Gavel & Dorn Engineering, PLLC
6730 Freedom Drive, Charlotte, NC 28214

MEMORANDUM

DATE: May 26, 2020

TO: Jonathan Blanton, Town Manager

FROM: Eric Medaugh, PE

CC: Kirk Gavel, PE

SUBJECT: Town of Ranlo – System Development Fee Study

Background

In 2017 North Carolina Governor Roy Cooper signed House Bill 436, clearly establishing the ability of North Carolina's local governments to impose system development or impact fees for new water and sewer users. System Development Fees (SDF) have been a prominent topic in municipal finance over the past several years. These fees have been charged by approximately 40% of North Carolina water and sewer providers to new customers to help offset capacity costs. However, there has been concern about inconsistencies among providers with the fee, including calculation methodologies and approaches to implementation. The potential impact of recent legal actions led to the development and ratification of House Bill 436 (HB 436). The new law provides specific guidelines that public water and sewer providers must follow to charge SDFs. A copy of HB 436 can be found in **Appendix A**.

Methodology

The SDF's were calculated using principles and practices set by the American Water Works Association (AWWA) Manual of Water Supply Practices, Principles of Water Rates, Fees, and Charges, System Development Charges. The new legislation defines three methods for calculating SDFs. These are briefly summarized as follows:

- ***Buy-in Method (Equity Method)*** - Under this method, new development bears a proportional share of the capital costs previously incurred by the municipal entity that allow for sufficient capacity to serve the new development.
- ***Incremental/Marginal Cost*** -This method requires new development to pay the proportional share of new capital costs that are attributable to the new development.
- ***Combined Cost*** - This method uses a combination of the buy-in and incremental/marginal cost methods.

The SDFs for the Town of Ranlo were calculated using the Buy-in or (Equity) Method, as it is best suited for the data available for the Town. The goal of this method is to achieve an equity position between new and existing customers of the system. The method assumes that the existing customers have provided equity in the existing system and that built-up equity should accrue to benefit existing customers. The

base level of the SDF is established at the current level of the system equity related to the capacity used to serve an existing equivalent residential customer.

System Equity

The major components of the system's equity include the valuation of the system assets, accumulated depreciation, system liabilities, source of equity and system capacity.

The Town of Ranlo currently purchases their water from and sends their wastewater to Two Rivers Utility (TRU) at an elevated rate. As such, this evaluation considers the capacity for both water and wastewater that is contracted with these two utilities. Currently, the Town of Ranlo has a contract with TRU for them to provide the Town with 0.6 million gallons per day (MGD) of potable water and for 0.4 MGD of wastewater treatment. On average the Town is currently discharging approximately 0.275 MGD of wastewater and using approximately 0.377 MGD of potable water. These values were taken from the Local Water Supply Plan for the Town of Stanley. A copy of the plan can be found in in **Appendix B**.

The equity in their system is calculated using the approximate cost that would be required to construct water and wastewater plants using current construction cost. To provide enough capacity for the current needs of the Town and to account for peaking factors, the Town would have to provide facilities capable of producing and treating roughly 0.75 MGD for both water and wastewater.

The valuation for a wastewater and/or water treatment plant can vary significantly due to new technologies and different methods of treatment. It is not feasible to design a plant for this valuation. However, through research and recent experience we can estimate that the cost for building a new wastewater treatment plant today would be around $9.00 per gallon and the cost for a water treatment plant would be around $6.00 per gallon. This means the cost to build the wastewater and water treatment plants would be approximately $6.75 million and $4.5 million respectively.

The Town of Ranlo currently owns and maintains approximately 142,560 feet of waterline ranging from 4-inch to 12-inch diameter pipe. Additionally, they own and maintain approximately 120,000 feet of sewer pipe and 3 pump stations. The value of these assets is calculated, with depreciation, at $6.3 million for the wastewater assets and $4.3 million for the water assets. The valuation of the assets is further explained below.

Valuation

The valuation of the Towns water and wastewater assets is based on the actual assets in place today. According to the local supply plan for 2019, the Town has approximately 27 miles (142,560 ft.) of existing water line and approximately 120,000 ft. of existing sewer lines. To determine the value of the pipe, we multiplied the linear footage by the unit cost of $60 per foot for water and $90 per linear foot of sewer line. These number are an estimate based on our experience with similar jobs and considering the varying types and sizes of pipe that would be installed. The pump station values were based on lump sum pricing compared to similar pump station construction in the region. Those values were then adjusted to show depreciation. This was done using straight line depreciation over a 50-year expected life span, given a

salvage value of $0. This depreciation was based on an assumed average life of 25-years for all assets. A breakdown of the valuation can be seen in **Table 1** below.

Table 1 Asset Valuation

Asset	Length of Existing Pipe (ft.)	Cost	Unit	Total	Depreciated Value
Water Line	142560	$ 60.00	LF	$ 8,553,600.00	-
			Water Total	**$ 8,553,600.00**	**$ 4,276,800.00**
Sewer Line	119888	$ 90.00	LF	$ 10,789,920.00	$ 5,394,960.00
Pump Station	3	$ 550,000.00	EA	$ 1,650,000.00	$ 825,000.00
			Wastewater Total	**$ 12,439,920.00**	**$ 6,219,960.00**

System Development Fee

System development fees (SDF) were calculated based on the capacities the Town would have to provide to maintain the current level of service using the Equity/Buy-in method. The number of equivalent dwelling units (EDU) the Town could serve is based on an assumed 190 gallons per day (GPD) per EDU. Assuming 0.75 MGD plants, this equates to 3,947 EDU (750,000 GPD/190 GPD = 3,947 EDU) for both water and sewer. The Town currently has no outstanding debt or loans related to their water or sewer systems. The most recent capital improvements plan (CIP) was included in a utility study report performed in 2010. A copy of the report can be found in **Appendix C**. This plan suggested a total of $1,879,750 worth of improvements needed for the water system and a total of $1,038,900 worth of improvements for the wastewater system over the next ten years. Without the availability of a recent CIP these numbers were used a basis to estimate the need for current upgrades. Assuming an increase in material and labor costs as well as expansion of the systems in the last decade, but also taking into account repairs that have been made over the course of the last ten years a factor of 1.4 was used and rounded to estimate current repair/improvement needs.

Table 2 and **Table 3** below show the breakdown of the recommended fees.

Table 2 Water SDF

Water	Original cost	Depreciation	Net Cost
Plant	-	-	$ 4,500,000.00
Distribution Lines	$ 8,553,600.00	$ 4,276,800.00	$ 4,276,800.00
		Subtotal	**$ 8,776,800.00**
LESS NET COST OF			
		Distribution Main Repairs per CIP	$ 2,600,000.00
		Outstanding Debt/Loans	$ -
		Total	**$ 6,176,800.00**
System Development Fees ($6,176,800/3,947)			**$ 1,565.00**

Table 3 Wastewater SDF			
Wastewater	**Original cost**	**Depreciation**	**Net Cost**
Plant	-	-	$ 6,000,000.00
Distribution Lines	$ 10,789,920.00	$ 5,394,960.00	$ 5,394,960.00
Pump Stations	$ 1,650,000.00	$ 825,000.00	$ 825,000.00
		Subtotal	**$ 12,219,960.00**
LESS NET COST OF			
		Distribution Main Repairs per CIP	$ 1,500,000.00
		Outstanding Debt/Loans	$ -
		Total	**$ 10,719,960.00**
System Development Fees ($10,719,960/3,947)			**$ 2,716.00**

The SDF's calculated above are per EDU as noted in the first paragraph in this section. However, some properties will have a greater demand for water and sewer and therefore should be charged accordingly. A single EDU is based on a ¾" water service and assumes 190 GPD as described above. Properties with a greater demand should be charged based on the water demand and service. In cases where a larger service is needed, we recommend rates as follows in **Table 4**.

Table 4 Rates Based on Service Size		
Service Size	**Water**	**Sewer**
3/4"	$ 1,565	$ 2,716
1"	$ 2,621	$ 4,514
2"	$ 8,388	$ 14,479
3"	$ 16,789	$ 28,921
4"	$ 26,234	$ 45,198
6"	$ 52,469	$ 90,377
8"	$ 83,947	$ 144,604
10"	$ 120,656	$ 207,877
12"	$ 162,623	$ 280,179

Conclusion

Based on the system assets, accumulate depreciation, system liabilities, source of equity and system capacity we conclude that a system development fee of up to $1,565.00 for water and $2,716.00 for wastewater should be assessed.

APPENDIX A
HB 436

GENERAL ASSEMBLY OF NORTH CAROLINA
SESSION 2017

HOUSE BILL 436
RATIFIED BILL

AN ACT TO PROVIDE FOR UNIFORM AUTHORITY TO IMPLEMENT SYSTEM DEVELOPMENT FEES FOR PUBLIC WATER AND SEWER SYSTEMS IN NORTH CAROLINA AND TO CLARIFY THE APPLICABLE STATUTE OF LIMITATIONS.

The General Assembly of North Carolina enacts:

SECTION 1. Chapter 162A of the General Statutes is amended by adding a new Article to read:

"Article 8.
"System Development Fees.

"**§ 162A-200. Short title.**

This Article shall be known and may be cited as the "Public Water and Sewer System Development Fee Act."

"**§ 162A-201. Definitions.**

The following definitions apply in this Article:

(1) Capital improvement. – A planned facility or expansion of capacity of an existing facility other than a capital rehabilitation project necessitated by and attributable to new development.

(2) Capital rehabilitation project. – Any repair, maintenance, modernization, upgrade, update, replacement, or correction of deficiencies of a facility, including any expansion or other undertaking to increase the preexisting level of service for existing development.

(3) Existing development. – Land subdivisions, structures, and land uses in existence at the start of the written analysis process required by G.S. 162A-205, no more than one year prior to the adoption of a system development fee.

(4) Facility. – A water supply, treatment, storage, or distribution facility, or a wastewater collection, treatment, or disposal facility, including for reuse or reclamation of water, owned or operated, or to be owned or operated, by a local governmental unit and land associated with such facility.

(5) Local governmental unit. – Any political subdivision of the State that owns or operates a facility, including those owned or operated pursuant to local act of the General Assembly or pursuant to Part 2 of Article 2 of Chapter 130A, Article 15 of Chapter 153A, Article 16 of Chapter 160A, or Articles 1, 4, 5, 5A, or 6 of Chapter 162A of the General Statutes.

(6) New development. – Any of the following occurring after the date a local government begins the written analysis process required by G.S. 162A-205, no more than one year prior to the adoption of a system development fee, which increases the capacity necessary to serve that development:

a. The subdivision of land.

b. The construction, reconstruction, redevelopment, conversion, structural alteration, relocation, or enlargement of any structure which increases the number of service units.

c. Any use or extension of the use of land which increases the number of service units.

(7) Service. – Water or sewer service, or water and sewer service, provided by a local governmental unit.

(8) Service unit. – A unit of measure, typically an equivalent residential unit, calculated in accordance with generally accepted engineering or planning standards.

(9) System development fee. – A charge or assessment for service imposed with respect to new development to fund costs of capital improvements necessitated by and attributable to such new development, to recoup costs of existing facilities which serve such new development, or a combination of those costs, as provided in this Article. The term includes amortized charges, lump-sum charges, and any other fee that functions as described by this definition regardless of terminology. The term does not include any of the following:

a. A charge or fee to pay the administrative, plan review, or inspection costs associated with permits required for development.

b. Tap or hookup charges for the purpose of reimbursing the local governmental unit for the actual cost of connecting the service unit to the system.

c. Availability charges.

d. Dedication of capital improvements on-site, adjacent, or ancillary to a development absent a written agreement providing for credit or reimbursement to the developer pursuant to G.S. 153A-280, 153A-451, 160A-320, 160A-499 or Part 3A of Article 18, Chapter 153A or Part 3D of Article 19, Chapter 160A of the General Statutes.

e. Reimbursement to the local governmental unit for its expenses in constructing or providing for water or sewer utility capital improvements adjacent or ancillary to the development if the owner or developer has agreed to be financially responsible for such expenses; however, such reimbursement shall be credited to any system development fee charged as set forth in G.S. 162A-207(c).

(10) System development fee analysis. – An analysis meeting the requirements of G.S. 162A-205.

"**§ 162A-202. Reserved.**

"**§ 162A-203. Authorization of system development fee.**

(a) A local governmental unit may adopt a system development fee for water or sewer service only in accordance with the conditions and limitations of this Article.

(b) A system development fee adopted by a local governmental unit under any lawful authority other than this Article and in effect on October 1, 2017, shall be conformed to the requirements of this Article not later than July 1, 2018.

"**§ 162A-204. Reserved.**

"**§ 162A-205. Supporting analysis.**

A system development fee shall be calculated based on a written analysis, which may constitute or be included in a capital improvements plan, that:

(1) Is prepared by a financial professional or a licensed professional engineer qualified by experience and training or education to employ generally accepted accounting, engineering, and planning methodologies to calculate system development fees for public water and sewer systems.

(2) Documents in reasonable detail the facts and data used in the analysis and their sufficiency and reliability.

(3) Employs generally accepted accounting, engineering, and planning methodologies, including the buy-in, incremental cost or marginal cost, and combined cost methods for each service, setting forth appropriate analysis as to the consideration and selection of a method appropriate to the circumstances and adapted as necessary to satisfy all requirements of this Article.

