

BURNSVILLE TOWN COUNCIL
Special Meeting (to conduct regular business for July, 2015)
Thursday, June 25, 2015

On June 25, 2015, the Town Council, with members Mayor Theresa Coletta, Ruth Banks, Judy Buchanan, Ron Powell and Bill Wheeler present, held a special meeting at the Burnsville Town Center. Also in attendance were staff members Brian Buchanan, Leslie Crowder, Chad Fox, Anthony Hensley, and Jeanne Martin; and visitors Lucy Doll, Dean Gates, Ginger Johnson, Jim Parlier, and Kathleen Soui. The Mayor, who presided, stated that the purpose of the meeting was to conduct regular business for the month of July, 2015.

- Public Comment – No one asked to be heard during the time set aside for public comment.
- Adoption of Agenda – Judy Buchanan made a motion to adopt the agenda as written. Ruth Banks seconded the motion, which carried.
- Consideration of Minutes – Minutes from the following meetings were available for consideration:
 - a. Regular meeting held May 11, 2015
 - b. Special meeting held June 1, 2015
 - c. Closed session held June 1, 2015

Ron Powell made a motion to approve the aforesaid minutes as written. Ruth Banks seconded the motion, which carried.

- Medicaid Expansion – Jim Parlier thanked Council for allowing him to represent the citizens of Burnsville by speaking on the subject of Medicaid expansion. As he distributed information, he said that as an agent for Blue Cross he has folks falling under the poverty level, which is \$11,770 for a single person, who don't qualify for subsidies. The NC marketplace directs them to Medicaid, but the state did not expand the Medicaid program to cover the insurance gap for poverty level citizens who do not presently qualify for Medicaid. Mr. Parlier urged Council to consider a Resolution to urge the NC General Assembly and the Governor to accept federal funds to expand Medicaid in our state, and forward the Resolution to the town's delegation to the General Assembly.

Councilor Ron Powell said he would rather have further information before acting on the request, but the remainder of the group was agreeable to act. Judy Buchanan moved to adopt the Resolution as presented. Ruth Banks seconded the motion.

Voting results were as follows:

<u>Ayes</u>	<u>Noes</u>	<u>Abstains</u>
Ruth Banks		Ron Powell
Judy Buchanan		(counted as an "Aye")
Theresa Coletta		
Bill Wheeler		

The motion carried.

- Budget Hearing – Mayor Coletta opened the budget hearing, noting that no one had signed up to speak. Leslie Crowder discussed the highlights of the budget, mentioning there was a carry-over in the Water/Sewer Fund of \$160,000 from what was budgeted and unspent on capital projects in the current fiscal year. Combined with a revenue surplus of \$230,000 in the upcoming budget, there is a total of \$390,000 that is allocated for capital projects. She advised there is over \$1 million in the Water Fund reserve account. A 1% rate increase was built into the Water Fund budget, and with a few exceptions, a 2% salary increase was budgeted.

As to the General Fund budget, Mrs. Crowder explained that figures used for healthcare coverage are the figures for which we are currently under contract. The contribution to fund balance in the General Fund is smaller this year by approximately \$18,000 due to the loss of business license revenues. She advised Council she scaled back anticipated tax revenues to an amount that was actually collected in the current budget year. The ad valorem tax rate remains at \$.50 per \$100 valuation, and with a few exceptions, a 2% salary increase was budgeted. Council was reminded that they previously declined an increase, so their compensation remains as it is in the current budget.

During open discussion Ron Powell shared with Council thoughts he'd had about water rates since earlier meetings and a newspaper article on the town budget. He distributed and explained information *from past Town Council meeting minutes, an article from the June 10th Yancey Common Times Journal, the 2012 Council approved Water and Sewer Capital Improvements Plan, and the NC School of Government website: Water and Wastewater Rates Dashboard*. Mr. Powell advised that he is in favor of an increase greater than 1% based on this information and for that reason he would be voting against the proposed budget. He said for the next budget year he would be promoting a larger increase, perhaps as much as 15%, based on the recommendations found in the *Financial Analysis of the 2012 Water and Sewer Capital Improvements Plan*.

The Mayor asked for clarification of the surplus figures that were reported by the Finance Officer. She was told there is a \$230,000 surplus in revenues over expenditures in the upcoming budget, and there is a \$160,000 carry-over of money that was budgeted and not spent on capital projects in the current budget. Combined, there is a \$390,000 surplus for capital improvements.

Councilor Bill Wheeler asked Mr. Powell if he'd ever had to live on \$700-\$800 per month. He said his water bill in Burnsville is higher than it is at his other house in Asheville.

Ron Powell said operational costs are increasing, salaries are being increased, and the town needs to be responsible for the business it runs.

The Mayor said she understood Mr. Powell's comments, and didn't want to slide backwards, but a 1% increase would demonstrate compassion towards those struggling in the current economy. Leslie Crowder said that when we received the letter from the Local Government Commission a few years ago [advising that corrective action was necessary to improve the town's financial position] we had only \$75,000 in the reserve account. Since that time we have accumulated over \$1 million.

The Mayor asked Anthony Hensley why we couldn't move forward with capital projects with the surplus balances. Mr. Hensley explained there hasn't been enough time, since some projects are multi-year, with permitting, design, and construction involved. He has moved forward, though, with conversion to the automatic meter reading system, which is easier.

Councilor Judy Buchanan asked Mr. Powell to stop bringing information for review at the last minute. Mr. Powell said he didn't send it earlier because it would be too confusing without explanation. Mrs. Buchanan said the next time something comes in at the last minute before a meeting she will not be reading it. The Mayor agreed she would like to have material for review ahead of time.

Councilor Bill Wheeler said elderly residents fear increases. If we could find another way to relieve them he wouldn't care what we raised rates to.

Ruth Banks said a 1% increase is all we can do right now. She commented that the charts Mr. Powell brought to the meeting demonstrated "affordability" with different rate increases, but the charts are set up for larger towns and don't consider the poverty factor here.

Judy Buchanan agreed with Ron Powell that the town needs to run the operation responsibly, but didn't think a rate increase of just 1% this year would hurt.

Judy Buchanan moved to close the budget hearing. Ron Powell seconded the motion, which carried.

