\$ 42,784	\$ 21,394			\$ 21,394	\$ 21,389	\$ -	100%					Ineligible - 8" sewer are too small and only serves Funworld
162	Sewer line-Edgerton Industrial Park (8")	Sewer - Collection	\$ 89,516				\$ 89,516	\$ 37,890			\$ 37,890	\$ 51,625	\$ -	100%					Ineligible - 8" sewer are too small
164	Western Steer Job-652 LF 8" PVC	Sewer - Collection	\$ 13,819				\$ 13,819	\$ 5,333			\$ 5,333	\$ 8,487	\$ -	100%					Ineligible - 8" sewer are too small
178	Hwy 421 & 55 Sewer Improvements (15")	Sewer - Collection	\$ 14,685				\$ 14,685	\$ 5,309			\$ 5,309	\$ 9,376	\$ 0.665	100%	0.01				
179	I-95 Spring Branch Road-Sewer (8")	Sewer - Collection	\$ 91,366				\$ 91,366	\$ 32,447			\$ 32,447	\$ 58,920	\$ -	100%					Ineligible - 8" sewer are too small
186	Blackriver Wastewater Improv. (Fd	Sewer - Collection	\$ 1,765,655				\$ 1,765,655	\$ 847,514			\$ 847,514	\$ 918,140	\$ 3,750	100%	0.24				
187	Blackriver Wastewater SE Outfall (15")	Sewer - Collection	\$ 619,084				\$ 619,084	\$ 228,585			\$ 228,585	\$ 390,499	\$ 0.665	100%	0.59				
315	.28 Mis. 15" Sewer	Sewer - Collection	\$ 8,120				\$ 8,120	\$ 8,120			\$ 8,120	\$ -	\$ -	100%					Fully depreciated.
316	2.5 Mis. 15" Sewer	Sewer - Collection	\$ 382,800				\$ 382,800</												

CURRENT YEAR - 2019	WATER					SEWER								
	Residential	Commercial	Institutional	Industrial	Total	Ex. Population	Population: Customer Ratio	Residential	Commercial	Institutional	Industrial	Total	Ex. Population	Population: Customer Ratio
No. of Existing Connections	3,920	791	29	9	4,749	9,468	1.99	3,611	716	29	9	4,365	9,468	2.17
Percent of Total Connections	82.5%	16.7%	0.6%	0.2%				76.0%	15.1%	0.6%	0.2%			
Volumetric Use per Connection, gpd	400	393	12,552	1,778	45,245			360	94	12,552	1,778			
Total Existing Volumetric Use, gpd	1,568,000	310,863	364,008	16,002	2,258,873			1,299,960	67,160	364,008	16,002			1,747,130
Percent of Total Use	69%	14%	16%	1%				58%	3%	16%	1%			

Meter Size - per GALLON Basis	Equivalent Ratio	Water	Sewer	Total
5/8	1.0	\$0.88	\$2.95	\$3.83
1	2.5	\$2.20	\$7.38	\$9.58
1-1/2	5.0	\$4.40	\$14.75	\$19.15
2	8.0	\$7.04	\$23.60	\$30.64
3 compound	16.0	\$14.08	\$47.20	\$61.28
4 compound	25.0	\$22.00	\$73.75	\$95.75
6 compound	50.0	\$44.00	\$147.50	\$191.50
8 compound	80.0	\$70.40	\$236.00	\$306.40
10 compound	115.0	\$101.20	\$339.25	\$440.45
12 compound	215.0	\$189.20	\$634.25	\$823.45

Meter Size - per CONNECTION basis	Equivalent Ratio	Water	Sewer	Total
5/8	1.0	\$ 317	\$ 1,062	\$ 1,379
1	2.5	\$ 792	\$ 2,655	\$ 3,447
1-1/2	5.0	\$ 1,584	\$ 5,310	\$ 6,894
2	8.0	\$ 2,534	\$ 8,496	\$ 11,030
3 compound	16.0	\$ 5,069	\$ 16,992	\$ 22,061
4 compound	25.0	\$ 7,920	\$ 26,550	\$ 34,470
6 compound	50.0	\$ 15,840	\$ 53,100	\$ 68,940
8 compound	80.0	\$ 25,344	\$ 84,960	\$ 110,304
10 compound	115.0	\$ 36,432	\$ 122,130	\$ 158,562
12 compound	215.0	\$ 68,112	\$ 228,330	\$ 296,442

5/8" Residential connection: 360 gpd

System Development Fees  
Depreciation Worksheet  
Client:

City of Dunn, NC

**BUY-IN METHOD** Evaluation Year 2022

Project No.	Project Description	Year Installation	Approximate Age	CCI Number	Actual Cost	Accumulated Depreciation to Date
<b>WATER</b>						
13	Clearwell (tank)	1966		56 #N/A	\$ 107,000	\$ 107,000
14	Carr St (tank)	1967		55 11.3	\$ 450,000	\$ 450,000
15	14.1 Mis. 16" water	1970		52 12	\$ 521,700	\$ 318,341
18	Powell avenue (tank)	1974		48 17.3	\$ 250,000	\$ 240,000
23	Water mains:8"/4,850	1980		42 26.3	\$ 301,586	\$ 186,322
24	Water mains:12"/3,920	1980		42 26.3	\$ 118,164	\$ 72,999
41	12" Waterline	1982		40 31.8	\$ 11,249	\$ 5,387
45	12" Water line	1982		40 31.8	\$ 38,471	\$ 23,674
47	Improvements @ raw water plant	1982		40 31.8	\$ 26,149	\$ 26,149
49	Waterline	1983		39 33.5	\$ 133,548	\$ 69,445
62	1319 ft. of 12" water	1985		37 34.6	\$ 35,654	\$ 20,250
78	New water facility (A.B. Uzzle WTP)	1986		36 35.2	\$ 10,528	\$ 5,832
99	Water line-N. Ellis (6")	1988		34 37.6	\$ 5,775	\$ 3,050
110	Food Lion water line (12")	1989		33 38.5	\$ 44,317	\$ 22,335
112	Falcon waterline (8")	1990		32 39.4	\$ 9,986	\$ 4,929
120	Harnett/Sampson 12"	1991		31 40.5	\$ 51,628	\$ 24,954
122	Falcon water line (8")	1991		31 40.5	\$ 216,139	\$ 104,190
131	Raw water capital project (24")	1987		35 36.7	\$ 184,632	\$ 100,837
135	Water trtmt plant expansion	1992		30 41.6	\$ 781,420	\$ 781,420
136	1,000,000 Gal ground	1988		34 37.6	\$ 89,302	\$ 89,302
138	Water treatment plant	1990		32 39.4	\$ 176,965	\$ 176,965
139	Water plant expansion	1991		31 40.5	\$ 2,557,266	\$ 2,557,266
142	1,000,000 Gal ground	1988		34 37.6	\$ 553,877	\$ 553,877
144	3550 LF 12" water line Broad St to	1992		30 41.6	\$ 53,916	\$ 24,677
152	Glover Water System	1993		29 42.5	\$ 176,634	\$ 77,900
153	301 N. Water Tank	1993		29 42.5	\$ 77,065	\$ 33,988
154	301 N. Water Tank	1993		29 42.5	\$ 336,347	\$ 148,601
159	1360 LF 12" Water Main	1994		28 43.7	\$ 21,880	\$ 9,341
165	1110 LF 8" Water Main	1996		26 46.1	\$ 23,033	\$ 9,095
177	I-95 Connector-Water (I-95 & Hwy) (12")	1999		23 49.2	\$ 138,124	\$ 49,937
188	Finish Water Main-Capital Project (24")	1999		23 49.2	\$ 1,901,857	\$ 672,965
311	4.4 Mis. 14" water	1930		92 #N/A	\$ 149,600	\$ 149,600
313	48 Mis. 8" Water	1935		87 #N/A	\$ 1,392,000	\$ 1,392,000
314	13.21 Mis. 8" water	1943		79 #N/A	\$ 317,040	\$ 317,040
319	8.53 Mis. 12" water	1960		62 #N/A	\$ 264,430	\$ 188,431
459	Water sys. improv. Granvill & Kin	2001		21 52.3	\$ 196,449	\$ 64,476
481	12" Water Powell Ave 1550 linear	2004		18 60.1	\$ 14,173	\$ 3,943
529	12" Water Main Wilson Ave 1121 LF	2011		11 80	\$ 336,138	\$ 56,885
532	Replace 8" Water Line Broad St.	2011		11 80	\$ 57,757	\$ 9,552
533	Replace 8" Water Line Carolina Dr	2012		10 81.4	\$ 82,338	\$ 12,773
597	Bay St. Infrastructure Improvements (12")	2019		3 97.1	\$ 115,599	\$ 7,899
599	Magnolia Ave Waterline Replacement (6")	2020		2 100	\$ 124,310	\$ 6,733