(4) Documents and demonstrates the reliable application of the methodologies to the facts and data, including all reasoning, analysis, and interim calculations underlying each identifiable component of the system development fee and the aggregate thereof.

(5) Identifies all assumptions and limiting conditions affecting the analysis and demonstrates that they do not materially undermine the reliability of conclusions reached.

(6) Calculates a final system development fee per service unit of new development and includes an equivalency or conversion table for use in determining the fees applicable for various categories of demand.

(7) Covers a planning horizon of not less than 10 years nor more than 20 years.

(8) Is adopted by resolution or ordinance of the local governmental unit in accordance with G.S. 162A-209.

"**§ 162A-206. Reserved.**

"**§ 162A-207. Minimum requirements.**

(a) Maximum. – A system development fee shall not exceed that calculated based on the system development fee analysis.

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

(c) Construction or Contributions Credit. – In calculating the system development fee with respect to new development, the local governmental unit shall credit the value of costs in excess of the development's proportionate share of connecting facilities required to be oversized for use of others outside of the development. No credit shall be applied, however, for water or sewer capital improvements on-site or to connect new development to water or sewer facilities.

"**§ 162A-208. Reserved.**

"**§ 162A-209. Adoption and periodic review.**

(a) For not less than 45 days prior to considering the adoption of a system development fee analysis, the local governmental unit shall post the analysis on its Web site and solicit and furnish a means to submit written comments, which shall be considered by the preparer of the analysis for possible modifications or revisions.

(b) After expiration of the period for posting, the governing body of the local governmental unit shall conduct a public hearing prior to considering adoption of the analysis with any modifications or revisions.

(c) The local governmental unit shall publish the system development fee in its annual budget or rate plan or ordinance. The local governmental unit shall update the system development fee analysis at least every five years.

"**§ 162A-210. Reserved.**

"**§ 162A-211. Use and administration of revenue.**

(a) Revenue from system development fees calculated using the incremental cost method or marginal cost method, exclusively or as part of the combined cost method, shall be expended only to pay:

(1) Costs of constructing capital improvements including, and limited to, any of the following:

a. Construction contract prices.

b. Surveying and engineering fees.

c. Land acquisition cost.

d. Principal and interest on bonds, notes, or other obligations issued by or on behalf of the local governmental unit to finance any costs for an item listed in sub-subdivisions a. through c. of this subdivision.

(2) Professional fees incurred by the local governmental unit for preparation of the system development fee analysis.

(3) If no capital improvements are planned for construction within five years or the foregoing costs are otherwise paid or provided for, then principal and interest on bonds, notes, or other obligations issued by or on behalf of a local governmental unit to finance the construction or acquisition of existing capital improvements.

(b) Revenue from system development fees calculated using the buy-in method may be expended for previously completed capital improvements for which capacity exists and for capital rehabilitation projects. The basis for the buy-in calculation for previously completed capital improvements shall be determined by using a generally accepted method of valuing the actual or replacement costs of the capital improvement for which the buy-in fee is being collected less depreciation, debt credits, grants, and other generally accepted valuation adjustments.

(c) A local governmental unit may pledge a system development fee as security for the payment of debt service on a bond, note, or other obligation subject to compliance with the foregoing limitations.

(d) System development fee revenues shall be accounted for by means of a capital reserve fund established pursuant to Part 2 of Article 3 of Chapter 159 of the General Statutes and limited as to expenditure of funds in accordance with this section.

"**§ 162A-212. Reserved.**

"**§ 162A-213. Time for collection of system development fees.**

For new development involving the subdivision of land, the system development fee shall be collected by a local governmental unit either at the time of plat recordation or when water or sewer service for the subdivision or other development is committed by the local governmental unit. For all other new development, the local governmental unit shall collect the system development fee at the time of application for connection of the individual unit of development to the service or facilities.

"**§ 162A-214. Reserved.**

"**§ 162A-215. Narrow construction.**

Notwithstanding G.S. 153A-4 and G.S. 160A-4, in any judicial action interpreting this Article, all powers conferred by this Article shall be narrowly construed to ensure that system development fees do not unduly burden new development."

SECTION 2. G.S. 130A-64 reads as rewritten:

"**§ 130A-64. Service charges and rates.**

(a) A sanitary district board shall apply service charges and rates based upon the exact benefits derived. These service charges and rates shall be sufficient to provide funds for the maintenance, adequate depreciation and operation of the work of the district. If reasonable, the service charges and rates may include an amount sufficient to pay the principal and interest maturing on the outstanding bonds and, to the extent not otherwise provided for, bond anticipation notes of the district. Any surplus from operating revenues shall be set aside as a separate fund to be applied to the payment of interest on or to the retirement of bonds or bond anticipation notes. The sanitary district board may modify and adjust these service charges and rates.

(b) The district board may require system development fees only in accordance with Article 8 of Chapter 162A of the General Statutes."

SECTION 3. G.S. 153A-277 reads as rewritten:

"**§ 153A-277. Authority to fix and enforce rates.**

(a) A county may establish and revise from time to time schedules of rents, rates, fees, charges, and penalties for the use of or the services furnished or to be furnished by a public enterprise. Schedules of rents, rates, fees, charges, and penalties may vary for the same class of service in different areas of the county and may vary according to classes of service, and different schedules may be adopted for services provided outside of the county. A county may include a fee relating to subsurface discharge wastewater management systems and services on the property tax bill for the real property where the system for which the fee is imposed is located.

…

(a2) A county may require system development fees only in accordance with Article 8 of Chapter 162A of the General Statutes.

…."

SECTION 4.(a) G.S. 160A-314 reads as rewritten:

"**§ 160A-314. Authority to fix and enforce rates.**

(a) A city may establish and revise from time to time schedules of rents, rates, fees, charges, and penalties for the use of or the services furnished or to be furnished by any public enterprise. Schedules of rents, rates, fees, charges, and penalties may vary according to classes of service, and different schedules may be adopted for services provided outside the corporate limits of the city.

…

(e) A city may require system development fees only in accordance with Article 8 of Chapter 162A of the General Statutes."

SECTION 4.(b) G.S. 160A-317 is amended by adding a new subsection to read:

"(a4) System Development Fees. – A city may require system development fees only in accordance with Article 8 of Chapter 162A of the General Statutes."

SECTION 5.(a) G.S. 162A-6(a) is amended by adding a new subdivision to read:

"(9a) To impose and require system development fees only in accordance with Article 8 of this Chapter."

SECTION 5.(b) G.S. 162A-9 is amended by adding a new subsection to read:

"(a5) An authority may require system development fees only in accordance with Article 8 of this Chapter."

SECTION 6.(a) G.S. 162A-36(a) is amended by adding a new subdivision to read:

"(8a) To impose and require system development fees only in accordance with Article 8 of this Chapter."

SECTION 6.(b) G.S. 162A-49 reads as rewritten:

"**§ 162A-49. Rates and charges for services.**

(a) The district board may fix, and may revise from time to time, rents, rates, fees and other charges for the use of land for the services furnished or to be furnished by any water system or sewerage system or both. Such rents, rates, fees and charges shall not be subject to supervision or regulation by any bureau, board, commission, or other agency of the State or of any political subdivision. Any such rents, rates, fees and charges pledged to the payment of revenue bonds of the district shall be fixed and revised so that the revenues of the water system or sewerage system or both, together with any other available funds, shall be sufficient at all times to pay the cost of maintaining, repairing and operating the water system or the sewerage system or both, the revenues of which are pledged to the payment of such revenue bonds, including reserves for such purposes, and to pay the interest on and the principal of such revenue bonds as the same shall become due and payable and to provide reserves therefor. If any such rents, rates, fees and charges are pledged to the payment of any general obligation bonds issued under this Article, such rents, rates, fees and charges shall be fixed and revised so as to comply with the requirements of such pledge. The district board may provide methods for collection of such rents, rates, fees and charges and measures for enforcement of collection thereof, including penalties and the denial or discontinuance of service.

(b) The district board may require system development fees only in accordance with Article 8 of this Chapter."

SECTION 7.(a) G.S. 162A-69 is amended by adding a new subdivision to read:

"(8a) To impose and require system development fees only in accordance with Article 8 of this Chapter."

SECTION 7.(b) G.S. 162A-72 reads as rewritten:

"**§ 162A-72. Rates and charges for services.**

(a) The district board may fix, and may revise from time to time, rents, rates, fees and other charges for the use of and for the services furnished or to be furnished by any sewerage system. Such rents, rates, fees and charges shall not be subject to supervision or regulation by any bureau, board, commission, or other agency of the State or of any political subdivision. Any such rents, rates, fees and charges pledged to the payment of revenue bonds of the district shall be fixed and revised so that the revenues of the sewerage system, together with any other available funds, shall be sufficient at all times to pay the cost of maintaining, repairing and operating the sewerage system the revenues of which are pledged to the payment of such revenue bonds, including reserves for such purposes, and to pay the interest on and the principal of such revenue bonds as the same shall become due and payable and to provide reserves therefor. If any such rents, rates, fees and charges are pledged to the payment of any general obligation bonds issued under this Article, such rents, rates, fees and charges shall be fixed and revised so as to comply with the requirements of such pledge. The district board may provide methods for collection of such rents, rates, fees and charges and measures for enforcement of collection thereof, including penalties and the denial or discontinuance of service.

(b) The district board may require system development fees only in accordance with Article 8 of this Chapter."

SECTION 8. G.S. 162A-85.13 is amended by adding a new subsection to read:

"(a1) The district board may require system development fees only in accordance with Article 8 of this Chapter."

SECTION 9. G.S. 162A-88 reads as rewritten:

"**§ 162A-88. District is a municipal corporation.**

(a) The inhabitants of a county water and sewer district created pursuant to this Article are a body corporate and politic by the name specified by the board of commissioners. Under that name they are vested with all the property and rights of property belonging to the corporation; have perpetual succession; may sue and be sued; may contract and be contracted with; may acquire and hold any property, real and personal, devised, sold, or in any manner conveyed, dedicated to, or otherwise acquired by them, and from time to time may hold, invest, sell, or dispose of the same; may have a common seal and alter and renew it at will; may establish, revise and collect rates, fees or other charges and penalties for the use of or the services furnished or to be furnished by any sanitary sewer system, water system or sanitary sewer and water system of the district; and may exercise those powers conferred on them by this Article.

(b) The district board may require system development fees only in accordance with Article 8 of this Chapter."

SECTION 10.(a) G.S. 1-52(15) reads as rewritten:

"(15) For the recovery of taxes paid as provided in ~~G.S. 105-381.~~G.S. 105-381 or for the recovery of an unlawful fee, charge, or exaction collected by a county, municipality, or other unit of local government for water or sewer service or water and sewer service."

SECTION 10.(b) This section is to clarify and not alter G.S. 1-52.

SECTION 11. Sections 1 through 9 of this act become effective October 1, 2017, and apply to system development fees imposed on or after that date. Section 10 of this act, being a clarifying amendment, has retroactive effect and applies to claims accrued or pending prior to and after the date that section becomes law. Nothing in this act provides retroactive authority for any system development fee, or any similar fee for water or sewer services to be furnished, collected by a local governmental unit prior to October 1, 2017. The remainder of this act is effective when it becomes law and applies to claims accrued or pending prior to and after that date.