- Budget Amendments for FY 2014-2015 – Finance Office Leslie Crowder presented a list of proposed end-of-year budget amendments, a copy of which is attached to these minutes and by reference made a part hereof. Ruth Banks made a motion to approve the aforesaid amendments. Ron Powell seconded the motion, which carried.
- Closed Session Pursuant to NCGS 143-318.11(a)(6) – Judy Buchanan made a motion to enter closed session pursuant to NCGS 143-318.11(a)(6). The motion was seconded by Bill Wheeler and carried.

After reconvening in open session, Ron Powell made a motion to amend the proposed budget to reflect a 2% across-the-board salary increase for all town employees; Salaries for Council members will not be increased. Judy Buchanan seconded the motion, which carried.

Ron Powell moved to accept the accrued sick leave balance from Yancey County for a newly hired police officer. Bill Wheeler seconded the motion, which carried.

- Consideration of FY 2015-2016 Budget – Judy Buchanan made a motion to adopt the proposed budget as amended to reflect an across-the-board 2% salary increase for all town employees. Ruth Banks seconded the motion. Voting results were as follows:

Ayes

Ruth Banks

Judy Buchanan

Bill Wheeler

Noes

Ron Powell

Theresa Coletta

- Planning Board Report – Planning Board Chair Dean Gates, reported:
 - a. Minutes from the Planning Board meeting held June 16, 2015 were available for review.
 - b. The Planning Board has been discussing mobile homes, and working on design guidelines, some of which may need modification.
 - c. The animal control report may be available for review prior to the next Council meeting.
 - d. Planning is currently considering recommendations for Board alternates.
 - e. Woody Ryan is working on an historic overlay.
 - f. Beginning in August the Planning Board will meet on the third Thursday.

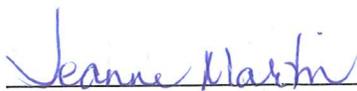
- Consideration of Petition for Voluntary Annexation of Property Owned by Pizza Hut (.0751 acres) – Councilor Ron Powell moved to annex the .0751 acres owned by Pizza Hut of Burnsville. The motion was seconded by Bill Wheeler and carried. Ron Powell moved to refer consideration of the initial zoning of the subject property to the Planning Board. Bill Wheeler seconded the motion, which carried.

- Department Updates:
 - a. Administration:
 - Personnel Policy update (Jeanne Martin/Judy Buchanan)
 - ✓ Currently working on benefits
 - Unpaid Balance Report pursuant to G.S. 105-369(a) dated June 24, 2015, provided as an update of uncollected revenues, was available for review. Council was told that a variety of collection efforts are underway.
 - ABC Board budget for FY 2015-2016 was available for review
 - Finance Issues (Leslie Crowder)
 - ✓ Council reviewed the Budget vs. Actual dated June 24, 2015.
 - b. Fire Department – Chief Niles Howell was unavailable for report. Council was told that the department’s focus in the past month has been on their ISO inspection.
 - c. Police Department – Chief Brian Buchanan reported:
 - *Young Life* held their race in the past month; the weather was good, but there were few runners.
 - The battery life on the radar sign is a challenge. Council heard there are solar panel options available at an additional cost.
 - d. Public Works Department – Public Works Director Anthony Hensley reported:
 - Construction crews have completed the last water tie-in that caused water outages.
 - Council considered renewal of membership in the *Small Town Main Street* Program, at an annual cost of \$350. Dean Gates spoke about the advantages offered by the program, including grant opportunities. Judy Buchanan moved to maintain membership in the program. The motion was seconded by Bill Wheeler and carried.
 - e. Town Center – Chad Fox gave an update on Town Center events, mentioning the upcoming Brian Gurl tribute to American music masters and Folkmoor.

- Council Members’ Reports
 - a. Mayor Theresa Coletta discussed the Mt. Mitchell 100th birthday celebration which is in the planning stages. Council was provided planning material for review. Part of the plan is to

hold a kick-off event on August 3rd at the Town Center that would showcase a new book written by Jonathan Bennett and David Biddix on Mt. Mitchell history, and feature a slide show/presentation on the book. Jugs designed and built by Pete and Kim McWhirter commemorating the 100th birthday will be available for sale. The Mayor asked Council to consider a line item transfer from the Community Promotions budget to cover the cost of the rental of the facility for the evening. Ron Powell made a motion to allow the requested line item transfer. The motion was seconded by Judy Buchanan and carried.

- b. The Mayor discussed a plan for distribution of meeting packets. She proposed that the agenda with financials and minutes will be in emails on the Friday prior to the regular meeting each month, and the full packet will be emailed the following Monday. Ron Powell moved to approve the plan for meeting packet distribution. Judy Buchanan seconded the motion, which carried.
 - c. The Mayor discussed her interest in having monthly planning worksessions. Ron Powell made a motion to meet the third Tuesday of every month for this purpose at 10:00 a.m. at the Burnsville Town Center. Ruth Banks seconded the motion, which carried.
 - d. Ron Powell said that the Public Art Design Board has intentions of having proposed projects available for review at budget time, but because the Public Art Plan wasn't adopted until May, it was too late this year for consideration during the budget process. This year, the Board will meet in September and discuss potential projects, which will be brought to Council for approval and insertion in the next year's budget.
 - e. Councilor Powell reminded Council members that "Esley" will be on stage at the Playhouse this season, and that David Holt will also be performing.
 - f. Ron Powell asked to be excused from the meeting. Judy Buchanan made a motion to excuse Mr. Powell and motion carried.
- Updates from Advisory Boards and Non-Profits
 - a. High Country Council of Governments – minutes were available.
 - Next Regular Town Council Meeting – Because of the Craft Fair, the next town council meeting will be held on Thursday, August 13, 2015 at 6:00 p.m., at the Burnsville Town Center to consider regular business for the month of August.
 - There being no further business, Judy Buchanan moved to adjourn. Bill Wheeler seconded the motion, which carried.



Jeanne Martin, Town Clerk



Theresa Coletta, Mayor

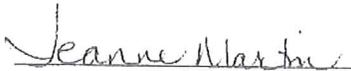
TOWN OF BURNSVILLE
Special Meeting
September 5, 2012

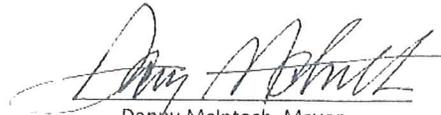
On September 5, 2012, the Town Council, with members Mayor Danny McIntosh, Ruth Banks, Judy Buchanan, Ron Powell, and Bill Wheeler present, held a special meeting in the Town Hall. Also in attendance was Public Works Director Anthony Hensley; McGill staff members Randy Hintz, Harry Buckner, and Steven Miller; and visitors Greg Bryant and Kenny Goodson. The Mayor called the meeting to order, stating that the purpose of the meeting was to hear a presentation by McGill Associates concerning the town's proposed Water and Sewer System Master Plan and Capital Improvements Plan and consider the same for adoption.