CIP-W1	Dunn-Erwin Abandonment and East Wake Rehab	2022		0 100	\$ 963,325	\$ -
<b>SEWER</b>						
27	1.67 Mis. 14" sewer	1980		42 26.3	\$ 210,000	\$ 134,188
28	4.5 Mis 15" sewer	1980		42 26.3	\$ 689,040	\$ 440,291
29	.26 Mis. 16" sewer	1980		42 26.3	\$ 42,560	\$ 27,195
30	1.03 Mis. 18" sewer	1980		42 26.3	\$ 201,220	\$ 128,578
31	3.13 Mis. 20" sewer	1980		42 26.3	\$ 363,580	\$ 232,325
32	1.79 Mis. 21" sewer	1980		42 26.3	\$ 425,304	\$ 271,766
33	1.11 Mis. 24" sewer	1980		42 26.3	\$ 363,370	\$ 232,191
34	.93 Mis. 27" sewer	1980		42 26.3	\$ 202,752	\$ 129,557
35	.23 Mis. 30" sewer	1980		42 26.3	\$ 72,850	\$ 46,551
37	Westside sewer plant	1981		41 29.3	\$ 3,479,802	\$ 2,883,682
38	Additional westside	1981		41 29.3	\$ 469,719	\$ 368,468
73	Sewer rehab '85-86	1986		36 35.2	\$ 228,460	\$ 128,289
92	Westside wastewater	1987		35 36.7	\$ 18,703	\$ 10,338
111	Funworld project sewer (8")	1990		32 39.4	\$ 42,784	\$ 21,394
162	Sewer line-Edgerton Industrial Park (8")	1995		27 45	\$ 89,516	\$ 37,890
164	Western Steer Job-652 LF 8" PVC	1997		25 47.2	\$ 13,819	\$ 5,333
178	Hwy 421 & 55 Sewer Improvements (15")	1998		24 48.1	\$ 14,685	\$ 5,309
179	I-95 Spring Branch Road-Sewer (8")	1999		23 49.2	\$ 91,366	\$ 32,447
186	Blackriver Wastewater Improv. (Fd	1998		24 48.1	\$ 1,765,655	\$ 847,514
187	Blackriver Wastewater SE Outfall (15")	1998		24 48.1	\$ 619,084	\$ 228,585
315	.28 Mis. 15" Sewer	1943		79 #N/A	\$ 8,120	\$ 8,120
316	2.5 Mis. 15" Sewer	1948		74 #N/A	\$ 382,800	\$ 382,800
475	Sewer project Hwy 55/421 (8")	2001		21 52.3	\$ 138,713	\$ 43,926
500-A	Water & Sewer Project - 24" JCOF	2004		18 60.1	\$ 838,392	\$ 270,051
500-B	Water & Sewer Project - Eastside PS 20" Forcemain	2004		18 60.1	\$ 1,956,249	\$ 630,118
501	Eastside Forcemain	2006		16 67.8	\$ 849,025	\$ 271,688
502	McKay Ave Sewer (8")	2006		16 67.8	\$ 731,069	\$ 233,942
541	Gravity Sewer Replacement-2009 (8")	2012		10 81.4	\$ 1,252,913	\$ 199,181
543	2% Loan Origination Fee-SRF 2009 WWTP Project	2012		10 81.4	\$ 100,000	\$ 50,000
570	Sewer Line Extension I-95 (12")	2016		6 86.7	\$ 1,161,849	\$ 107,248
596	N. Orange Ave. (8")	2019		3 97.1	\$ 67,593	\$ 20,278
628	Sewer Treatment Plant Improvements	2021		1 100	\$ 123,534	\$ 13,383
<b>OTHER</b>						
16	Can St	1970		52 12	\$ 80,560	\$ 80,560
19	Various	1976		46 19.6	\$ 31,075	\$ 28,589
123	Engineering Black river	1991		31 40.5	\$ 14,683	\$ 6,777
161	Water & Sewer line-Interstate Drive	1995		27 45	\$ 52,566	\$ 21,468
184	Glover/Ponderosa-Water & Sewer	1998		24 48.1	\$ 626,968	\$ 231,496
185	Glover/Ponderosa-Water & Sewer	1998		24 48.1	\$ 120,165	\$ 44,369
487	Purdie Road Water & Sewer	2005		17 63.4	\$ 159,672	\$ 40,737
569	Water/Sewer Line Ext. for Rooms to Go	2016		6 86.7	\$ 2,339,465	\$ 215,951
625	2020 Sewer, Water, Drainage systems improve	2021		1 100	\$ 754,239	\$ 75,424
<b>TOTAL</b>					<b>\$ 32,786,968</b>	<b>\$ 16,938,481</b>