In the General Assembly read three times and ratified this the 29th day of June, 2017.

s/ Daniel J. Forest
President of the Senate

s/ Tim Moore
Speaker of the House of Representatives

_____
Roy Cooper
Governor

Approved _____.m. this _____ day of _____, 2017

APPENDIX B
Local Water Supply Plan

Ranlo

2019

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

Complete

Water System Name:	Ranlo	PWSID:	01-36-034
Mailing Address:	1624 Spencer Mountain Road Gastonia, NC 28054	Ownership:	Municipality
Contact Person:	Jason Green	Title:	Public Works Director
Phone:	980-745-3083	Cell/Mobile:	--
Secondary Contact:	Martin D Wilson	Phone:	919-745-7968
Mailing Address:	1100 Hidden Creek Ct Hickory, NC 28602	Cell/Mobile:	--

Distribution System

Line Type	Size Range (Inches)	Estimated % of lines
Cast Iron	4	4.85 %
Ductile Iron	6	8.86 %
Ductile Iron	8	20.67 %
Galvanized Iron	2	51.82 %
Polyvinyl Chloride	10	5.95 %
Polyvinyl Chloride	12	7.85 %

What are the estimated total miles of distribution system lines? 27 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? 110

How old are the oldest meters in this system? 5 Year(s)

How many meters for outdoor water use, such as irrigation, are not billed for sewer services? 19

What is this system's finished water storage capacity? 0.1000 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? No, As Needed

Does this system have a cross-connection program? No

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? No

Does this system have a leak detection program? No

Water Conservation

What type of rate structure is used? Uniform

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
South Fork Catawba River (03-2)	100 %	Gaston	100 %

What was the year-round population served in 2019? 3,668

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	1,617	0.1920	0	0.0000
Commercial	25	0.0839	0	0.0000
Industrial	25	0.0407	0	0.0000
Institutional	0	0.0000	0	0.0000

How much water was used for system processes (backwash, line cleaning, flushing, etc.)? 0.0001 MGD

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	0.3720	0.0000	May	0.3892	0.0000	Sep	0.4020	0.0000
Feb	0.3635	0.0000	Jun	0.3620	0.0000	Oct	0.3413	0.0000
Mar	0.3404	0.0000	Jul	0.4225	0.0000	Nov	0.3520	0.0000
Apr	0.3918	0.0000	Aug	0.4323	0.0000	Dec	0.3520	0.0000

The town does not track maximum day

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			
Two Rivers Utilities	01-36-010	0.3768	365	0.6000	2016	Yes	Yes	12	Regular

4. Wastewater Information

Monthly Discharges

	Average Daily Discharge (MGD)		Average Daily Discharge (MGD)		Average Daily Discharge (MGD)
Jan	0.3219	May	0.2378	Sep	0.2897
Feb	0.3918	Jun	0.2670	Oct	0.2418
Mar	0.2552	Jul	0.2143	Nov	0.2777

Apr	0.2810	Aug	0.2252	Dec	0.2983

How many sewer connections does this system have? 1,485

How many water service connections with septic systems does this system have? 176

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

Wastewater Interconnections

Water System	PWSID	Type	Average Daily Amount		Contract Maximum (MGD)
			MGD	Days Used	
Two Rivers Utilities	01-36-010	Discharging	0.2742	365	0.4000

5. Planning

Projections

	2019	2020	2030	2040	2050	2060
Year-Round Population	3,668	3,704	3,741	4,115	4,527	4,979
Seasonal Population	0	0	0	0	0	0
Residential	0.1920	0.1938	0.1957	0.2153	0.2368	0.2605
Commercial	0.0839	0.0852	0.0861	0.0947	0.1041	0.1145
Industrial	0.0407	0.0407	0.0410	0.0410	0.0410	0.0410
Institutional	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
System Process	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Unaccounted-for	0.0601	0.0607	0.0793	0.0864	0.0943	0.1029

Demand v/s Percent of Supply

	2019	2020	2030	2040	2050	2060
Surface Water Supply	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Ground Water Supply	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Purchases	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000
Future Supplies		0.0000	0.0000	0.0000	0.0000	0.0000
Total Available Supply (MGD)	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000
Service Area Demand	0.3768	0.3805	0.4022	0.4375	0.4763	0.5190
Sales	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Future Sales		0.0000	0.0000	0.0000	0.0000	0.0000
Total Demand (MGD)	0.3768	0.3805	0.4022	0.4375	0.4763	0.5190
Demand as Percent of Supply	63%	63%	67%	73%	79%	87%

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 52 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? none

What supplies other than the ones listed in future supplies are being considered to meet your future supply needs? The town will be working with Two Rivers Utilities to obtain additional water in the future

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

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:

APPENDIX C
Ranlo CIP

UTILITY FEASIBILITY STUDY

TOWN OF RANLO, NORTH CAROLINA

DOUGLAS CHAPMAN, PE

McGill ASSOCIATES

Engineering • Planning • Finance
1240 19th Street Lane NW
Hickory, North Carolina 28601
Firm License #C-0459

September, 2010

09.01119

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SECTION I INTRODUCTION

The purpose of this report is to investigate options for the future operations and maintenance of the Town of Ranlo water and sewer utility system. To consider future situations, an evaluation of options for regionalizing these systems with the City of Gastonia and comparison of those with the continued operation of the system as purchasing treatment from Gastonia must be completed. This report represents the joint efforts of the Town of Ranlo and the City of Gastonia.

Ranlo, North Carolina

To establish a scope of work for this evaluation, as well as determine the alternatives for consideration, several meetings were held with representatives from both Ranlo and Gastonia. The alternatives selected for evaluation include four (4) options:

- Alternative A – Existing Operations

  Continue with the existing operations and management scenario, which maintains Ranlo and Gastonia as separate systems, with Ranlo purchasing water and wastewater treatment from Gastonia.

- Alternative B – Existing Operations and Reactivate the Ranlo Water Treatment Plant

  Continue with the existing operations and management scenario, which maintains Ranlo and Gastonia as separate systems, with rehabilitating the existing Ranlo Water Treatment Plant, and purchasing wastewater treatment from Gastonia.

- Alternative C – Merge with Gastonia

  The Town of Ranlo water and sewer systems would merge with the City of Gastonia water and sewer systems; and, the Town of Ranlo water treatment plant would remain out of service.

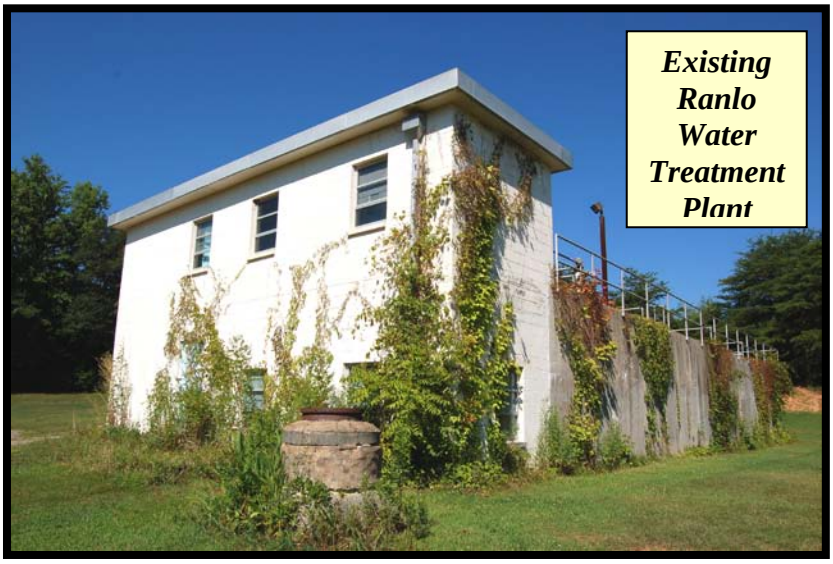
Two (2) key elements in a study of this nature include: 1) a technical evaluation of the existing infrastructure to identify needed improvements; and 2) a financial evaluation to determine the cost effectiveness of each option.

During this process, various meetings were held with the operations, technical, and engineering staffs from both the Town of Ranlo and the City of Gastonia to gain information needed. Financial information was also obtained from both municipalities to develop a historical background for making future cost projections to operate and provide service.

SECTION II EXISTING UTILITY SYSTEM

The Town of Ranlo currently owns and operates water and wastewater systems, which serve the Town limits and portions of the neighboring area. For recent history, Ranlo has purchased water supply and wastewater treatment service from the City of Gastonia. The Town operates the water distribution and wastewater collection system as a stand-alone system from the City of Gastonia. The following is a summary of the major components and general conditions of the existing water and sewer systems.

WATER SUPPLY AND TREATMENT



Existing Ranlo Water Treatment Plant

Ranlo currently owns a water treatment plant that was taken out of service in the 1990s. The facility receives and transports raw water from the South Fork of the Catawba River to a ground storage reservoir, which is located at the water treatment plant. The water treatment plant, which has a permitted capacity of 600,000 gallons per day (GPD), was built in 1985 and uses conventional treatment technologies with chemical mixing, flocculation, sedimentation, and gravity filtration. Treated water is stored on site in a 500,000 gallon steel ground storage tank, from which high service pumps deliver water into the distribution system. The plant has been off-line for a number of years and is in need of significant repairs and modifications to be placed back into service.

As a general note, the proposal of putting this plant back on-line was discussed with staff from the North Carolina Department of Environment and Natural Resources – Public Water Supply Section (NCDENR-PWSS). It was stated by NCDENR-PWSS during these discussions that they would treat this situation as if this were a new plant being proposed for construction and would be subject to all current rules and regulations. Of significant importance is the issue of the existing raw water intake on the South Fork of the Catawba River which would have to be permitted as if it were a brand new intake. This would involve the preparation and submittal of an Environmental Assessment (EA) for review and comment. It is our understanding however that should the plant be put back on-line that raw water would be purchased from the Town of Gastonia via an existing raw water main on Dallas Spencer Mountain Road.

WATER DISTRIBUTION SYSTEM

Abandoned water lines running through sewer manholes

A cursory review of the water system was made; however, no hydraulic analysis was performed as part of this study. Only visual inspections of fire hydrants and valve boxes were completed during field work; though, the existing water system maps were reviewed to analyze water line sizing.

Based on these evaluations, it appears that portions of the Town of Ranlo Water System, which are closer to the central area of the Town – near Town Hall – are older, dating back to the original mill days. Sections of the peripheral water system and some of the main lines through Town, along with upgrades that have been completed in recent years, are newer sections and; thus, in better condition.

According to Ranlo water system maps, which were provided by Town Staff, it appears that a significant portion of the Town's water system consists of 2-inch, 3-inch, and 4-inch water lines – most of which are presumed to be constructed of galvanized pipe. A number of these areas include dead-end links [of near four (4) or five (5) thousand feet] with numerous customers connected to these small sections of water line.

The water system currently does not have an operable water storage tank to maintain system pressure or extended storage for fire flow conditions. The system relies on water storage from the City of Gastonia water system, which also establishes the pressure gradient within the Town of Ranlo water system. This interconnection is accomplished through a single point along Spencer Mountain Road near Ozark Avenue. Refer to Map 1 in the Appendix for an overview of the water system.

It should be noted that the Town of Ranlo does own one (1) elevated water storage tank located on the northeast side of Town, just off of Spencer Mountain Road. However, this elevated tank has been out of storage for a number of years and would require extensive rehabilitation and recoating, if used.

WASTEWATER COLLECTION SYSTEM

A similar overview of the sewer collection system was completed. Visual inspections of manholes in select areas throughout Town were performed to identify the system and the materials used. From our observation, it appears that many of the manholes in the central portion of Town are brick and are in poor-to-fair condition. (Refer to Map 2 in the Appendix for an overview of the sewer system.)

The majority of the sewer collection lines in the system are "gravity", with only four (4) pump stations.

The Waste Management pump station is a newly constructed pump station, which is located on the east side of the Town of Ranlo and serves much of the area east of Spencer Mountain Road. This pump station is equipped with submersible pumps, emergency generator, and related hoists and appurtenances. The facility was recently completed and is in no need of repairs currently.


Waste Management pump station

The old wastewater plant pump station is located off Duff Street and serves the northern section of Town. This pump station contains two (2) suction-lift pumps and includes a Parschal flume flow meter and manual bar screen. The pump station is in good operable condition and only routine pump maintenance/repairs are needed.

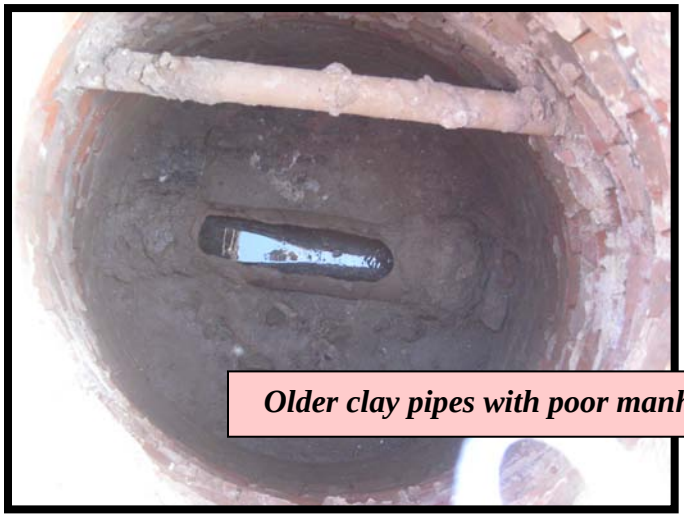
The next pump station is located just south of Sunset Drive along Burton Branch. It serves the western side of the Town of Ranlo. This submersible pump station was rehabilitated several years ago and is in good operable condition. The facility is equipped with an emergency generator for power back-up.


Sunset Drive Pump Station

The final pump station was installed by a developer to serve the Spencer Heights Subdivision. This submersible pump station is only a few years old and includes an emergency generator and is in good operable condition. This pump station has yet to be taken over

by the Town and is still operated and maintained by the developer through a private contractor.

The Ranlo Wastewater Collection System has been constructed over a number of years, with the older sections showing significant age and deterioration; and, with varying levels of conditions in the newer areas. In several of the newer subdivisions, which were constructed in the last 10 to 15 years, the lines are primarily PVC with precast concrete manholes and in good condition. In contrast, a number of the lines in the older portion of Town – in and around Town Hall, to the north – the lines are older clay pipes with brick manholes, some of which have abandoned galvanized water lines that extend through them. Further, in a few areas, nominal sewer back-ups observed in field observations, which lead us to believe that there may be some segments of gravity sewers without adequate slopes.



Older clay pipes with poor manholes

The Town Board, as well as Town Staff, report that high wastewater flows are an issue within the system during significant rain events. It is assumed that these extraneous flows are the result of infiltration of ground water into faulty facilities and/or inflow of stormwater directly into the sewer system. This fact is substantiated based on flow meter chart recordings at the Town's connection point with the City of Gastonia's system. Though infiltration and inflow (I/I) is an issue within the system, the Town of Ranlo only exceeded their minimum contractual wastewater flow with the City of Gastonia thirty six percent (36%) of the study period from April 2006 through March 2010. It should be noted that the Town has made headway in addressing the I/I issue by replacing sections of sewer line; most significantly, the section leading from Ranlo Avenue east, to the Waste Management pump station.