Council listened to the presentation given by McGill Associates staff members.

Ron Powell made a motion to adopt the aforesaid Water and Sewer Capital Improvements Plan and use it as a planning tool for the implementation of a water and wastewater system rehabilitation and extension program. Ruth Banks seconded the motion, which was unanimously approved.

There being no further business, Ron Powell made a motion to adjourn. Ruth Banks seconded the motion, which was unanimously approved.


Jeanne Martin, Town Clerk


Danny McIntosh, Mayor

2. Consider and possibly take action on matters concerning the proposed FY 2015-2016 budget:

Water/Sewer Rates - Council considered a water/sewer rate schedule that depicted a 2% increase. Anthony Hensley said the increase would be necessary to keep up with the capital improvement projects that are already two years behind. He advised that we need to be funding capital improvements at the rate of \$700,000/year, and this increase would only amount to \$250,000. He said that sewer filming was done on the east end recently and the crew couldn't film because the pipes were badly collapsed. If only emergency repairs were undertaken, there would be DENR issues to deal with in addition to the cost of upgrading the infrastructure.

Mayor Coletta commented that water rates are one area in which people, particularly the elderly, seem to be concerned, and she would like to see no increase or just a small one.

Councilor Ron Powell said he understands people are upset, but a 2% increase would keep the town on top of the projects. He said if you miss one year, it's hard to recover.

Councilor Bill Wheeler said that there are people living on \$700 to \$800 per month, which Council needs to be mindful of and operate within the town's means.

Leslie Crowder asked Council to consider a payoff of the water plant loan, which would save \$30,000 and free up the budget approximately \$140,000. In order to have money on hand for capital improvement projects and unforeseen needs, it was decided to leave the loan in place.

After the above discussion, Councilors were asked to indicate their feelings on the water/sewer rate increase. Bill Wheeler favored 0%; Ron Powell at least 2%; Ruth Banks might consider 1%; Judy Buchanan favored a 1% in order to avoid a huge increase at one time; and the Mayor favored 1% to give the public a small break, even though it doesn't seem like a lot. The budget will be set at a 1% increase. Ron Powell commented that he was comfortable with everyone's feelings, but not that number.

RECOMMENDATIONS

As a result of this analysis, water and sewer revenue increases have been modeled for financing system growth, inflation, and capital needs. These increases would affect only fixed and volume charges, not Capacity Depletion Impact, Tap or other miscellaneous charges. These revenue increases are arranged in time to minimize the impact to most users yet yield a positive Unrestricted Net Assets balance within two years, as shown below.

- 10% water and sewer revenue increases during FY 2014.
- 5% water and sewer revenue increases during FY 2015.
- 4.5% annual water and sewer revenue increases from FY 2020 – FY 2023.

We have developed a rate schedule for the next two years shown in Table 7 that generates the first two proposed revenue increases and creates irrigation rates that match water rates. In doing so, the Town complies with State Drought legislation yet does not complicate its rate structure.

Page 2 --Yancey Common Times Journal-- June 10, 2015

Slight water/sewer rate increase /

At their regular meeting last week the Burnsville Town Council made a couple of important financial decisions as they work to complete the 2015-2016 budget.

Historically, water/sewer fees have increased at a low pace of 1 or 2 percent annually. The Town Council decided to continue that trend for the town's water usage rates, voting on a 1 percent increase set to take effect July 1.

The 1 percent rate increase for residential and commercial

users will raise the minimum residential water/sewer usage charge from \$19.23 to \$19.62 over a one-month billing cycle. That translates to a .39 cent increase per month or \$4.68 annually per customer for 0-3000 gallons.

Excess usage rates will also increase in turn. Rates for usage will increase from \$25.16 to \$26.19 per 4,000 gallons, from \$32.14 to \$32.79 per 5,000 gallons, from \$38.64 to 39.42 per 6,000 gallons, from \$45.17 to \$46.06 per 7,000, from \$51.73 to \$52.77 per 8,000 gallons, from \$58.33 to \$59.50 per 9,000 gallons and the rate per 10,000 gallons and up rose from \$64.96 per month to \$66.26.

The rate increase was needed to keep up with the Town's mandatory capital improvement plan, according to Mayor Theresa Coletta.

In an effort to retain valued employees, the Board also agreed to a 2 percent salary increase for Town workers.

"We want our Town employees to know that they are valuable to us," Mayor Coletta said.

The wage increase does not include raises for the mayor or town board members.

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TABLE 7
TOWN OF BURNSVILLE
CURRENT AND PROPOSED WATER AND SEWER RATES

	CURRENT 2013	YEAR 1 2014	YEAR 2 2015
WATER INSIDE			
Minimum	\$18.00	\$20.00	\$21.20
3,001 +	\$6.00	\$6.70	\$7.15 per 1000 gal
IRRIGATION INSIDE			
Minimum		\$20.00	\$21.20
3,001 +		\$6.70	\$7.15 per 1000 gal
WATER OUTSIDE			
Minimum	\$36.00	\$40.00	\$42.40
3,001 +	\$12.00	\$13.40	\$14.30 per 1000 gal
IRRIGATION OUTSIDE			
Minimum		\$40.00	\$42.40
3,001 +		\$13.40	\$14.30 per 1000 gal
SEWER INSIDE			
Minimum	\$18.00	\$20.00	\$21.20
3,001 +	\$6.00	\$6.70	\$7.15 per 1000 gal
SEWER OUTSIDE			
Minimum	\$36.00	\$40.00	\$42.40
3,001 +	\$12.00	\$13.40	\$14.30 per 1000 gal
WATER CAPACITY DEPLETION			
9,999 -10,000	\$3.00	\$3.00	\$3.00
10,001 +	\$1.50	\$1.50	\$1.50 per 5000 gal
SEWER CAPACITY DEPLETION			
9,999 -10,000	\$3.00	\$3.00	\$3.00
10,001 +	\$1.50	\$1.50	\$1.50 per 5000 gal
<u>SAMPLE MONTHLY WATER & SEWER CHARGES</u>			
INSIDE 4,000 GAL	\$48.00	\$53.40	\$56.70
INSIDE 10,000 GAL	\$126.00	\$139.80	\$148.50
INSIDE 50,000 GAL	\$630.00	\$699.80	\$744.50
INSIDE 100,000 GAL	\$1,260.00	\$1,399.80	\$1,489.50
OUTSIDE 4,000 GAL	\$96.00	\$106.80	\$113.40
OUTSIDE 10,000 GAL	\$246.00	\$273.60	\$291.00
OUTSIDE 50,000 GAL	\$1,230.00	\$1,369.60	\$1,459.00
OUTSIDE 100,000 GAL	\$2,460.00	\$2,739.60	\$2,919.00