System Development Fees

CCI Worksheet

Client: City of Dunn, NC

Year	Historical CCI	Current CCI
1967	23.5	11.3
1968	24.9	11.9
1969	26.9	12.9
1970	28.7	12.0
1971	32.1	13.4
1972	34.8	14.6
1973	37.7	15.8
1974	41.4	17.3
1975	44.8	18.7
1976	46.9	19.6
1977	49.5	20.7
1978	53.5	22.4
1979	57.8	24.2
1980	62.9	26.3
1981	70.0	29.3
1982	76.1	31.8
1983	80.2	33.5
1984	82.0	34.3
1985	82.6	34.6
1986	84.2	35.2
1987	87.7	36.7
1988	89.9	37.6
1989	92.1	38.5
1990	94.3	39.4
1991	96.8	40.5
1992	99.4	41.6
1993	101.7	42.5
1994	104.4	43.7
1995	107.6	45.0
1996	110.2	46.1
1997	112.8	47.2
1998	115.1	48.1
1999	117.6	49.2
2000	120.9	50.6
2001	125.1	52.3
2002	128.7	53.8
2003	132.0	55.2
2004	143.7	60.1
2005	151.6	63.4
2006	162.0	67.8
2007	169.4	70.8
2008	180.4	75.4
2009	180.1	75.3
2010	183.5	76.7
2011	191.2	80.0
2012	194.6	81.4
2013	201.2	84.1
2014	204.9	85.7
2015	206.2	86.2
2016	207.3	86.7
2017	213.6	89.3
2018	222.9	93.2
2019	232.2	97.1
2020	239.1	100.0

**System Development Fees  
Summary Worksheet**

Client: City of Dunn, NC

Accounting Methodology:

Buy-In Cost Pay proportional share of past and current investments (for existing utilities/facilities to support existing/new growth)  
 Incremental Cost Pay increase in total costs resulting from increase in production (for new utilities/facilities to support new growth only)  
 Combined Cost Combination of Buy-In and Incremental Costs