SECTION III PROPOSED CAPITAL IMPROVEMENTS

The technical component of the utility feasibility study consisted of the evaluation of existing water and sewer infrastructure to assess need improvements. This evaluation was not an in-depth (by component) analysis; but instead, a broad overview with which to develop a Capital Improvement Plan (CIP) for the Town of Ranlo to undertake for the long-term viability of the system. In preparation of the CIP, population projections from the North Carolina State Data Center (NC SDC) were reviewed as well as discussions with Town Staff – to determine if capacity expansions were necessary to meet anticipated growth in the next ten (10) years. From these evaluations, it appears that the existing water supply and wastewater disposal capacities are sufficient to meet the Town's needs for the next decade. However, unexpected growth and demand for water supply and/or wastewater disposal could occur if significant increases in population, (such as generated growth as a result of the close proximity to the Charlotte Metropolitan Region), industrial development, commercial growth, etc., occur during this period. Should the need for additional capacity occur, we would propose negotiations with the City of Gastonia to meet those needs beyond the existing capacities – regardless of the alternative considered.

WATER SUPPLY AND TREATMENT

One purpose of this study was to develop a probable cost opinion and financial analysis of updating and reactivating the existing Ranlo Water Treatment Plant. Through site visits and discussion with Town staff and representatives of the North Carolina Department of Environment/Environmental Health and Natural Resources – Public Water Supply Section (PWS), numerous deficiencies have been identified at the water treatment plant. The following is a list of recommended and required improvements, accompanied in some cases by photos of existing facilities.

- Raw Water Pump Intake and Pump Station: The existing raw water intake and pump station are in need of significant upgrades however as stated above, raw water supply for the plant would be purchased from the City of Gastonia via an existing raw water line that is installed along Dallas Spencer Mountain Road. To transport raw water from this line to the plant would require approximately 700 feet of new raw water main and a new raw water flow meter and flow control valve installed in a concrete vault.

- Chemical Storage and Feed System: The existing chemical storage and feed system is in disrepair and in need of numerous improvements. It is assumed that due to the extended time period that the plant has been offline that the existing bulk caustic storage tank will need to be replaced. Additionally, a new bulk alum storage tank is highly recommended as well as new chemical day tanks, transfer pumps, metering pumps and chemical piping.

- In-Line Mixer: Treatment chemicals are mixed with the raw water by means of an in-line mechanical mixer. It is assumed that this unit will require extensive service at a minimum or replacement. For the purposes of this evaluation it is assumed that a new unit will be required.

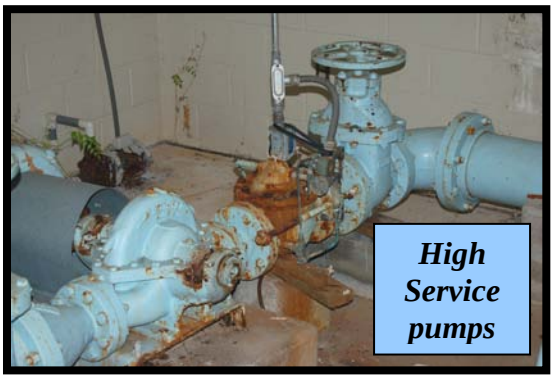
- Pre-Treatment: As stated previously, the plant utilizes a conventional treatment scheme. Pre-treatment consists of mechanical flocculation and sedimentation. The plant has one (1) flocculation basin equipped with two (2) vertical mechanical mixers. The mixing impellers appear undersized for the basin dimensions which are not conducive to proper mixing. Additionally, the motors will more than likely need to be replaced and additional handrails are required for safety. Following the flocculation basin is a single sedimentation basin. As is the case with the flocculation basin, the concrete appears to be in generally good condition. However the overflow piping will need to be cleaned, sandblasted and repainted, the mud valves will need to be replaced and additional handrails are required for safety. More significantly however, it is recommended that an additional sedimentation basin be constructed in parallel with the current basin. While not a statutory requirement, discussions with NCDENR - PWSS staff indicate that this will be strongly recommended. A second sedimentation basin is recommended to provide redundancy and to allow cleaning and maintenance of the basin without interruption of water production.

- Filtration: Following sedimentation, water flows to one (1) mixed media filter for treatment. The media in this filter will need to be replaced and the surface sweeps will require servicing to return them to operation. Additionally, and more importantly, a second filter will be required to comply with current regulations governing water treatment plants.

- Clearwell Storage:

Finished water is stored in a 500,000 gallon (approx.) ground level steel storage tank. The tank shows signs of wear on the exterior and will need to be cleaned and repainted before being put back in service to prevent further corrosion. It is safe to assume that the interior of the tank will require repainting as well although no inspection of the interior of the tank was made.

- High Service Pumps: The high service pump station consists of a masonry building with a wooden truss roof that house the two (2) high service pumps, the backwash pump and their associated electrical gear. The high service pumps are horizontal



split case pumps rated at 400 GPM at 300 feet of head. The backwash pump is also a horizontal split case pump with a capacity of 2000 GPM at 50' of head. The operability of the pumps is not known but it would be prudent to assume that they would need to be replaced or extensively rehabilitated. New pump control valves will be required as well and the piping should be cleaned and repainted. The building itself will require some improvements including cleaning and repainting and replacement of the roof.

- Electrical System:


Emergency Generator

A detailed investigation of the electrical system serving the facility was not performed. It has been reported by Town staff that the existing standby generator is in working condition however without knowing for sure it is recommended to assume it will need to be replaced. Likewise, the rest of the power and lighting equipment at the plant will most certainly require some improvements and upgrades. An estimated cost for these improvements was based on similar projects completed by McGill Associates.

- Treatment Plant Building: In general, the treatment plant building is in fair condition considering the length of time it has been out of service. Clearing of vines and weeds is needed along with an overall cleaning and repainting of the structure both on the exterior and interior. Some replacement of light fixtures, fans, louvers etc. should be anticipated but since the facility did not have power, a detailed breakdown of these improvements cannot be accurately provided.


Treatment Plant Laboratory

The laboratory is in need of upgrade and modernization including installation of all new monitoring equipment as necessary to comply with current regulations. This would include new turbidimeters, chlorine analyzers, pH probes and meters. Replacement or repair of most of the plant control system should also be planned for given the age of this equipment.

- Elevated Storage: It is our understanding that along with the abandonment of the water treatment plant, the switch to purchasing water from Gastonia also resulted in the abandonment of the Town's elevated storage tank. Reactivation of the plant would necessitate a replacement tank that is sized to meet the current average daily demands of the system. It is estimated that a minimum of a 250,000 gallon elevated storage tank would be required.

Elevated storage tank

The recommended improvements listed above are intended to outline the improvements and upgrades necessary to reactivate the Town of Ranlo Water Treatment Plant. The improvements recommended are those that are necessary to bring the facility into compliance with current regulations and do not include any work that would increase the capacity of the facility

The Table T-1 below presents itemized estimated costs for the suggested improvements. These costs are preliminary and should be considered planning level costs and not budgetary figures. In the event that the Town elects to pursue this option further a more detailed evaluation including electrical and structural reviews would be necessary.

TABLE T-1
WATER TREATMENT PLANT IMPROVEMENTS

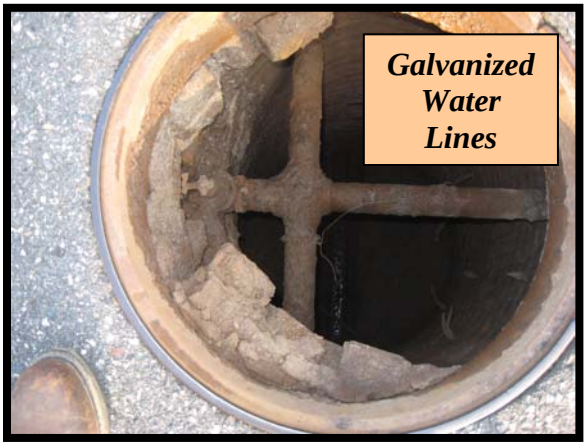
Project	Estimated Cost
New Sedimentation Basin	$401,700
New Filter	$267,800
Raw Water Main Connection to Gastonia	$107,100
Chemical Feed Improvements	$234,800
Rehab Existing Filter	$100,900
Rehab Existing Sed Basin	$67,000
Rehab Existing Flocculation Basin	$80,300
Rehab Existing High Service PS	$133,900
Repaint Existing Clearwell	$114,300
Misc. Control Building Improvements	$107,100
Misc. Lab Improvements	$26,800
New 250,000 Gallon Elevated Tank	$669,500
Electrical Improvements	$334,800
Total Water Treatment Plant Improvements	**$2,646,000**

Should an expansion of capacity at the water treatment plant be planned, a practical incremental increase in capacity would be from 0.6 MGD to 0.9 MGD. Based on current construction costs, regulations, and replicating the current layout, the anticipated project cost for this expansion is approximately $3,000,000. Again, purchasing additional water capacity from the City of Gastonia would be the most cost-effective solution.

WATER DISTRIBUTION SYSTEM

Based on reports by Town Staff, the only area currently experiencing low-pressure problems is the Smyre Village area, which is located to the south of Highway 7/Lowell Road. It is anticipated that this area will be taken over by the City of Gastonia due to annexation (regardless of the outcome of this study). From our limited evaluation of the

system, we have concluded that the greatest deficiency in the water system is the quantity of small galvanized water lines. Many of these lines far exceed lengths designated by the NC DENR Rules Governing Public Water Systems. These rules require larger than 2-inch water lines if a dead-end water line is greater than 1,000 feet in length, a looped water line is greater than 2,000 feet, or there are more than twenty (20) connections on the line. Not only are many of the lines undersized, but most (if not all) of these small lines are galvanized and have sufficient age to warrant corrosion-restricting flows and potentially create water quality issues. Therefore, we propose a plan to systematically replace these lines and connect customers onto the new lines.



To develop the CIP, a general cost-per-foot and per condition was placed on these lines (whether they were anticipated in the street or off of the edge of the street) and what the proposed line size would be. Table T-2 (below) outlines the total project estimated cost per foot associated with the various line sizes and installation conditions.

TABLE T-2
WATER LINE REPLACEMENT UNIT PRICES

Line Size	Street Condition	Estimated Total Project Cost Per Linear Foot
2 - inch	Shoulder	$32
2 - inch	In Pavement	$55
6 - inch	Shoulder	$53
6 - inch	In Pavement	$80
8 - inch	Shoulder	$61
8 - inch	In Pavement	$90

Based on footages derived from Town of Ranlo and Gaston County Utility Maps (and the aforementioned replacement prices), we have developed a prioritized listing used to create the Capital Improvement Plans found in the Appendix.

Based on current system demands and the hydraulic ability to operate effectively off of the City of Gastonia water storage tanks, we do not propose construction of an elevated storage tank in the Town of Ranlo, outside of Alternate C. Should demands increase significantly or the requirements for fire flow increase, an elevated water storage tank could become necessary in the future.

WASTEWATER COLLECTION SYSTEM

Infiltration and inflow (I/I) is an issue with the Town of Ranlo wastewater collection system. Upon reviewing flow chart recordings for various time periods, it appears that average daily flows can increase by as much as 200-250% during rain events – which is a direct result of sewer system failures and needs. Though, shifting from these daily flow recordings to look at monthly billing records from the City of Gastonia, it appears that the Town of Ranlo has only exceeded the minimum purchased wastewater treatment amount during 35% of the months from April 2006 to March 2010. Given this fact, we have not rated wastewater collection system rehabilitation and replacement as high as water system upgrades. In addition, many of the lines along the periphery of the system are newer lines, which appear to be in good condition. As a result, our focus on sewer line replacement is in the central areas surrounding- and north of Town Hall. As previously noted, many of these lines have questionable masonry-built manholes and vitrified clay pipes; some, even having abandoned galvanized water lines through the manholes.

As with water line replacements, the CIP for these projects was developed based on a general cost per foot and per laying condition. Eight-inch and twelve-inch sewer line replacements, inclusive of line work, manholes, service connections, contingencies and engineering services, were estimated at $115 and $130 per linear foot respectively (assuming street cut and patch along the length of the main line). Footages for the

estimates were, again, based on Town of Ranlo and Gaston County maps, which were available. A summary of the sewer lines to be replaced and associated costs are shown in the Capital Improvement Plans, can be found in the Appendix.

From the review performed of the wastewater pump stations, all appear to be in good workable order; and therefore, no replacements or significant repairs are anticipated over the ten (10) year study period.

SECTION IV FINANCIAL ANALYSIS

A financial assessment of the Ranlo water and sewer program has been conducted to determine the present status of the program, effect of the latest, planned projects in the capital improvements plan (CIP), and the feasibility of using the services of the City of Gastonia, as described in the below alternatives:

- Alternative A – Existing Operations without Water Plant
  - Ranlo water and sewer operations continue without refurbishing the water plant.
  - All capital projects are financed using available cash.