**WATER AND SEWER
CAPITAL IMPROVEMENTS PLAN**

**TOWN OF BURNSVILLE
YANCEY COUNTY, NORTH CAROLINA**

NATHAN D. BOWE, PE

 **McGill**
ASSOCIATES
Engineering • Planning • Finance
Asheville, North Carolina

AUGUST 2012

11.00431



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A. GOAL STATEMENT

This report should be used as a planning tool for the implementation of a water and wastewater system rehabilitation and extension program that will improve the quality of service to existing customers and also extend service to areas currently lacking access to water and wastewater services. Infrastructure capital improvements will be recommended to serve these needs in a cost-effective manner.

B. SCOPE OF WORK

The scope of this report is to evaluate the overall water and wastewater systems currently owned and operated by the Town of Burnsville. This report will identify water and sewer system improvements necessary to strengthen and remediate services to existing customers, establish current system demands and project system-wide demands over a 20-year planning period (2012 through 2032). In addition to rehabilitation, future growth areas of these systems will be considered. This report will allow for a systematic approach to water and sewer improvements by developing a prioritized list of recommended improvements which then can be programmed into future budgets.

The principal elements of this report include the following:

- Population projections and user forecasts.
- Review of the capacity and condition of existing water supply, treatment, transmission, distribution, pumping and storage facilities and identification of water system deficiencies.
- Review of the capacity and condition of existing sewage collection, pumping and treatment facilities and identification of sewer system deficiencies.
- Preparation of a summary listing of recommended improvements to the water and sewer systems that shall logically address existing and future system needs.
- Assembling of cost estimates for the proposed improvements.
- Prioritization of capital projects over a 20-year planning period, ending in 2032.
- Manufacturing maps identifying the locations of the recommended improvements.
- Complete a financial analysis as a tool to aid in the planning for construction of water and sewer projects.

C. EXECUTIVE SUMMARY

This Water and Sewer Capital Improvements Plan (CIP) presents recommended improvements to the water and sewer systems for the Town of Burnsville in order for the Town to correct current deficiencies in its core systems and have the option to later expand water and sewer service to additional areas of need. This study evaluates anticipated water demands and sewer flows for the service area according to a 20-year period.

Based on the population projections and recent flow and billing records, design flows and demands were projected to remain steady through the 2032 design year except for a new approximate 50,000 gallon per day water demand from a potential water extension to the Micaville Community. For the design year, it is estimated that both the water treatment plant (WTP, capacity of 1.0 MGD) and wastewater treatment plant (WWTP, capacity of 0.8 MGD) will both maintain a substantial excess of capacity and will not require expansion unless a large employer and/or water user relocates to the area.

Recommended improvements proposed for standardization and upgrade of the Town's water system are listed in Table II-1. These proposed projects are listed in decreasing priority with estimated capital costs.

Project No.	Description	Estimated Cost
W1	Cane River Intake Pump Replacement	\$50,000
W2	Automated Meter Reading (AMR) Project	\$952,000
W3	Water Treatment Plant Improvements	\$515,200
W4	Green Mountain Drive Water Improvements	\$643,100
W5	Meadow Road Water Line Improvements	\$359,450
W6	Main Street Water Line Improvements	\$1,973,600
W7	West Burnsville Church Road Water Line Improvements	\$343,600
W8	Love Fox Road Trailer Park Water Improvements	\$207,000
W9	1 Million Gallon Reservoir	\$1,341,500
W10	West Glendale Avenue Water Improvements	\$786,350
W11	Burnsville School Road Water Line Improvements	\$334,800
W12	Bill Young Road Water Line Improvements	\$279,600
W13	Comet Lane Trailer Park Water Improvements	\$155,180

7,941,380

Recommended improvements proposed to standardize and upgrade the wastewater system to sufficiently handle current and anticipated future flows are shown in Table II-2. Projects are listed in order of decreasing priority with estimated capital costs.



TABLE II-2 RECOMMENDED SEWER SYSTEM CAPITAL IMPROVEMENT PROJECTS		
Project No.	Description	Estimated Cost
S1	Main Sewer Interceptor Videos	\$87,600
S2	Main Sewer Interceptor (West) Improvements	\$1,307,550
S3	Main Sewer Interceptor (East) Improvements	\$710,100
S4	Love Fox Road Trailer Park Sewer Improvements	\$322,850
S5	OMC Pump Station Replacement	\$481,500
S6	Hickory Lane and West Glendale Avenue Sewer Line Improvements	\$633,100
S7	Orchard Drive Sewer Line Improvements	\$607,880
S8	Ramsey Street Sewer Line Improvements	\$128,125
S9	Meadow Road and Indian Trail Sewer Line Improvements	\$779,450
S10	Pensacola Road Sewer Line Improvements	\$411,850
S11	Westover Drive and Presnell Road Sewer Line Improvements	\$398,900

5,868,905

It is also recommended that the Town implement other measures to promote logical planning and control costs of operating and maintaining the water and sewer systems, such as:

1. Water and Wastewater System Mapping
2. Water System Monitoring and Data Collection
3. Water System Hydraulic Modeling Study
4. Water Loss Detection Program
5. Infiltration/Inflow (I/I) Analysis
6. Preventative Maintenance Program
7. Safety Program and Emergency Procedures Training
8. Customer Service, Public Relations and Education
9. Administrative Improvements:
 - a. Water and Sewer Design Standards
 - b. Policies and Procedures Manual
 - c. Standard Specifications and Drawings
 - d. Lists of Standard Materials

These programs are discussed in greater detail in Section VIII.