subtract from total costs

INCREMENTAL COST METHOD	Anticipated Project Costs								Anticipated Project Credits				Net Total Cost per							Comment	
Asset/Project ID	CIP Asset/Project Description	Asset Group	Construction Cost	Survey & Engineering Fees	Land Acquisition Cost	Debt Principal and Interest Pmts	SDF Professional Fees	Total Costs	Principal Forgiveness / Grants	Debt Credits	Total Credits	Net Total Cost	Design Capacity, MGD	Gal Capacity, S/GPD	% Min. Credit <sup>1</sup>	% SDF Eligible	% Water System Affiliation	\$ Water System Affiliation	% Sewer System Affiliation	\$ Sewer System Affiliation	
<b>WATER</b>																					
W-1	Replace/Rehabilitate 8-MGD Water Treatment Plant	Water - Supply	\$ 59,400,000	\$ 8,100,000				\$ 67,500,000		\$ 67,500,000	\$ 67,500,000	\$ -	8.000	\$ -	25%	39%	100%	\$ -	0.00%	\$ -	Peak day flow produced by WTP is 4.842 MGD.
W-2	New 5-Day Reservoir at the WTP	Water - Storage	\$ 22,000,000	\$ 3,000,000				\$ 25,000,000			\$ -	\$ 25,000,000	8.000	\$ 3.13	25%	39%	100%	\$ 0.91	0.00%	\$ -	Peak day flow produced by WTP is 4.842 MGD.
W-3	New 0.5-MG Elevated Water Tank	Water - Storage	\$ 2,750,000	\$ 375,000				\$ 3,125,000			\$ -	\$ 3,125,000	2.450	\$ 1.28	25%	100%	100%	\$ 0.96	0.00%	\$ -	Completed within the first 5 years. Connects to 12" line.
W-4	Replace 16" AC Water Main with 18" DIP - Dunn to Benson & Four Oaks	Water - Distribution	\$ 29,704,400	\$ 4,050,600				\$ 33,755,000			\$ -	\$ 33,755,000	5.620	\$ 6.01	25%	0%	100%	\$ -	0.00%	\$ -	Ineligible - solely for providing finished water to the Town of Four Oaks.
W-5	New Booster Pump Station - Dunn to Four Oaks	Water - Distribution	\$ 2,750,000	\$ 375,000				\$ 3,125,000			\$ -	\$ 3,125,000		\$ -	25%	0%	100%	\$ -	0.00%	\$ -	Ineligible - solely for providing finished water to the Town of Four Oaks.
<b>SEWER</b>																					
S-1	Black River WWTP Improvements	Sewer - Treatment	\$ 8,050,000	\$ 3,450,000				\$ 11,500,000			\$ -	\$ 11,500,000	3.750	\$ 3.07	25%	24%	0%	\$ -	100.00%	\$ 0.55	DWI funded. Complete in August 2024. 2021 ADF to WWTP is 2.833 MGD.
S-2	Black River WWTP Effluent Conveyance System	Sewer - Treatment	\$ 16,100,000					\$ 16,100,000	\$ 15,350,000	\$ 15,350,000	\$ 750,000		3.750	\$ 0.20	25%	24%	0%	\$ -	100.00%	\$ 0.04	DWI/Town funded. Bid in December 2022.
S-3	CDBG-I & USDA Phase 1 Sewer Line Rehabilitation - 15"	Sewer - Collection	\$ 452,010					\$ 452,010	\$ 255,930	\$ 255,930	\$ 196,080		0.665	\$ 0.29	25%	50%	0%	\$ -	100.00%	\$ 0.11	CDBG & USDA funded. CDBG complete in August 2024, USDA complete in February 2023. Assume 50% capacity utilized for future customers.
S-4	CDBG-I & USDA Phase 1 Sewer Line Rehabilitation - 12"	Sewer - Collection	\$ 452,010					\$ 452,010	\$ 255,930	\$ 255,930	\$ 196,080		0.444	\$ 0.44	25%	25%	0%	\$ -	100.00%	\$ 0.08	CDBG & USDA funded. CDBG complete in August 2024, USDA complete in February 2023. Assume 25% capacity utilized for future customers.
S-5	CDBG-I & USDA Phase 1 Sewer Line Rehabilitation - 10"	Sewer - Collection	\$ 113,003					\$ 113,003	\$ 63,983	\$ 63,983	\$ 49,020		0.308	\$ 0.16	25%	50%	0%	\$ -	100.00%	\$ 0.06	CDBG & USDA funded. CDBG complete in August 2024, USDA complete in February 2023. Assume 50% capacity utilized for future customers.
S-6	CDBG-I & USDA Phase 1 Sewer Line Rehabilitation - 8"	Sewer - Collection	\$ 4,633,106					\$ 4,633,106	\$ 2,623,286	\$ 2,623,286	\$ 2,009,820		0.203	\$ 9.90	25%	0%	0%	\$ -	100.00%	\$ -	CDBG & USDA funded. CDBG complete in August 2024, USDA complete in February 2023. Ineligible - 8" lines are too small.
S-7	CWSRF Collection System Improvements - 15" Rehabilitation and Replacement	Sewer - Collection	\$ 499,200					\$ 499,200	\$ 80,000	\$ 80,000	\$ 419,200		0.665	\$ 0.63	25%	25%	0%	\$ -	100.00%	\$ 0.12	DWI-SRF funded. Complete in August 2024. Assume 75% of line's capacity is utilized for existing customers, so 25% is for future growth.
S-8	CWSRF Collection System Improvements - 10" Rehabilitation and Replacement	Sewer - Collection	\$ 124,800					\$ 124,800	\$ 20,000	\$ 20,000	\$ 104,800		0.308	\$ 0.34	25%	25%	0%	\$ -	100.00%	\$ 0.06	DWI-SRF funded. Complete in August 2024. Assume 75% of line's capacity is utilized for existing customers, so 25% is for future growth.
S-9	CWSRF Collection System Improvements - 8" Rehabilitation and Replacement	Sewer - Collection	\$ 2,496,000					\$ 2,496,000	\$ 400,000	\$ 400,000	\$ 2,096,000		0.203	\$ 10.33	25%	0%	0%	\$ -	100.00%	\$ -	DWI-SRF funded. Complete in August 2024. Ineligible - 8" sewer are too small.
S-10	Eastside Pump Station/Force Main and Machine and Welding Outfall	Sewer - Collection	\$ 15,850,000					\$ 15,850,000	\$ 15,100,000	\$ 15,100,000	\$ 750,000		4.320	\$ 0.17	25%	44%	0%	\$ -	100.00%	\$ 0.06	DWI/Town funded. Complete in December 2022.
S-11	8" Gravity Interceptor and Champion PS Removal	Sewer - Collection	\$ 528,760	\$ 72,240				\$ 601,000			\$ -	\$ 601,000	0.203	\$ 2.96	25%	0%	0%	\$ -	100.00%	\$ -	Ineligible - 8" sewer are too small
S-12	Loves Truck Stop Pump Station Force Main	Sewer - Collection	\$ 913,200	\$ 124,800				\$ 1,038,000			\$ -	\$ 1,038,000	0.396	\$ 2.62	25%	94%	0%	\$ -	100.00%	\$ 1.85	Completed within the first 5 years.
<b>TOTAL</b>			\$ 166,816,489	\$ 19,547,640	\$ -	\$ -	\$ -	\$ 186,364,129	\$ 34,149,129	\$ 67,500,000	\$ 101,649,129	\$ 84,715,000		\$ 41.52		\$ 17,423,290		\$ 1.87		\$ 2.93	

<sup>1</sup> Minimum 25% credit per HB 436.