- Alternative B – Existing Operations with Water Plant
  - Ranlo water and sewer operations continue but the Town refurbishes its water plant and purchases raw water from Gastonia.
  - The water plant is financed using debt and all other capital projects are financed using available cash.

- Alternative C – Merge with Gastonia
  - The operation of the Ranlo water and sewer program is transferred to Gastonia.
  - All capital projects are financed using available cash.

CAPITAL IMPROVEMENTS

With the assistance of the Town staff, the Ranlo water and sewer program's capital improvements plan (CIP) was updated to reflect the needs inherent to each alternative. Careful consideration of the cash flows associated with these projects was also part of this effort. The resulting cost estimates for capital improvements and equipment under each of the three alternatives are shown in Tables F1 A-C, found in the Appendix.

DEBT SERVICE REQUIREMENTS

The water and sewer fund has two outstanding debt obligations in FY 2011. The first loan used for financing vehicles will mature in FY 2011 after a final payment of $22,500. The second loan used to finance an outfall line and refund prior debt will mature in FY 2012 with a payment of nearly $205,000. In order to maintain a positive net income with large capital improvement projects planned, the analysis assumes that funds will be acquired by using cash on hand under Alternatives A and C or by borrowing capital for the water plant costs under Alternative B. The details of the proposed debt package to fund the water plant are shown in Table F2.

TABLE F-2
RANLO WATER AND SEWER PROGRAM
ALTERNATIVE B – EXISTING OPERATIONS WITH WATER PLANT
PROPOSED FUTURE DEBT PACKAGE

Year	Principal	Yearly Payment	Interest Rate	Term (years)
2012	$ 3,350,550	$320,163	5%	15

REVENUE REQUIREMENT

The annual, required revenue for the Ranlo program is comprised of all the expenditures necessary to ensure consistent, quality service to all users. These expenditures ensure proper operation and maintenance of equipment, development and perpetuation of the system, and maintenance of the utilities' financial integrity. These cost components can be divided into the following categories:

- Salaries and Benefits
- Water & Sewer Treatment
- Operations
- Debt Service
- Capital Outlay

The total of all the items listed above is the required revenue for the Town's water and sewer fund as shown in the following table for FY 2009, the year of the latest available audit at the time of this analysis:

TABLE F-3
RANLO WATER AND SEWER PROGRAM
FY 2009 REVENUE REQUIREMENT

Category	FY 2009 Cost
Salaries and Benefits	$119,886
Water & Sewer Treatment	$522,817
Operations	$125,780
Debt Service	$249,164
Capital Outlay	$104,524
Revenue Requirement	**$1,122,171**

The revenues generated from water and sewer customers should meet or exceed the above revenue requirements in order to avoid subsides from other Town funds. The fund operated with a positive net income during at least the past two years both before and after accrual adjustments. However, FY 2009 water and sewer revenues totaled $1,013,877 million, yielding a net loss of $108,294 before accrual adjustments. This margin must continue to be closely monitored because growth in expenditures due to inflation and capital needs can create further operating losses that require the spending of the program's fund balance or possibly subsidies from other funds.

FINANCIAL ANALYSIS

The Financial Analysis for each of the three alternatives shown in Tables F4 A-C, found in the Appendix, provide the details of projections for the water and sewer program, including the capital improvements program for each of the alternatives. The Financial Analysis has been developed with audit information from FY 2007 through FY 2009, Year to Date figures for FY

2010, and budget expenditures for FY 2011. The following assumptions were developed for the analysis through the examination of financial trend data and discussions with the Town staff:

- Water and sewer revenues are projected to be $956,000 and $1.05 million in FY 2010 and 2011 respectively and maintain an average annual growth rate of 1% thereafter, based upon historical growth trends. Total expenditures are projected to be $1.04 million and $1.02 million in FY 2010 and 2011 respectively with maintenance and other expenses growing at an average annual rate of 6%, salaries and benefits growing at an average annual rate of 5% and other administrative expenditures growing at average annual rates of 3-4%.
- Gastonia's water and/or sewer volume charges to Ranlo will be their lowest volume charges to inside users, $2.60 and $3.26 per 1000 gallons for water and sewer respectively as of FY 2011, and increase by 8% in FY 2012 & FY 2013 and 5% in FY 2014. Thereafter, it is assumed that they will grow at an average annual rate of 1.5%.
- If the Town of Ranlo purchases raw water service from Gastonia, volume charges are projected to be $0.35 per 1000 gallons.
- If the Ranlo system is transferred to the Gastonia system, it is assumed to occur July 1, 2012.
- If the Town of Ranlo merges with Gastonia, water and sewer treatment costs are expected to decrease to reflect Gastonia's cost to treat water and sewer. Gastonia's water and sewer treatment costs are based upon projected Ranlo flows and estimated Gastonia treatment costs of $1.46 and $2.97 per 1000 gallons respectively. All other operating costs are expected to be unaffected.
- Ranlo' general fund will retain the water and sewer fund's unallocated fund balance if the system merges with Gastonia. In addition, the Ranlo debt obligations will remain with Ranlo. All related operating expenditures will transfer to Gastonia.

- Merging operations with Gastonia may have an effect upon the Ranlo user rates since the two providers' schedules differ as shown in the following Section: Rate Comparisons.

SECTION V RATE COMPARISONS

As part of the financial analysis, rate considerations are very important to modeling of future revenues. Given the magnitude of effect on the cumulative fund balance to changes in rates, this portion of the analysis is very important to the ending result.

EXISTING RATE STRUCTURE

Both Ranlo and Gastonia have structures of rates for water and sewer customers, distinguished by whether customers are located inside or outside the municipal limits. A summary of the respective current rates are included in Tables R-1 and R-2 below:

TABLE R-1
RANLO WATER AND SEWER
FY 2011 MONTHLY RATES

Water Inside	
¾-inch	$4.50 minimum
1-inch	$6.50 minimum
1-1/2 – inch	$7.50 minimum
Water Consumption	$5.87 per 1,000 gallon
Water Outside	
¾-inch	$4.50 minimum
1-inch	$6.50 minimum
1-1/2 – inch	$7.50 minimum
Water Consumption	$11.74 per 1,000 gallon
Sewer Inside	
0 – 1,000 gallons	$4.69 minimum
1,001 + gallons	$4.69 per 1,000 gallon
Sewer Outside	
0 – 1,000 gallons	$9.38 minimum
1,001 + gallons	$8.52 per 1,000 gallon

The resulting sample monthly water and sewer charge for a Ranlo in-town residence using 3,000 gallons per month is $36.18.

TABLE R-2
GASTONIA WATER AND SEWER
FY 2011 MONTHLY RATES

Water Inside	
Customer Charge	$2.75
Availability Charge (3/4-in)*	$8.40
0 – 6,000 gallons	$2.49 per 1,000 gallon
6,001 – 12,000 gallons	$2.73 per 1,000 gallon
12,000 + gallons	$3.20 per 1,000 gallon
Water Outside	
Customer Charge	$2.75
Availability Charge (3/4-in)*	$16.80
0 – 6,000 gallons	$4.98 per 1,000 gallon
6,001 – 12,000 gallons	$5.46 per 1,000 gallon
12,000 + gallons	$6.40 per 1,000 gallon
Sewer Inside	
Customer Charge	$2.75
Availability Charge (3/4-in)*	$11.00
Volumetric Charge	$3.26 per 1,000 gallon
Sewer Outside	
Customer Charge	$2.75
Availability Charge (3/4-in)*	$19.14
Volumetric Charge	$5.67 per 1,000 gallon

* Availability charge varies with meter size
Other charges apply to customers with high strength discharges to the system

The resulting sample monthly water and sewer charge for a Gastonia in-town customer using 3,000 gallons per month is $42.15.

Gastonia recently completed a water and sewer utility rate study, which included projected rate increases during this ten year study period. These increases are planned as shown in Table R-3 below:

TABLE R-3
PROPOSED GASTONIA WATER AND SEWER RATE INCREASES

Year	Percent Increase
2012	8 %
2013	8 %
2014	5 %
2015 thru 2021	1.5 % per year

PROJECTED RATE STRUCTURES

As a result of our analysis, we have modeled the following water and sewer revenue increases for each of the three Ranlo alternatives. The proposed rate increases only affect base and volume charges but not tap, connection, or other miscellaneous charges. Below are recommendations specific to each alternative:

- Alternate A **Existing Operations without Water Plant**
  6% water and sewer revenue increase in FY 2012.
  5% water and sewer revenue increases in FY 2013-2018.
  1% water and sewer revenue increase in FY 2019.

- Alternate B **Existing Operations with Water Plant**
  10% water and sewer revenue increases in FY 2012-2015.
  2% water and sewer revenue increases in FY 2016-2021.

- Alternate C **Merge with Gastonia / Change to Gastonia Rates**
  Water and sewer revenues increase by 1% and 96% respectively by FY 2016 to match Gastonia rates.

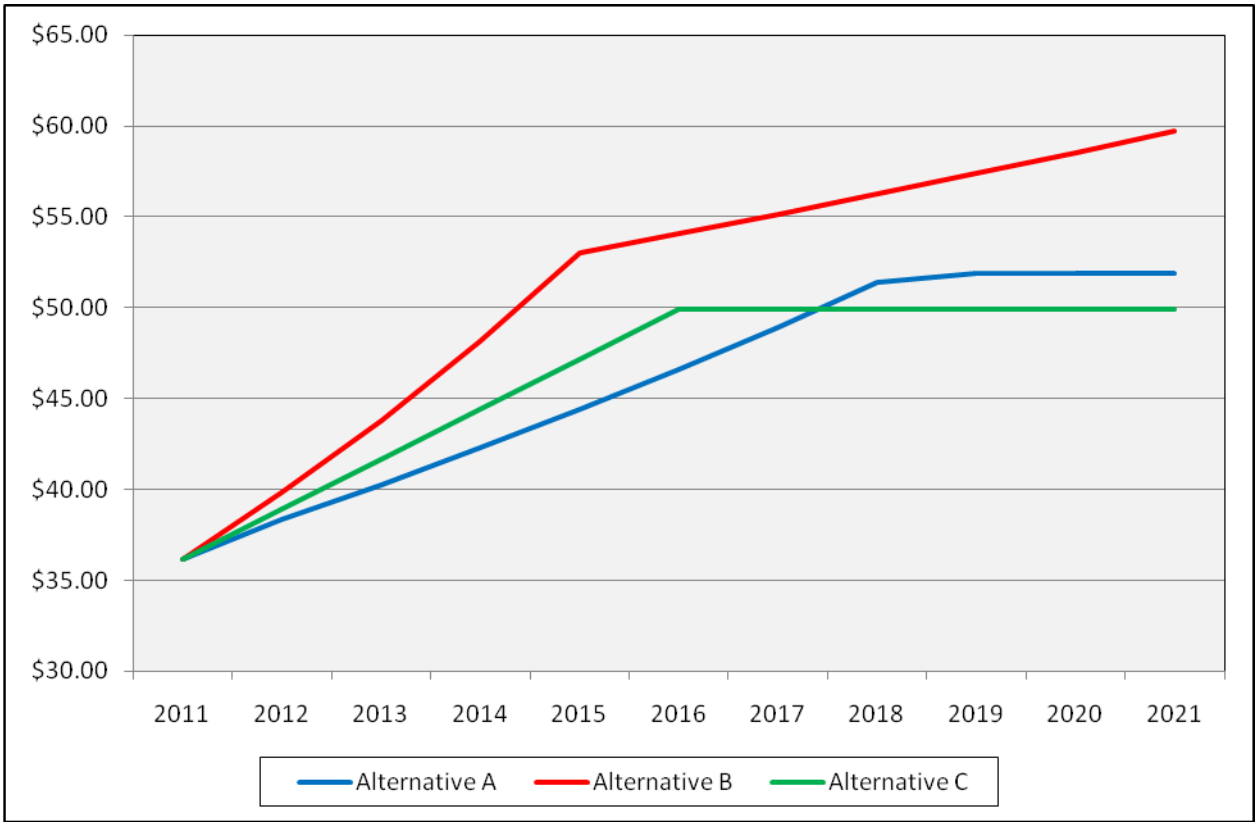
Examples of potential monthly water and sewer bills at the end of the 10-year study period are proposed on Table R-4 below for an in-town customer in Ranlo using 3,000 gallons per month:

TABLE R-4
PROPOSED RANLO 10-YEAR WATER AND SEWER BILL

Alternative	Projected Monthly Bill	Percent Increase
A – Existing Operation Scenario	$51.91	43.5%
B – Reactivate Water Treatment Plant	$59.71	65%
C – Merge – Transition to Gastonia Rates	$49.91	39%

To summarize the trend of water and sewer projected billing under given the four (4) alternatives evaluated, refer to Chart R-1 below.

CHART R-1
PROPOSED RANLO 10-YEAR
INSIDE WATER AND SEWER BILL (3,000 GALLONS PER MONTH)
RATE COMPARISONS



SECTION VI CONCLUSIONS

The purpose of this analysis is to evaluate several options for operation of the Ranlo water and sewer systems. Those options include continuing with the status quo, or merging with the City of Gastonia.