A. DEMOGRAPHICS

Yancey County had a 2010 US Census population of 17,818 persons – an increase of only 0.25% since 2000, while Burnsville is home to 1,693 residents according to the 2010 US Census – an increase of 4.3% since 2000. Therefore, Burnsville represents 9.5% of the County population and Yancey County represents 0.2% of the North Carolina population of 9,535,483. Per billing information for the calendar year 2011 provided by the Town, Burnsville’s water and sewer systems served approximately 1,515 and 1,066 connections, respectively, during that year. Burnsville’s Local Water Supply Plan for 2011 listed a year-round population served of 3,950 individuals.

The 2009 poverty rate of Yancey County (17.8%) is slightly higher than that of the State (16.2%), and the Town of Burnsville’s poverty rate of 23.7% is significantly higher. As expected by the consideration of poverty rate information, median household income in Burnsville (\$29,621) is lower than those of the County (\$34,148) and State (\$43,754) for 2009 as well.

B. LAND AREA CONFIGURATIONS

The Town of Burnsville is a small mountain community in western North Carolina, located in central Yancey County. Burnsville is the county seat of Yancey County, which borders Madison, Buncombe, McDowell and Mitchell counties of North Carolina and the State of Tennessee to the north. It is located between the Cane River and Toe River valleys with which it shares an economic base consisting of various manufacturing facilities and service-related employment. U.S. Highway 19E traverses the center of Burnsville and connects to Interstate 26 making Burnsville easily accessible. Therefore, the Town relies heavily on tourism as a major component of the economy. The Town owns and operates water and wastewater systems which serve customers within the Town limits and in adjacent Yancey County areas.

The topography of the area, as observed through review of data gathered from USGS, NC One Map and NCDENR, is typical of Western North Carolina, with steep slopes, narrow valleys and little bottomland. Burnsville sits on a high spot between the Cane River and South Toe River, with Pine Swamp Branch and Bowlens Creek (tributaries of the Cane River to the west) and Little Crabtree Creek (a tributary to South Toe River to the east) as the primary waterways in the area along with several smaller creeks and unnamed tributaries that ultimately drain to the Nolichucky River near the Tennessee border to the north. Burnsville has adequate access to surface water, and therefore does not include groundwater as a part of its water supply.

Currently, the Town of Burnsville consists primarily of commercial businesses along Highway 19E with residential development surrounding the area on the adjacent surface streets. The Town of Burnsville also contains several larger businesses and institutions including Altec Industries, a maker of fabricated truck bodies, Glen Raven Mills, a textile manufacturer, East Yancey Middle School, Burnsville Elementary School, Mountain Heritage High School, a Mayland Community College satellite campus, as well as numerous other businesses and churches.

The predominant soils of the project area are Fannin sandy clay loam, 30 to 50 percent slopes, eroded (FeE2, 16.0% of the area of interest), Udorthents, loamy, stony (Ud, 12.6%), Clifton clay loam, 8 to 15 percent slopes, eroded (CnC2, 12.4%) and Clifton clay loam, 15 to 30 percent slopes, eroded (CnD2, 11.5%). See the Appendix for soils report and map. The United States Department of Agriculture Natural Resources Conservation Service (USDA NRCS) defines four (4) hydrologic soils groups, from Group A for well drained to excessively drained soils through Group D for a very slow infiltration rate and high runoff potential. The aforementioned predominant soils of the Burnsville area are all categorized as Group B soils, which “consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture.” The steepness of the slopes, however, does indicate that these soils also experience medium to high surface runoff potential.

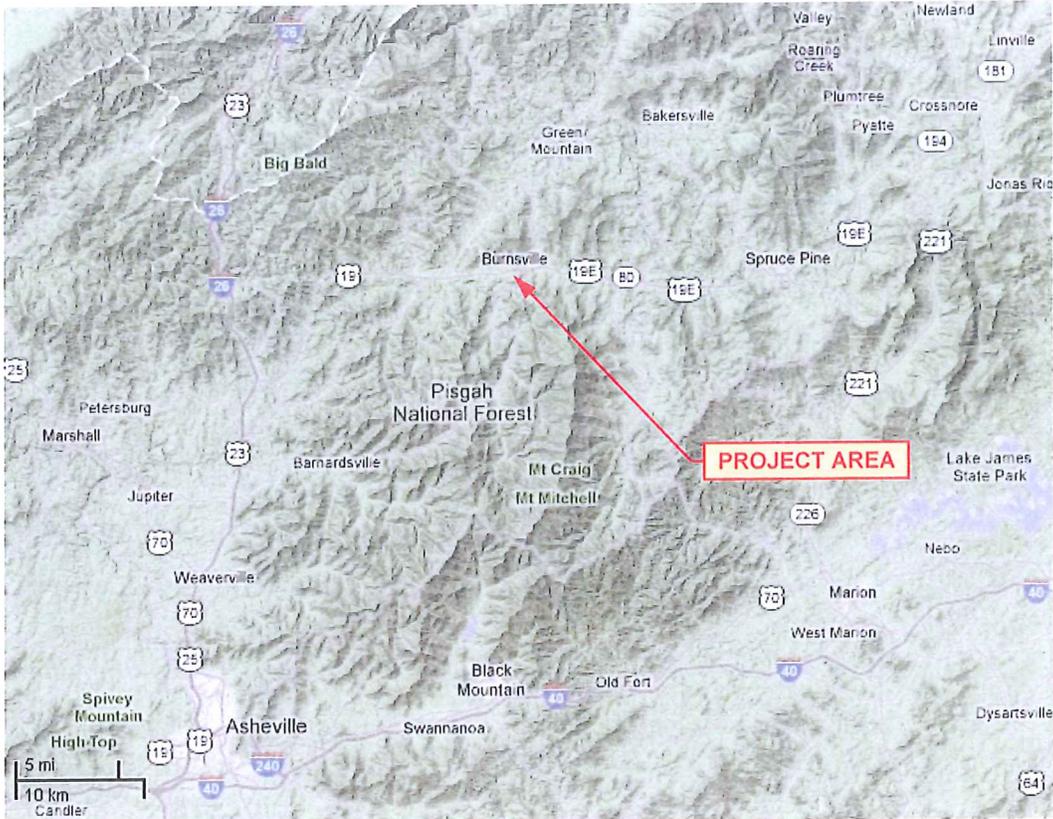


Figure II-1: Project area map. Source: Google Maps

SECTION III

DESCRIPTION OF EXISTING WATER FACILITIES

A. GENERAL STATUS

The Town of Burnsville owns and operates a public water supply and distribution system under PWSID (Public Water System Identification) No. 01-00-010. The Town originally began filtering raw water in the 1920s, utilizing forks of Bowlens Creek through a shared raw water line. A new intake and pump station was constructed on Cane River in 1989:

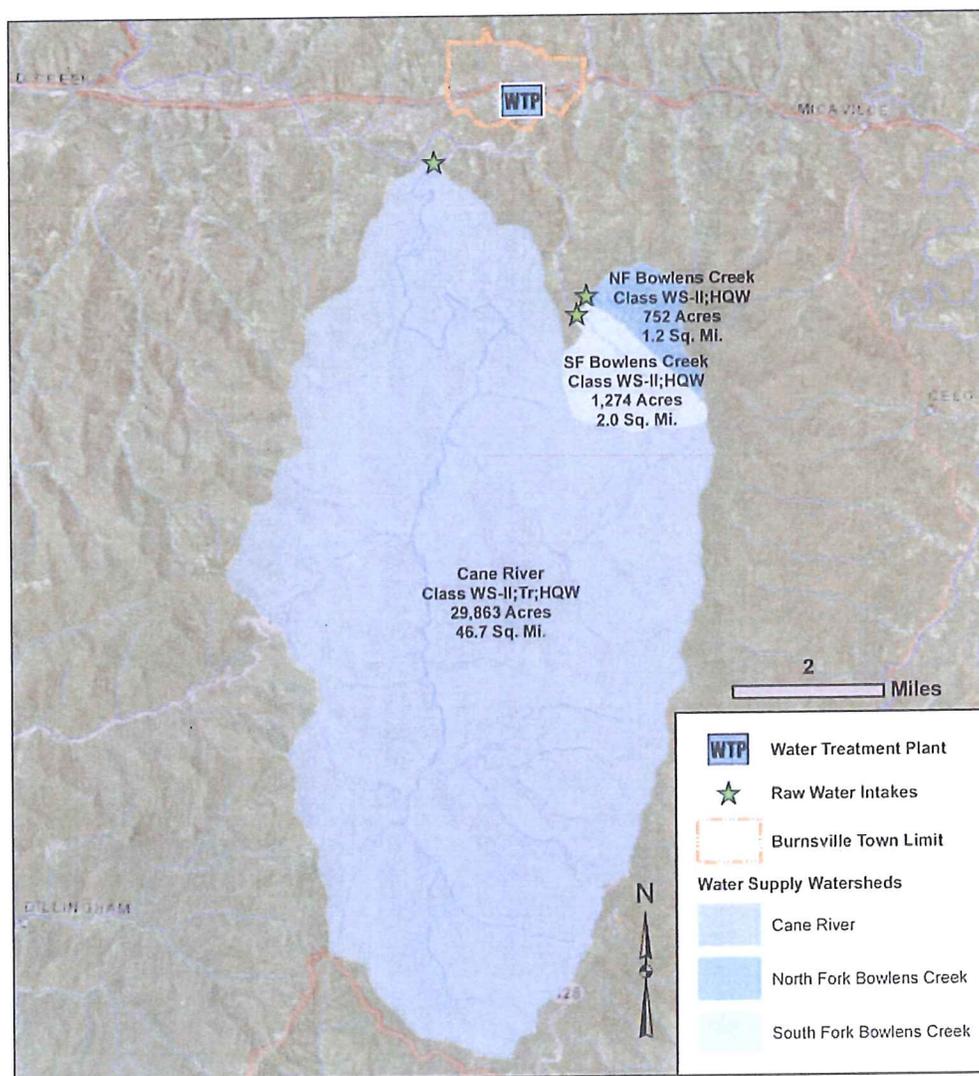


Figure III-1: Raw Water Supply Watersheds. NC One Map data.

The Town's original water filter plant was constructed on the south side of Town in the 1920s, and was capable of treating approximately 0.5 MGD. As mentioned above, it utilized the north fork (1.2 square mile drainage area, 0.250 MGD) and south fork (2.0 square mile drainage area, 0.250 MGD) of Bowlens Creek through a shared raw water line as a source of water. The Town maintains the original intakes on Bowlens Creek for emergency purposes, but they have not been used for some time.

The old plant was replaced on the same property in 1989 with its current treatment system. A new raw water intake and pump station was constructed at the same time, and the active plant now utilizes the Cane River as the primary source of raw water. The Cane River has a drainage area of approximately 47 square miles above the intake. A preliminary study performed by McGill Associates in 2008 found that although a drought-corrected USGS water resource data estimate for the Cane River calculates a low flow (7 day-10 year, 7Q10) of approximately 7.7 MGD, with an approximate safe yield of 1.5 MGD (20% of 7Q10) from the Cane River, a May 19, 1989 memo from the former Division of Environment Management (now Division of Water Quality) dictates that withdrawal is limited to 1.0 MGD at this location. This 1.0 MGD limit is repeated within the most recent Division of Water Resources North Carolina Water Supply Plan, which goes on to say that Burnsville "must cease withdrawals when downstream flows drop below 12.2 cfs."