	WATER					Total	Ex. Population	Customer Ratio	SEWER					Total	Ex. Population	Customer Ratio
	Residential	Commercial	Institutional	Industrial	Population:				Residential	Commercial	Institutional	Industrial	Population:			
<b>CURRENT YEAR - 2018-19</b>																
No. of Existing Connections	3,920	791	29	9	4,749	9,468	1.99	3,611	716	29	9	4,365	9,468	2.17		
Percent of Total Connections	82.5%	16.7%	0.6%	0.2%				76.0%	15.1%	0.6%	0.2%					
Volumetric Use per Connection, gpd	400	393	12,552	1,778				360	94	12,552	1,778					
Total Existing Volumetric Use, gpd	1,568,000	310,863	364,008	16,002	2,258,873			1,299,960	67,160	364,008	16,002	1,747,130				
Percent of Total Use	69%	14%	16%	1%				58%	3%	16%	1%					

Meter Size - per GALLON Basis	Equivalent Ratio	Water	Sewer	Total
5/8	1.0	\$1.87	\$2.93	\$4.80
1	2.5	\$4.68	\$7.33	\$12.00
1-1/2	5.0	\$9.35	\$14.65	\$24.00
2	8.0	\$14.96	\$23.44	\$38.40
3 compound	16.0	\$29.92	\$46.88	\$76.80
4 compound	25.0	\$46.75	\$73.25	\$120.00
6 compound	50.0	\$93.50	\$146.50	\$240.00
8 compound	80.0	\$149.60	\$234.40	\$384.00
10 compound	115.0	\$215.05	\$336.95	\$552.00
12 compound	215.0	\$402.05	\$629.95	\$1,032.00

Meter Size - per CONNECTION basis	Equivalent Ratio	Water	Sewer	Total
5/8	1.0	\$673	\$1,055	\$1,728
1	2.5	\$1,683	\$2,637	\$4,320
1-1/2	5.0	\$3,366	\$5,274	\$8,640
2	8.0	\$5,386	\$8,438	\$13,824
3 compound	16.0	\$10,771	\$16,877	\$27,648
4 compound	25.0	\$16,830	\$26,370	\$43,200
6 compound	50.0	\$33,660	\$52,740	\$86,400
8 compound	80.0	\$53,856	\$84,384	\$138,240
10 compound	115.0	\$77,418	\$121,302	\$198,720
12 compound	215.0	\$144,738	\$226,782	\$371,520

5/8" Residential connection: 360 gpd

System Development Fees

Summary Worksheet

Client:

City of Dunn, NC

Meter Size - per GALLON Basis	Equivalent Ratio	WATER			SEWER			Combined Total
		Buy In	Incremental	Combined	Buy In	Incremental	Combined	
5/8	1.0	\$0.88	\$1.87	<b>\$2.75</b>	\$2.95	\$2.93	<b>\$5.88</b>	<b>\$8.63</b>
1	2.5	\$2.20	\$4.68	<b>\$6.88</b>	\$7.38	\$7.33	<b>\$14.70</b>	<b>\$21.58</b>
1-1/2	5.0	\$4.40	\$9.35	<b>\$13.75</b>	\$14.75	\$14.65	<b>\$29.40</b>	<b>\$43.15</b>
2	8.0	\$7.04	\$14.96	<b>\$22.00</b>	\$23.60	\$23.44	<b>\$47.04</b>	<b>\$69.04</b>
3 compound	16.0	\$14.08	\$29.92	<b>\$44.00</b>	\$47.20	\$46.88	<b>\$94.08</b>	<b>\$138.08</b>
4 compound	25.0	\$22.00	\$46.75	<b>\$68.75</b>	\$73.75	\$73.25	<b>\$147.00</b>	<b>\$215.75</b>
6 compound	50.0	\$44.00	\$93.50	<b>\$137.50</b>	\$147.50	\$146.50	<b>\$294.00</b>	<b>\$431.50</b>
8 compound	80.0	\$70.40	\$149.60	<b>\$220.00</b>	\$236.00	\$234.40	<b>\$470.40</b>	<b>\$690.40</b>
10 compound	115.0	\$101.20	\$215.05	<b>\$316.25</b>	\$339.25	\$336.95	<b>\$676.20</b>	<b>\$992.45</b>
12 compound	215.0	\$189.20	\$402.05	<b>\$591.25</b>	\$634.25	\$629.95	<b>\$1,264.20</b>	<b>\$1,855.45</b>