To adequately compare the options, a financial analysis was completed for each one, with consistent CIP programs for each. The results of this analysis outline the revenues and expenditures for each alternative, as well as an assumed rate for Ranlo customers. These results translate into a cumulative fund balance and net present value for each alternative. A summary of the rates, capital outlay, debt, fund balances, and net present value for the Ranlo Water and Sewer Fund for each alternative is shown in Table C-1.

TABLE C-1
RANLO WATER AND SEWER FUND
FINANCIAL SUMMARY OF OPTIONS

	Alternative A	Alternative B	Alternative C as operated by Gastonia
10-year User Rate Increase	43.5%	65%	39%
3,000 gal. Monthly User Charge	$51.91	$59.71	$49.91
10-year Capital Outlay	$2,918,650	$5,564,650	$2,918,650
Total New Debt	--	$3,350,550	--
Unrestricted Net Assets in Year 10	$472,750	$524,637	$3,695,642

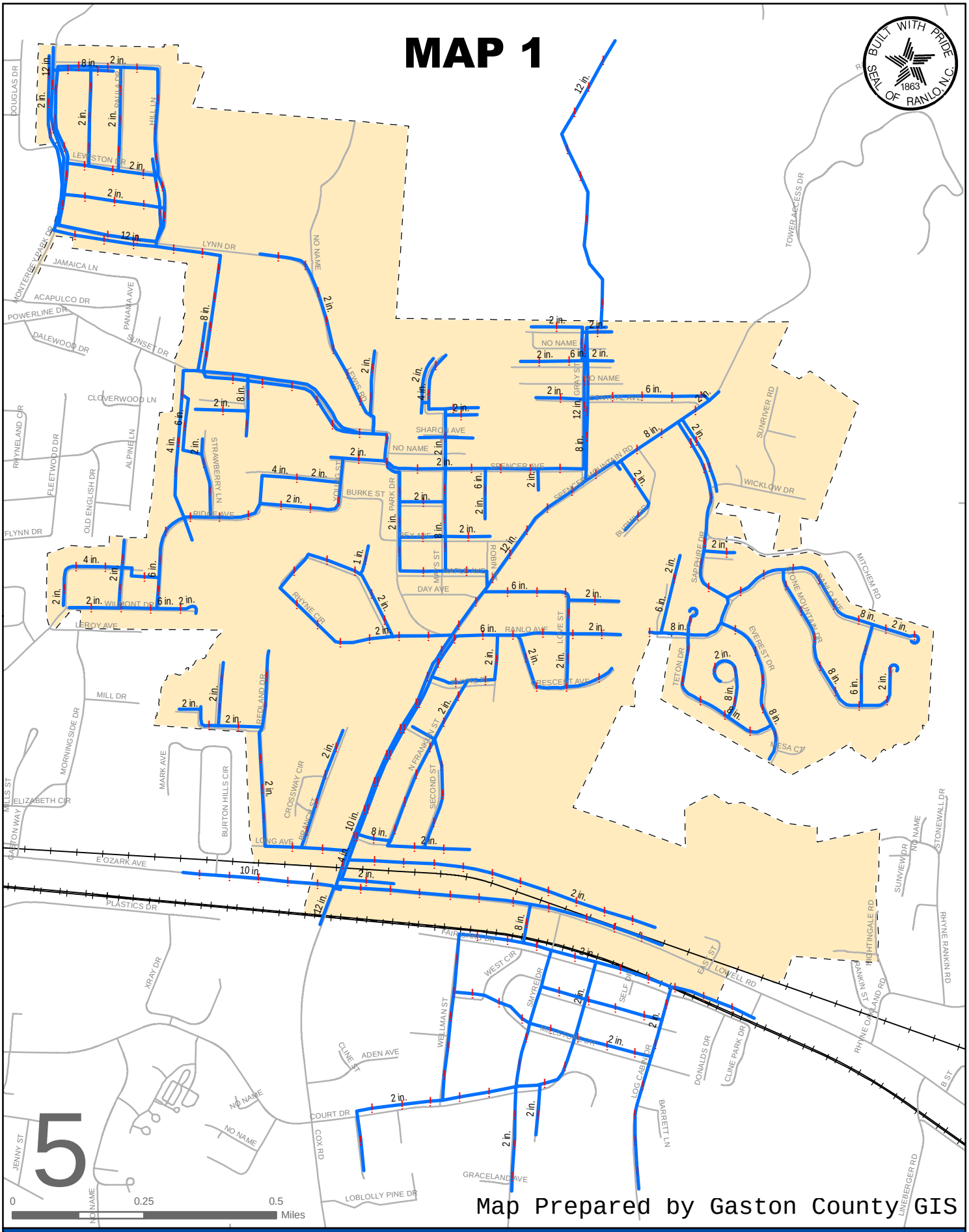
Our evaluation of merger (Alternative C) only considers the transfer of the system from Ranlo to Gastonia and does not consider transfer of personnel or equipment and vehicles used by the staff. We assume that the system would be transferred to Gastonia at no cost (other than construction of the CIP), and that Ranlo would pay no cost for treatment capacity in either the water or

wastewater plants. Our work also assumes that no expansion of capacity is needed to serve Ranlo for the near future.

Each of the proposed alternatives yields a fund balance that is necessary in order to meet the capital requirements of the Ranlo program for the next ten years. The targeted fund balance for Alternatives A and B following year 10 was approximately 30% of annual expenses (meeting the minimum levels established by the NC Local Government Commission). Should a higher balance be desired to accommodate other capital projects, steeper rate increases would be necessary.

Regardless of the selected alternative, future Ranlo revenues should be closely monitored due to the current recession. If Ranlo customer usages decrease, a revenue shortfall may recur. Therefore, it is recommended that the status of the Ranlo water and sewer program be re-assessed in 12 months to ensure all assumptions for the implemented alternative are being realized.

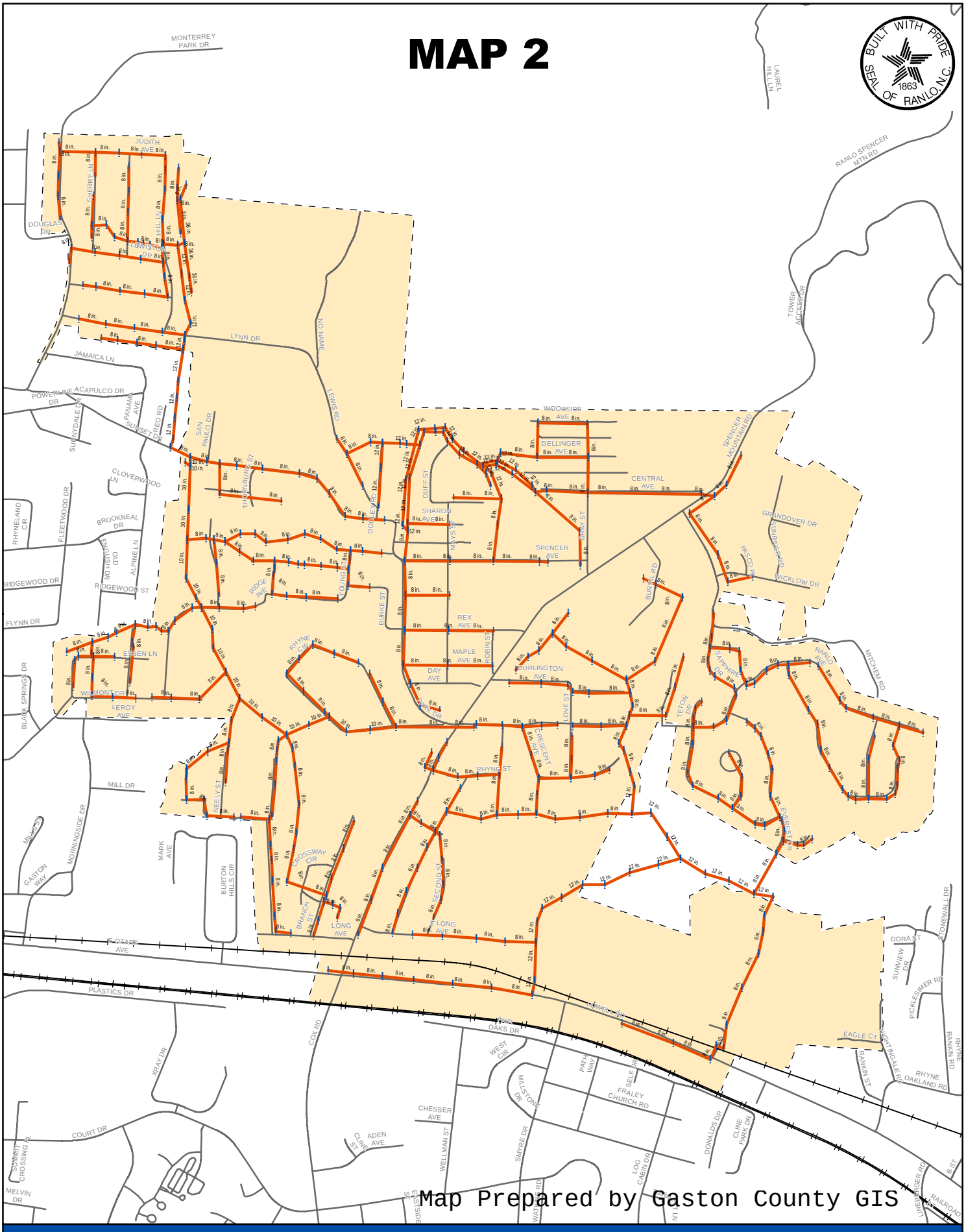
MAP 1



Map Prepared by Gaston County GIS

TOWN OF RANLO WATER LINES MAP

MAP 2



Map Prepared by Gaston County GIS

TOWN OF RANLO SEWER MAP

TABLE F1-A
TOWN OF RANLO WATER AND SEWER FUND
CAPITAL IMPROVEMENTS PLAN WITHOUT WATER PLANT

PROJECT LOCATION	COST	2012 YEAR 1	2013 YEAR 2	2014 YEAR 3	2015 YEAR 4	2016 YEAR 5	2017 YEAR 6	2018 YEAR 7	2019 YEAR 8	2020 YEAR 9	2021 YEAR 10
WATER IMPROVEMENTS											
Priority A - Water Line Replacement List											
Lewis Rd	167,000				167,000						
Spencer Ave	32,300				32,300						
Ridge Ave	99,700					99,700					
Essen Ln	9,200					9,200					
Wilmont Dr	50,400					50,400					
Alpine Ln	27,000					27,000					
Booker St	39,600	39,600									
Reland Dr	72,100	72,100									
Long Ave	24,000	24,000									
Branch St	73,700	73,700									
Second St	109,300			109,300							
Church Ave	20,800			20,800							
Franklin St	64,700			64,700							
Rhyne St	27,800					27,800					
Rhyne Place	45,400					45,400					
Duff Ave	31,400		31,400								
Love St	50,600						50,600				
Spencer Mountain Rd	33,000		33,000								
E. Long Ave	39,300			39,300							
Priority B - Water Line Replacement List											
Essen Ln	111,900				111,900						
Booker St	34,400		34,400								
Neely St	40,300		40,300								
Reland Dr	58,300		58,300								
Branch St	17,300		17,300								
E. Long Ave	17,800			17,800							
Franklin St	7,800			7,800							
Crescent Ave	129,300						129,300				
Ranlo Ave	34,100						34,100				
Off of Burlington Ave	21,000						21,000				
Rhyne St	24,300						24,300				
Maple Ave	36,200										36,200
Rex Ave	85,900									85,900	
Walnut Ave	36,600									36,600	

TABLE F1-A
TOWN OF RANLO WATER AND SEWER FUND
CAPITAL IMPROVEMENTS PLAN WITHOUT WATER PLANT

		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
PROJECT LOCATION	**COST**	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**	**YEAR 6**	**YEAR 7**	**YEAR 8**	**YEAR 9**	**YEAR 10**
Sharon Ave	21,100										21,100
Duff Ave	20,350	20,350									
Dooley St	31,500				31,500						
Off of Spencer Ave	21,800								21,800		
Central Ave	35,900							35,900			
Dellinger Ave	57,200		57,200								
Woodside Ave	19,400			19,400							
WATER IMPROVEMENTS SUBTOTAL	1,879,750	229,750	271,900	279,100	342,700	259,500	259,300	35,900	21,800	122,500	57,300
WASTEWATER IMPROVEMENTS											
Maple Ave	156,100										156,100
Robin St	21,100						21,100				
Rex Ave	151,500									151,500	
Walnut Ave	76,500									76,500	
Spencer Ave	234,500								234,500		
Sharon Ave	71,100										71,100
Woodside Ave	79,200								79,200		
Central Ave	248,900							248,900			
WASTEWATER IMPROVEMENTS SUBTOTAL	1,038,900	0	0	0	0	0	21,100	248,900	313,700	228,000	227,200
TOTAL	2,918,650	229,750	271,900	279,100	342,700	259,500	280,400	284,800	335,500	350,500	284,500