The water treatment plant is located outdoors, utilizing a conventional treatment process consisting of pre-treatment chlorination, flash mixing, coagulation with liquid aluminum sulfate (alum), flocculation, sedimentation, filtration and post-treatment chlorination with a design capacity of 1.0 MGD. The treatment process has remained mostly unchanged since the replacement plant was constructed. Soda ash is used before and after treatment for pH adjustment and orthophosphate is injected afterwards for corrosion protection. Sampling points are located throughout the process. Finished water flows to a 0.275 MG underground concrete clearwell, and then pumped to a shared line that either feeds an on-site 2.0 MG concrete storage tank or directly to the distribution system. Sludge is pumped to an on-site dewatering tank. The dewatering tank and clearwell are both remnants from the original 1920s plant construction, and the 2.0 MG storage tank was part of a 1972 upgrade. A small

2-inch booster system is tapped into the storage tank line for the purpose of providing adequate water supply to some homes located above the treatment plant. Refer to the water treatment plant flow diagram below for a graphical representation:

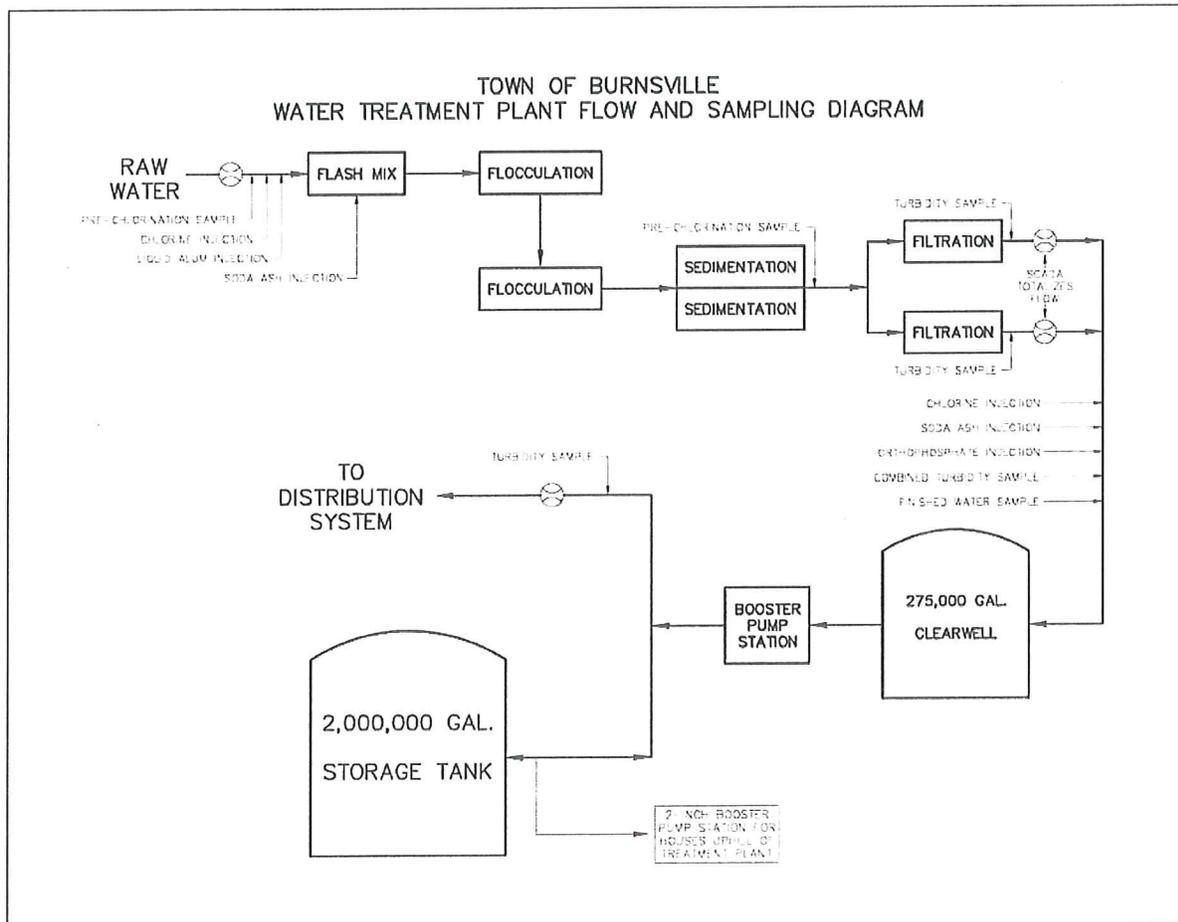


Figure III-2: Water Treatment Plant Flow Diagram.

The 300,000-gallon Altec storage tank was recently commissioned in 2010 on the west side of Town as part of the distribution system, which brings the total finished water storage capacity up to approximately 2.575 million gallons.

The water system provided service to 1,587 customers according to the Town's Local Water Supply Plan (LWSP) for calendar year 2011. There is a discrepancy between the total number of water customers obtained from the billing system (1,515) and the LWSP (1,587)

for that time period, due possibly to inconsistencies within the billing system software according to Town staff. Although the majority of customers are located within the existing Town of Burnsville's corporate limits, approximately 40% of all water customers are located outside the Town limits per staff estimates. Table III-1 shows the average customer base served by the Town of Burnsville water system throughout calendar year 2011, per their 2011 LWSP:

Type	Metered Connections	Average Metered Use (MGD)
Residential	1,308	0.170
Commercial	258	0.102
Industrial	4	0.088
Institutional	17	0.035
TOTAL	1,587	0.395

Burnsville's water distribution system consists of approximately 40 miles of 2-inch diameter through 12-inch diameter water lines constructed of cast iron (30% of total), ductile iron (30%), polyvinyl chloride (PVC, 30%) and asbestos cement (AC, 10%) pipe. According to system map revisions performed during the writing of this report, the size ranges and approximate total lengths of the Town's water distribution pipes are as follows:

Diameter (in)	Total Length (ft)	% of Total
1	3,356	1.6%
2	30,496	14.3%
4	23,082	10.8%
6	91,678	43.1%
8	35,937	16.9%
10	333	0.2%
12	27,948	13.1%
TOTAL	212,830 ft	
	40 miles	

This information is subject to change as current and near-future projects, including the widening of U.S. 19E, are completed and more detailed information about existing

infrastructure is collected. Also, approximately 18,575 linear feet of 4-inch pipe and 7,500 linear feet of 8-inch pipe are raw water lines from the Bowlens Creek intakes and Cane River intakes, respectively.

Current water and sewer rates are identical, and are more expensive in areas outside Town limits. In general, each user type is charged the same amount regardless of being residential, commercial, industrial or institutional. Each “inside town” connection is charged a minimum of \$18.00 per month for up to 3,000 gallons of water, and “outside town” connections are charged a minimum of \$36.00 for the same amount. Water sales above 3,000 gallons are a flat \$6 per 1,000 gallons for inside, and \$12 per 1,000 gallons for outside, up to 9,999 gallons. After 10,000 gallons is used in a month, a capacity depletion impact (CDI) fee of \$3.00 (inside or outside) is charged, with an additional \$1.50 charge for each additional 5,000 gallons. For example, an “outside” industrial user who consumes 20,000 gallons in one month would be charged \$246. See Table III-3 for a summary of water rates:

TABLE III-3 CURRENT MONTHLY WATER RATE SCHEDULE		
Description	Inside City Limits	Outside City Limits
All Customers Minimum (< 3,000 gal.)	\$18.00	\$36.00
> 3,000 gallons	\$6.00 per 1,000 gal.	\$12.00 per 1,000 gal.
Capacity Depletion Fee (> 9,999 gal.)	\$3.00 + \$1.50 per 5,000 gal.	\$3.00 + \$1.50 per 5,000 gal.