Meter Size - per CONNECTION basis	Equivalent Ratio	WATER			SEWER			Combined Total
		Buy In	Incremental	Combined	Buy In	Incremental	Combined	
5/8	1.0	\$317	\$673	<b>\$990</b>	\$1,062	\$1,055	<b>\$2,117</b>	<b>\$3,100</b>
1	2.5	\$792	\$1,683	<b>\$2,475</b>	\$2,655	\$2,637	<b>\$5,292</b>	<b>\$7,760</b>
1-1/2	5.0	\$1,584	\$3,366	<b>\$4,950</b>	\$5,310	\$5,274	<b>\$10,584</b>	<b>\$15,530</b>
2	8.0	\$2,534	\$5,386	<b>\$7,920</b>	\$8,496	\$8,438	<b>\$16,934</b>	<b>\$24,850</b>
3 compound	16.0	\$5,069	\$10,771	<b>\$15,840</b>	\$16,992	\$16,877	<b>\$33,869</b>	<b>\$49,700</b>
4 compound	25.0	\$7,920	\$16,830	<b>\$24,750</b>	\$26,550	\$26,370	<b>\$52,920</b>	<b>\$77,670</b>
6 compound	50.0	\$15,840	\$33,660	<b>\$49,500</b>	\$53,100	\$52,740	<b>\$105,840</b>	<b>\$155,340</b>
8 compound	80.0	\$25,344	\$53,856	<b>\$79,200</b>	\$84,960	\$84,384	<b>\$169,344</b>	<b>\$248,540</b>
10 compound	115.0	\$36,432	\$77,418	<b>\$113,850</b>	\$122,130	\$121,302	<b>\$243,432</b>	<b>\$357,280</b>
12 compound	215.0	\$68,112	\$144,738	<b>\$212,850</b>	\$228,330	\$226,782	<b>\$455,112</b>	<b>\$667,960</b>

System Development Fees  
Growth Projections Worksheet

Client: **City of Dunn, NC**

**CITY GROWTH ONLY**

Percent Annual Growth	0.50%	0.50%	0.50%	0.50%
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Year	Total Water Connections			
	Residential	Commercial	Institutional	Industrial
2020	3,920	791	29	9
2021	3,940	795	29	9
2022	3,959	799	29	9
2023	3,979	803	29	9
2024	3,999	807	30	9
2025	4,019	811	30	9
2026	4,039	815	30	9
2027	4,059	819	30	9

Year	Total Sewer Connections			
	Residential	Commercial	Institutional	Industrial
2020	3,611	716	29	9
2021	3,629	720	29	9
2022	3,647	723	29	9
2023	3,665	727	29	9
2024	3,684	730	30	9
2025	3,702	734	30	9
2026	3,721	738	30	9
2027	3,739	741	30	9

Proposed Developments			
Name	# Connections	Meter Type	Year Installed
Canterbury Phase 2	31	Residential	2022
	32	Residential	2023
Edgerton Lot 4 & 5	90	Commercial	2023
	90	Commercial	2026
I-95 Campground	87	Residential	2021
Jonesboro Road	61	Residential	2022
	61	Residential	2023
	61	Residential	2024
McLamb Property	90	Commercial	2023
	90	Commercial	2026
Speedway I95	1	Commercial	2023
Susan Tart Development	20	Residential	2022
	20	Residential	2023
	21	Residential	2024
	21	Residential	2025
Wellons	21	Residential	2026
	36	Residential	2022
	54	Residential	2023
	54	Residential	2024

# New Connections due to Proposed Developments				
Year	Residential	Commercial	Institutional	Industrial
2020	0	0	0	0
2021	87	0	0	0
2022	148	0	0	0
2023	167	181	0	0
2024	136	0	0	0
2025	21	0	0	0
2026	21	180	0	0
2027	0	0	0	0

**CITY GROWTH + PROPOSED DEVELOPMENTS**

Total Water Connections				
Residential	Commercial	Institutional	Industrial	
3,920	791	29	9	
4,027	795	29	9	
4,194	799	29	9	
4,381	984	29	9	
4,537	988	30	9	
4,578	992	30	9	
4,619	1,176	30	9	
4,639	1,180	30	9	

Total Sewer Connections				
Residential	Commercial	Institutional	Industrial	
3,611	716	29	9	
3,716	720	29	9	
3,882	723	29	9	
4,067	908	29	9	
4,222	911	30	9	
4,261	915	30	9	
4,301	1,099	30	9	
4,319	1,102	30	9	

System Development Fees  
Revenues Projection Worksheet  
Client:

City of Dunn, NC

Percent Annual Growth	0.50%	0.50%	0.50%	0.50%
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Meter Size	Buy-in Method		Incremental Method	
	Water	Sewer	Water	Sewer
5/8"	\$ 317	\$ 1,062	\$ 673	\$ 1,055
1.5"	\$ 1,584	\$ 5,310	\$ 3,366	\$ 5,274
4" compound	\$ 7,920	\$ 26,550	\$ 16,830	\$ 26,370

Year	Total Water Connections			
	Residential	Commercial	Institutional	Industrial
2020	3,920	791	29	9
2021	4,027	795	29	9
2022	4,194	799	29	9
2023	4,381	984	29	9
2024	4,537	988	30	9
2025	4,578	992	30	9
2026	4,619	1,176	30	9
2027	4,639	1,180	30	9
<b>TOTAL</b>				