TABLE F1-B
TOWN OF RANLO WATER AND SEWER FUND
CAPITAL IMPROVEMENTS PLAN WITH WATER PLANT

		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
PROJECT LOCATION	**COST**	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**	**YEAR 6**	**YEAR 7**	**YEAR 8**	**YEAR 9**	**YEAR 10**
WATER IMPROVEMENTS											
Priority A - Water Line Replacement List											
Lewis Rd	167,000				167,000						
Spencer Ave	32,300				32,300						
Ridge Ave	99,700					99,700					
Essen Ln	9,200					9,200					
Wilmont Dr	50,400					50,400					
Alpine Ln	27,000					27,000					
Booker St	39,600	39,600									
Reland Dr	72,100	72,100									
Long Ave	24,000	24,000									
Branch St	73,700	73,700									
Second St	109,300			109,300							
Church Ave	20,800			20,800							
Franklin St	64,700			64,700							
Rhyne St	27,800					27,800					
Rhyne Place	45,400					45,400					
Duff Ave	31,400		31,400								
Love St	50,600						50,600				
Spencer Mountain Rd	33,000		33,000								
E. Long Ave	39,300			39,300							
Priority B - Water Line Replacement List											
Essen Ln	111,900				111,900						
Booker St	34,400		34,400								
Neely St	40,300		40,300								
Reland Dr	58,300		58,300								
Branch St	17,300		17,300								
E. Long Ave	17,800			17,800							
Franklin St	7,800			7,800							
Crescent Ave	129,300						129,300				
Ranlo Ave	34,100						34,100				
Off of Burlington Ave	21,000						21,000				
Rhyne St	24,300						24,300				
Maple Ave	36,200										36,200
Rex Ave	85,900									85,900	
Walnut Ave	36,600									36,600	
Sharon Ave	21,100										21,100
Duff Ave	20,350	20,350									
Dooley St	31,500				31,500						
Off of Spencer Ave	21,800								21,800		
Central Ave	35,900							35,900			
Dellinger Ave	57,200		57,200								

TABLE F1-B
TOWN OF RANLO WATER AND SEWER FUND
CAPITAL IMPROVEMENTS PLAN WITH WATER PLANT

PROJECT LOCATION	COST	2012 YEAR 1	2013 YEAR 2	2014 YEAR 3	2015 YEAR 4	2016 YEAR 5	2017 YEAR 6	2018 YEAR 7	2019 YEAR 8	2020 YEAR 9	2021 YEAR 10
Woodside Ave	19,400			19,400							
Water Treatment Plant Improvements											
New Sedimentation Basin	401,700	401,700									
New Filter	267,800	267,800									
Raw Water Main Connection to Gastonia	107,100	107,100									
Chemical Feed Improvements	234,800	234,800									
Rehab Existing Filter	100,900	100,900									
Rehab Existing Sed Basin	67,000	67,000									
Rehab Existing Flocculation Basin	80,300	80,300									
Rehab Existing High Service PS	133,900	133,900									
Repaint Existing Clearwell	114,300	114,300									
Misc. Control Building Improvements	107,100	107,100									
Misc. Lab Improvements	26,800	26,800									
New 250,000 Gallon Elevated Tank	669,500	669,500									
Electrical Improvements	334,800	334,800									
WATER IMPROVEMENTS SUBTOTAL	4,525,750	2,875,750	271,900	279,100	342,700	259,500	259,300	35,900	21,800	122,500	57,300
WASTEWATER IMPROVEMENTS											
Maple Ave	156,100										156,100
Robin St	21,100						21,100				
Rex Ave	151,500									151,500	
Walnut Ave	76,500									76,500	
Spencer Ave	234,500								234,500		
Sharon Ave	71,100										71,100
Woodside Ave	79,200								79,200		
Central Ave	248,900							248,900			
WASTEWATER IMPROVEMENTS SUBTOTAL	1,038,900	0	0	0	0	0	21,100	248,900	313,700	228,000	227,200
TOTAL	5,564,650	2,875,750	271,900	279,100	342,700	259,500	280,400	284,800	335,500	350,500	284,500
		DEBT PKG 1									
DEBT PACKAGES		3,350,550									
ANNUAL DEBT / RESERVES		$2,851,750									
ANNUAL CAPITAL OUTLAY		$24,000	$271,900	$279,100	$342,700	$259,500	$280,400	$284,800	$335,500	$350,500	$284,500

TABLE F1-C
TOWN OF RANLO WATER AND SEWER FUND
CAPITAL IMPROVEMENTS PLAN - MERGE WITH GASTONIA

		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
PROJECT LOCATION	**COST**	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**	**YEAR 6**	**YEAR 7**	**YEAR 8**	**YEAR 9**	**YEAR 10**
WATER IMPROVEMENTS											
Priority A - Water Line Replacement List											
Lewis Rd	**167,000**				**167,000**						
Spencer Ave	**32,300**				**32,300**						
Ridge Ave	**99,700**					**99,700**					
Essen Ln	**9,200**					**9,200**					
Wilmont Dr	**50,400**					**50,400**					
Alpine Ln	**27,000**					**27,000**					
Booker St	**39,600**	**39,600**									
Reland Dr	**72,100**	**72,100**									
Long Ave	**24,000**	**24,000**									
Branch St	**73,700**	**73,700**									
Second St	**109,300**			**109,300**							
Church Ave	**20,800**			**20,800**							
Franklin St	**64,700**			**64,700**							
Rhyne St	**27,800**					**27,800**					
Rhyne Place	**45,400**					**45,400**					
Duff Ave	**31,400**		**31,400**								
Love St	**50,600**						**50,600**				
Spencer Mountain Rd	**33,000**		**33,000**								
E. Long Ave	**39,300**			**39,300**							
Priority B - Water Line Replacement List											
Essen Ln	**111,900**				**111,900**						
Booker St	**34,400**		**34,400**								
Neely St	**40,300**		**40,300**								
Reland Dr	**58,300**		**58,300**								
Branch St	**17,300**		**17,300**								
E. Long Ave	**17,800**			**17,800**							
Franklin St	**7,800**			**7,800**							
Crescent Ave	**129,300**						**129,300**				
Ranlo Ave	**34,100**						**34,100**				
Off of Burlington Ave	**21,000**						**21,000**				
Rhyne St	**24,300**						**24,300**				
Maple Ave	**36,200**										**36,200**
Rex Ave	**85,900**									**85,900**	
Walnut Ave	**36,600**									**36,600**	

TABLE F1-C
TOWN OF RANLO WATER AND SEWER FUND
CAPITAL IMPROVEMENTS PLAN - MERGE WITH GASTONIA

		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
PROJECT LOCATION	**COST**	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**	**YEAR 6**	**YEAR 7**	**YEAR 8**	**YEAR 9**	**YEAR 10**
Sharon Ave	21,100										21,100
Duff Ave	20,350	20,350									
Dooley St	31,500				31,500						
Off of Spencer Ave	21,800								21,800		
Central Ave	35,900							35,900			
Dellinger Ave	57,200		57,200								
Woodside Ave	19,400			19,400							
WATER IMPROVEMENTS SUBTOTAL	1,879,750	229,750	271,900	279,100	342,700	259,500	259,300	35,900	21,800	122,500	57,300
WASTEWATER IMPROVEMENTS											
Maple Ave	156,100										156,100
Robin St	21,100						21,100				
Rex Ave	151,500									151,500	
Walnut Ave	76,500									76,500	
Spencer Ave	234,500								234,500		
Sharon Ave	71,100										71,100
Woodside Ave	79,200								79,200		
Central Ave	248,900							248,900			
WASTEWATER IMPROVEMENTS SUBTOTAL	1,038,900	0	0	0	0	0	21,100	248,900	313,700	228,000	227,200
TOTAL	2,918,650	229,750	271,900	279,100	342,700	259,500	280,400	284,800	335,500	350,500	284,500

TABLE F4-A
TOWN OF RANLO WATER AND SEWER FUND
FINANCIAL ANALYSIS - OPTION A - NO WATER PLANT

	AUDIT 2007	AUDIT 2008	AUDIT 2009	ESTIMATE 2010	BUDGET 2011	YEAR 1 2012	YEAR 2 2013	YEAR 3 2014	YEAR 4 2015	YEAR 5 2016	YEAR 6 2017	YEAR 7 2018	YEAR 8 2019	YEAR 9 2020	YEAR 10 2021
REVENUES															
WATER & SEWER CHARGES	916,341	984,958	884,856												
WATER CHARGES				546,000	567,000	572,670	578,397	584,181	590,022	595,923	601,882	607,901	613,980	620,120	626,321
SEWER CHARGES				275,000	301,400	304,414	307,458	310,533	313,638	316,774	319,942	323,142	326,373	329,637	332,933
STORMWATER FEES	53,604	55,110	56,130	56,000	57,000	57,570	58,146	58,727	59,314	59,908	60,507	61,112	61,723	62,340	62,963
OTHER OPERATING REVENUE	106,061	72,741	72,891	79,000	127,100	128,371	129,655	130,951	132,261	133,583	134,919	136,268	137,631	139,007	140,397
TOTAL OPERATING REVENUE	1,076,006	1,112,809	1,013,877	956,000	1,052,500	1,063,025	1,073,655	1,084,392	1,095,236	1,106,188	1,117,250	1,128,422	1,139,707	1,151,104	1,162,615
NON OPERATING REVENUE:															
LOAN PROCEEDS	130,747														
TOTAL PRESENT REVENUES	1,206,753	1,112,809	1,013,877	956,000	1,052,500	1,063,025	1,073,655	1,084,392	1,095,236	1,106,188	1,117,250	1,128,422	1,139,707	1,151,104	1,162,615
NEW SOURCES OF REVENUE:															
REVENUE FROM WATER RATE INCREASES						34,360	65,359	98,522	133,984	171,886	212,379	255,623	266,901	269,570	272,266
PROJECTED RATE OF INCREASE						6%	5%	5%	5%	5%	5%	5%	1%		
REVENUE FROM SEWER RATE INCREASES						18,265	34,743	52,371	71,222	91,369	112,894	135,881	141,876	143,295	144,728
PROJECTED RATE OF INCREASE						6%	5%	5%	5%	5%	5%	5%	1%		
TOTAL REVENUES	1,206,753	1,112,809	1,013,877	956,000	1,052,500	1,115,650	1,173,757	1,235,285	1,300,441	1,369,443	1,442,523	1,519,927	1,548,484	1,563,969	1,579,609
EXPENDITURES															
SALARIES AND BENEFITS	92,005	113,828	119,886	124,000	133,150	139,808	146,798	154,138	161,845	169,937	178,434	187,355	196,723	206,559	216,887
TREATMENT	492,169	492,472	522,817												
WATER TREATMENT				349,000	356,000	410,000	450,000	480,000	490,000	500,000	510,000	530,000	540,000	550,000	570,000
SEWER TREATMENT				181,000	196,000	200,000	220,000	230,000	240,000	240,000	250,000	250,000	260,000	270,000	270,000
UTILITIES	16,069	20,983	9,937	12,000	10,400	10,712	11,033	11,364	11,705	12,056	12,418	12,791	13,174	13,570	13,977
MAINTENANCE AND REPAIR	7,927	11,451	11,968	20,000	23,300	24,698	26,180	27,751	29,416	31,181	33,051	35,035	37,137	39,365	41,727
TESTING	4,676	5,752	3,753	2,000	7,200	7,488	7,788	8,099	8,423	8,760	9,110	9,475	9,854	10,248	10,658
POSTAGE/TELEPHONE	7,499	8,659	8,921	9,000	9,100	9,373	9,654	9,944	10,242	10,549	10,866	11,192	11,528	11,873	12,230
OTHER	30,176	42,542	91,201	40,000	71,100	75,366	79,888	84,681	89,762	95,148	100,857	106,908	113,323	120,122	127,329
TOTAL OPERATING EXPENDITURES	650,521	695,687	768,483	737,000	806,250	877,445	951,341	1,005,977	1,041,393	1,067,631	1,104,736	1,142,755	1,181,738	1,221,737	1,262,807
CAPITAL OUTLAY	32,315	2,294	39,689	90,000	0	229,750	271,900	279,100	342,700	259,500	280,400	284,800	335,500	350,500	284,500
EXISTING DEBT	346,650	251,193	249,164	213,300	213,200	204,991									
TRANSFERS OUT	0	0	64,835												
TOTAL EXPENDITURES	1,029,486	949,174	1,122,171	1,040,300	1,019,450	1,312,186	1,223,241	1,285,077	1,384,093	1,327,131	1,385,136	1,427,555	1,517,238	1,572,237	1,547,307
REVENUE OVER EXPENDITURES	177,267	163,635	(108,294)	(84,300)	33,050	(196,536)	(49,484)	(49,792)	(83,652)	42,312	57,387	92,372	31,246	(8,268)	32,301
ACCRUAL ADJUSTMENTS	74,928	64,355	533,411												
NET INCOME	252,195	227,990	425,117	(84,300)	33,050	(196,536)	(49,484)	(49,792)	(83,652)	42,312	57,387	92,372	31,246	(8,268)	32,301
UNRESTRICTED NET ASSETS			656,113	571,813	604,863	408,327	358,843	309,052	225,400	267,712	325,099	417,471	448,717	440,449	472,750
UNRESTRICTED NET ASSETS / EXPENDITURES			58.47%	54.97%	59.33%	31.12%	29.34%	24.05%	16.29%	20.17%	23.47%	29.24%	29.57%	28.01%	30.55%
MONTHLY INSIDE WATER AND SEWER CHARGE (3000 GAL)					$36.18	$38.35	$40.27	$42.28	$44.40	$46.62	$48.95	$51.39	$51.91	$51.91	$51.91
MONTHLY OUTSIDE WATER AND SEWER CHARGE (3000 GAL)					$66.14	$70.11	$73.61	$77.29	$81.16	$85.22	$89.48	$93.95	$94.89	$94.89	$94.89
MONTHLY INSIDE WATER AND SEWER CHARGE (5000 GAL)					$57.30	$60.74	$63.77	$66.96	$70.31	$73.83	$77.52	$81.39	$82.21	$82.21	$82.21
MONTHLY OUTSIDE WATER AND SEWER CHARGE (5000 GAL)					$106.66	$113.06	$118.71	$124.65	$130.88	$137.42	$144.30	$151.51	$153.03	$153.03	$153.03

TABLE F4-B
TOWN OF RANLO WATER AND SEWER FUND
FINANCIAL ANALYSIS - OPTION B - BUILD WATER PLANT

	AUDIT 2007	AUDIT 2008	AUDIT 2009	ESTIMATE 2010	BUDGET 2011	YEAR 1 2012	YEAR 2 2013	YEAR 3 2014	YEAR 4 2015	YEAR 5 2016	YEAR 6 2017	YEAR 7 2018	YEAR 8 2019	YEAR 9 2020	YEAR 10 2021
REVENUES															
WATER & SEWER CHARGES	916,341	984,958	884,856												
WATER CHARGES				546,000	567,000	572,670	578,397	584,181	590,022	595,923	601,882	607,901	613,980	620,120	626,321
SEWER CHARGES				275,000	301,400	304,414	307,458	310,533	313,638	316,774	319,942	323,142	326,373	329,637	332,933
STORMWATER FEES	53,604	55,110	56,130	56,000	57,000	57,570	58,146	58,727	59,314	59,908	60,507	61,112	61,723	62,340	62,963
OTHER OPERATING REVENUE	106,061	72,741	72,891	79,000	127,100	128,371	129,655	130,951	132,261	133,583	134,919	136,268	137,631	139,007	140,397
TOTAL OPERATING REVENUE	1,076,006	1,112,809	1,013,877	956,000	1,052,500	1,063,025	1,073,655	1,084,392	1,095,236	1,106,188	1,117,250	1,128,422	1,139,707	1,151,104	1,162,615
NON OPERATING REVENUE:															
LOAN PROCEEDS	130,747														
TOTAL PRESENT REVENUES	1,206,753	1,112,809	1,013,877	956,000	1,052,500	1,063,025	1,073,655	1,084,392	1,095,236	1,106,188	1,117,250	1,128,422	1,139,707	1,151,104	1,162,615
NEW SOURCES OF REVENUE:															
REVENUE FROM WATER RATE INCREASES						57,267	121,463	193,364	274,615	294,827	315,768	337,462	359,933	383,206	407,305
PROJECTED RATE OF INCREASE						10%	10%	10%	10%	2%	2%	2%	2%	2%	2%
REVENUE FROM SEWER RATE INCREASES						30,441	64,566	102,786	145,977	156,721	167,853	179,385	191,330	203,700	216,511
PROJECTED RATE OF INCREASE						10%	10%	10%	10%	2%	2%	2%	2%	2%	2%
TOTAL REVENUES	1,206,753	1,112,809	1,013,877	956,000	1,052,500	1,150,733	1,259,685	1,380,542	1,515,827	1,557,736	1,600,871	1,645,269	1,690,969	1,738,010	1,786,430
EXPENDITURES															
SALARIES AND BENEFITS	92,005	113,828	119,886	124,000	133,150	139,808	146,798	154,138	161,845	169,937	178,434	187,355	196,723	206,559	216,887
TREATMENT	492,169	492,472	522,817												
WATER TREATMENT				349,000	356,000	410,000	52,000	53,000	55,000	56,000	57,000	59,000	60,000	62,000	63,000
SEWER TREATMENT				181,000	196,000	200,000	220,000	230,000	240,000	240,000	250,000	250,000	260,000	270,000	270,000
UTILITIES	16,069	20,983	9,937	12,000	10,400	10,712	11,033	11,364	11,705	12,056	12,418	12,791	13,174	13,570	13,977
MAINTENANCE AND REPAIR	7,927	11,451	11,968	20,000	23,300	24,698	26,180	27,751	29,416	31,181	33,051	35,035	37,137	39,365	41,727
TESTING	4,676	5,752	3,753	2,000	7,200	7,488	7,788	8,099	8,423	8,760	9,110	9,475	9,854	10,248	10,658
POSTAGE/TELEPHONE	7,499	8,659	8,921	9,000	9,100	9,373	9,654	9,944	10,242	10,549	10,866	11,192	11,528	11,873	12,230
OTHER	30,176	42,542	91,201	40,000	71,100	75,366	79,888	84,681	89,762	95,148	100,857	106,908	113,323	120,122	127,329
NEW OPERATING COSTS						0	265,000	273,000	281,200	289,600	298,300	307,200	316,400	325,900	335,700
TOTAL OPERATING EXPENDITURES	650,521	695,687	768,483	737,000	806,250	877,445	818,341	851,977	887,593	913,231	950,036	978,955	1,018,138	1,059,637	1,091,507
CAPITAL OUTLAY	32,315	2,294	39,689	90,000	0	24,000	271,900	279,100	342,700	259,500	280,400	284,800	335,500	350,500	284,500
EXISTING DEBT	346,650	251,193	249,164	213,300	213,200	204,991									
NEW DEBT						160,081	320,163	320,163	320,163	320,163	320,163	320,163	320,163	320,163	320,163
TRANSFERS OUT	0	0	64,835												
TOTAL EXPENDITURES	1,029,486	949,174	1,122,171	1,040,300	1,019,450	1,266,517	1,410,404	1,451,240	1,550,456	1,492,894	1,550,599	1,583,918	1,673,801	1,730,300	1,696,170
REVENUE OVER EXPENDITURES	177,267	163,635	(108,294)	(84,300)	33,050	(115,784)	(150,719)	(70,698)	(34,628)	64,842	50,272	61,351	17,168	7,710	90,260
ACCRUAL ADJUSTMENTS	74,928	64,355	533,411												
NET INCOME	252,195	227,990	425,117	(84,300)	33,050	(115,784)	(150,719)	(70,698)	(34,628)	64,842	50,272	61,351	17,168	7,710	90,260
UNRESTRICTED NET ASSETS			656,113	571,813	604,863	489,079	338,361	267,663	233,035	297,876	348,148	409,499	426,667	434,377	524,637
UNRESTRICTED NET ASSETS / EXPENDITURES			58.47%	54.97%	59.33%	38.62%	23.99%	18.44%	15.03%	19.95%	22.45%	25.85%	25.49%	25.10%	30.93%
NPV @ 5%					(132,615)										
MONTHLY INSIDE WATER AND SEWER CHARGE (3000 GAL)					$36.18	$39.80	$43.78	$48.16	$53.02	$54.08	$55.16	$56.26	$57.39	$58.54	$59.71
MONTHLY OUTSIDE WATER AND SEWER CHARGE (3000 GAL)					$66.14	$72.75	$80.03	$88.03	$96.92	$98.86	$100.84	$102.86	$104.91	$107.01	$109.15
MONTHLY INSIDE WATER AND SEWER CHARGE (5000 GAL)					$57.30	$63.03	$69.33	$76.27	$83.97	$85.65	$87.36	$89.11	$90.89	$92.71	$94.56
MONTHLY OUTSIDE WATER AND SEWER CHARGE (5000 GAL)					$106.66	$117.33	$129.06	$141.96	$156.30	$159.43	$162.62	$165.87	$169.19	$172.57	$176.02

NEW DEBT:

PROJECT COST	3,350,550
CAPITAL RESERVE CONTRIBUTION	0
LOAN AMOUNT	3,350,550
PAYMENT	160,081
ANNUAL PAYMENTS	320,163
RATE	5.00%
TERM	15

TABLE 4-C
TOWN OF RANLO WATER AND SEWER OPERATED BY GASTONIA
FINANCIAL ANALYSIS - OPTION C - TRANSITION TO GASTONIA RATES OVER 5 YEARS

	BUDGET 2011	YEAR 1 2012	YEAR 2 2013	YEAR 3 2014	YEAR 4 2015	YEAR 5 2016	YEAR 6 2017	YEAR 7 2018	YEAR 8 2019	YEAR 9 2020	YEAR 10 2021
REVENUES											
WATER & SEWER CHARGES											
WATER CHARGES	567,000	573,815	580,713	587,693	594,757	601,906	607,925	614,004	620,144	626,346	632,609
SEWER CHARGES	301,400	362,861	436,856	525,940	633,190	762,310	769,933	777,632	785,408	793,262	801,195
STORMWATER FEES	57,000	57,570	58,146	58,727	59,314	59,908	60,507	61,112	61,723	62,340	62,963
OTHER OPERATING REVENUE	127,100	128,371	129,655	130,951	132,261	133,583	134,919	136,268	137,631	139,007	140,397
TOTAL OPERATING REVENUE	1,052,500	1,122,618	1,205,369	1,303,311	1,419,522	1,557,706	1,573,283	1,589,016	1,604,906	1,620,955	1,637,165
NON OPERATING REVENUE:											
LOAN PROCEEDS											
TOTAL PRESENT REVENUES	1,052,500	1,122,618	1,205,369	1,303,311	1,419,522	1,557,706	1,573,283	1,589,016	1,604,906	1,620,955	1,637,165
NEW SOURCES OF REVENUE:											
REVENUE FROM WATER RATE INCREASES		0	0	0	0	0	0	0	0	0	0
PROJECTED RATE OF INCREASE		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
REVENUE FROM SEWER RATE INCREASES		0	0	0	0	0	0	0	0	0	0
PROJECTED RATE OF INCREASE		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
TOTAL REVENUES	1,052,500	1,122,618	1,205,369	1,303,311	1,419,522	1,557,706	1,573,283	1,589,016	1,604,906	1,620,955	1,637,165
EXPENDITURES											
SALARIES AND BENEFITS	133,150	139,808	146,798	154,138	161,845	169,937	178,434	187,355	196,723	206,559	216,887
TREATMENT											
WATER TREATMENT	356,000	214,000	234,000	248,000	254,000	261,000	267,000	274,000	281,000	288,000	295,000
SEWER TREATMENT	196,000	165,000	179,000	190,000	195,000	200,000	205,000	210,000	215,000	221,000	226,000
UTILITIES	10,400	10,712	11,033	11,364	11,705	12,056	12,418	12,791	13,174	13,570	13,977
MAINTENANCE AND REPAIR	23,300	24,698	26,180	27,751	29,416	31,181	33,051	35,035	37,137	39,365	41,727
TESTING	7,200	7,488	7,788	8,099	8,423	8,760	9,110	9,475	9,854	10,248	10,658
POSTAGE/TELEPHONE	9,100	9,373	9,654	9,944	10,242	10,549	10,866	11,192	11,528	11,873	12,230
OTHER	71,100	75,366	79,888	84,681	89,762	95,148	100,857	106,908	113,323	120,122	127,329
TOTAL OPERATING EXPENDITURES	806,250	646,445	694,341	733,977	760,393	788,631	816,736	846,755	877,738	910,737	943,807
CAPITAL OUTLAY	0	229,750	271,900	279,100	342,700	259,500	280,400	284,800	335,500	350,500	284,500
EXISTING DEBT	213,200										
TRANSFERS OUT											
TOTAL EXPENDITURES	1,019,450	876,195	966,241	1,013,077	1,103,093	1,048,131	1,097,136	1,131,555	1,213,238	1,261,237	1,228,307
REVENUE OVER EXPENDITURES	33,050	246,423	239,128	290,234	316,429	509,575	476,147	457,461	391,668	359,718	408,858
ACCRUAL ADJUSTMENTS											
NET INCOME	33,050	246,423	239,128	290,234	316,429	509,575	476,147	457,461	391,668	359,718	408,858
UNRESTRICTED NET ASSETS	604,863	246,423	485,552	775,786	1,092,215	1,601,790	2,077,937	2,535,398	2,927,066	3,286,785	3,695,642
UNRESTRICTED NET ASSETS / EXPENDITURES	59.33%	28.12%	50.25%	76.58%	99.01%	152.82%	189.40%	224.06%	241.26%	260.60%	300.87%
NPV @ 5%	2,790,287										
MONTHLY INSIDE WATER AND SEWER CHARGE (3000 GAL)	$36.18	$38.93	$41.67	$44.42	$47.16	$49.91	$49.91	$49.91	$49.91	$49.91	$49.91
MONTHLY OUTSIDE WATER AND SEWER CHARGE (3000 GAL)	$66.14	$71.29	$76.44	$81.60	$86.75	$91.90	$91.90	$91.90	$91.90	$91.90	$91.90
MONTHLY INSIDE WATER AND SEWER CHARGE (5000 GAL)	$57.30	$61.87	$66.44	$71.01	$75.58	$80.15	$80.15	$80.15	$80.15	$80.15	$80.15
MONTHLY OUTSIDE WATER AND SEWER CHARGE (5000 GAL)	$106.66	$115.13	$123.60	$132.07	$140.54	$149.01	$149.01	$149.01	$149.01	$149.01	$149.01