Water Revenues from Buy-In Cost Method				
Residential (5/8")	Commercial (1.5")	Institutional (4 compound)	Industrial (1.5")	TOTAL
\$ 59,242	\$ 293,040	\$ -	\$ -	\$ 352,282
\$ 49,421	\$ 6,336	\$ 7,920	\$ -	\$ 63,677
\$ 12,989	\$ 6,336	\$ -	\$ -	\$ 19,325
\$ 12,989	\$ 291,456	\$ -	\$ -	\$ 304,445
\$ 6,336	\$ 6,336	\$ -	\$ -	\$ 12,672
<b>\$ 140,976</b>	<b>\$ 603,504</b>	<b>\$ 7,920</b>	<b>\$ -</b>	<b>\$ 752,400</b>

Water Revenues from Incremental Cost Method				
Residential (5/8")	Commercial (1.5")	Institutional (4 compound)	Industrial (1.5")	TOTAL
\$ 125,888	\$ 622,710	\$ -	\$ -	\$ 748,598
\$ 105,019	\$ 13,464	\$ 16,830	\$ -	\$ 135,313
\$ 27,601	\$ 13,464	\$ -	\$ -	\$ 41,065
\$ 27,601	\$ 619,344	\$ -	\$ -	\$ 646,945
\$ 13,464	\$ 13,464	\$ -	\$ -	\$ 26,928
<b>\$ 299,574</b>	<b>\$ 1,282,446</b>	<b>\$ 16,830</b>	<b>\$ -</b>	<b>\$ 1,598,850</b>

Water Revenues from Combined Cost Method				
Residential (5/8")	Commercial (1.5")	Institutional (4 compound)	Industrial (1.5")	TOTAL
\$ 185,130	\$ 915,750	\$ -	\$ -	\$ 1,100,880
\$ 154,440	\$ 19,800	\$ 24,750	\$ -	\$ 198,990
\$ 40,590	\$ 19,800	\$ -	\$ -	\$ 60,390
\$ 40,590	\$ 910,800	\$ -	\$ -	\$ 951,390
\$ 19,800	\$ 19,800	\$ -	\$ -	\$ 39,600
<b>\$ 440,550</b>	<b>\$ 1,885,950</b>	<b>\$ 24,750</b>	<b>\$ -</b>	<b>\$ 2,351,250</b>

Year	Total Sewer Connections			
	Residential	Commercial	Institutional	Industrial
2020	3,611	716	29	9
2021	3,716	720	29	9
2022	3,882	723	29	9
2023	4,067	908	29	9
2024	4,222	911	30	9
2025	4,261	915	30	9
2026	4,301	1,099	30	9
2027	4,319	1,102	30	9
<b>TOTAL</b>				

Sewer Revenues from Buy-In Cost Method				
Residential (5/8")	Commercial (1.5")	Institutional (4 compound)	Industrial (1.5")	TOTAL
\$ 196,470	\$ 982,350	\$ -	\$ -	\$ 1,178,820
\$ 164,610	\$ 15,930	\$ 26,550	\$ -	\$ 207,090
\$ 41,418	\$ 21,240	\$ -	\$ -	\$ 62,658
\$ 42,480	\$ 977,040	\$ -	\$ -	\$ 1,019,520
\$ 19,116	\$ 15,930	\$ -	\$ -	\$ 35,046
<b>\$ 464,094</b>	<b>\$ 2,012,490</b>	<b>\$ 26,550</b>	<b>\$ -</b>	<b>\$ 2,503,134</b>

Sewer Revenues from Incremental Cost Method				
Residential (5/8")	Commercial (1.5")	Institutional (4 compound)	Industrial (1.5")	TOTAL
\$ 195,138	\$ 975,690	\$ -	\$ -	\$ 1,170,828
\$ 163,494	\$ 15,822	\$ 26,370	\$ -	\$ 205,686
\$ 41,137	\$ 21,096	\$ -	\$ -	\$ 62,233
\$ 42,192	\$ 970,416	\$ -	\$ -	\$ 1,012,608
\$ 18,986	\$ 15,822	\$ -	\$ -	\$ 34,808
<b>\$ 460,948</b>	<b>\$ 1,998,846</b>	<b>\$ 26,370</b>	<b>\$ -</b>	<b>\$ 2,486,164</b>

Sewer Revenues from Combined Cost Method				
Residential (5/8")	Commercial (1.5")	Institutional (4 compound)	Industrial (1.5")	TOTAL
\$ 391,608	\$ 1,958,040	\$ -	\$ -	\$ 2,349,648
\$ 328,104	\$ 31,752	\$ 52,920	\$ -	\$ 412,776
\$ 82,555	\$ 42,336	\$ -	\$ -	\$ 124,891
\$ 84,672	\$ 1,947,456	\$ -	\$ -	\$ 2,032,128
\$ 38,102	\$ 31,752	\$ -	\$ -	\$ 69,854
<b>\$ 925,042</b>	<b>\$ 4,011,336</b>	<b>\$ 52,920</b>	<b>\$ -</b>	<b>\$ 4,989,298</b>