Further water rate analysis is included in the Water and Sewer Financial Analysis, attached in the Appendix.

Please refer to Figure III-3 (next page) for an overview of the Town of Burnsville’s water distribution system service area.

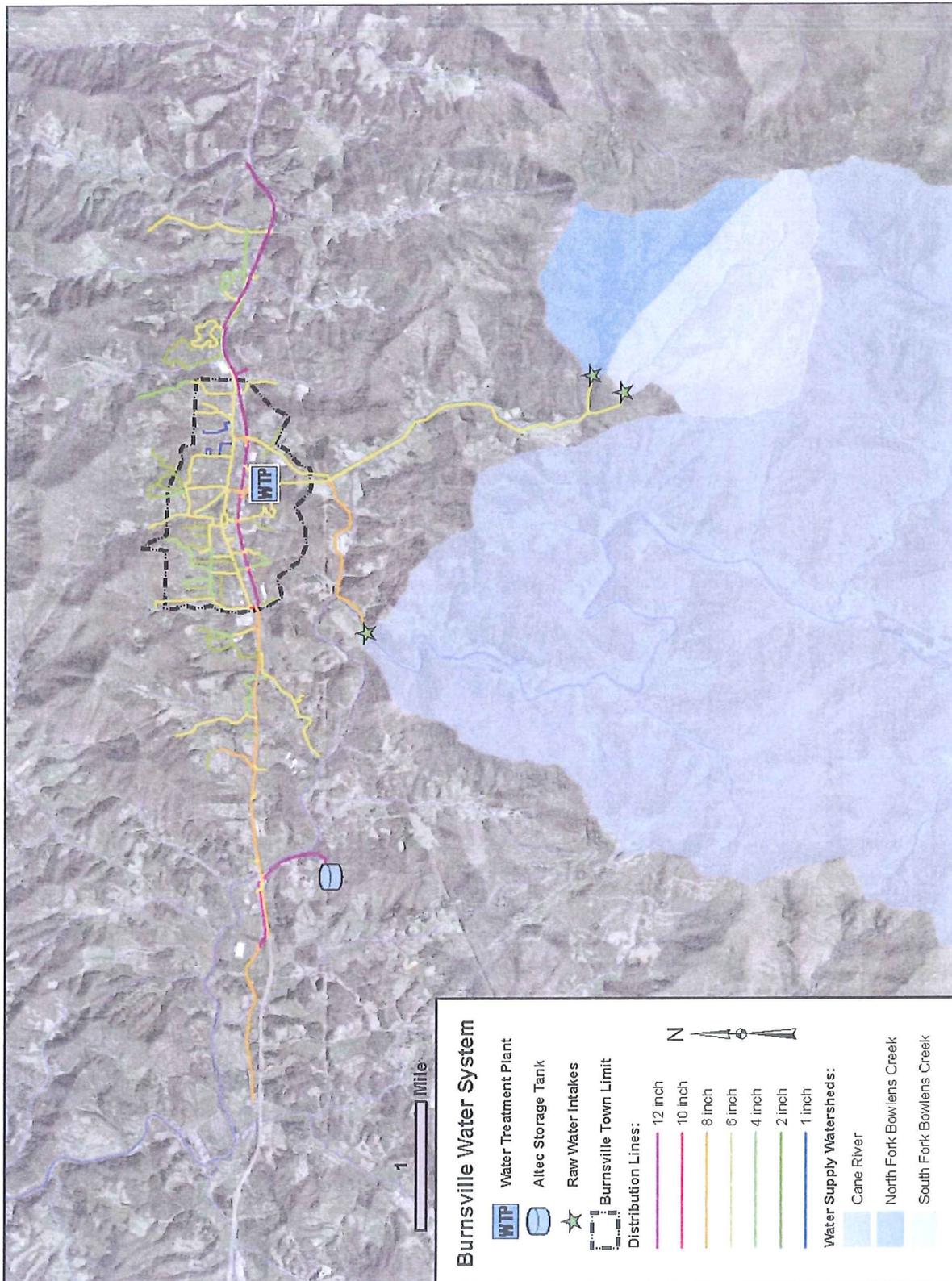


Figure III-3: Water Distribution System.

B. EXISTING CAPACITY

Burnsville’s water treatment plant has a permitted capacity of 1.0 MGD. Average daily raw water withdrawal from Cane River during calendar year 2011 was calculated at 0.573 MGD per monthly operating reports (MORs) for days that the facility was in operation, with a maximum daily withdrawal of 0.979 MGD (thus a withdrawal peaking factor of 1.7). The average rate of finished water sent to the distribution system was recorded as 0.498 MGD, with a maximum distribution of 0.787 MGD, or approximately 79% of the permitted capacity of the plant and yielding a distribution peaking factor of 1.6.

Upon the analysis of a 2011 water loss study performed by the North Carolina Rural Water Association (included in the Appendix), the peak distribution of 0.787 MGD and the second largest peak of the year, 0.678 MGD, both occurred in months that coincided with major leaks in the water system: the first in April of an estimated 450,000 gallons, and the second in August with an estimated leak of 400,000 gallons. On average, the Burnsville water treatment facility enjoys an excess capacity of 0.427 MGD (43%) when accounting for average raw water withdrawal rates. It should be noted, however, that the aforementioned *average* withdrawal figures are calculated with no regard for days in which the treatment plant is idle. According to MOR data, for example, the plant operated for 28 days in January, 24 days in February, 27 days in March, and so on. The total 2011 raw water withdrawal was 179.8717 million gallons, which yields a daily average of 0.493 MGD when spread out over all the days of the year. See Table III-4 below for a summary of water tracking information:

Description	Average (MGD)	Maximum (MGD)
Metered Raw Water Withdrawal (on days the WTP runs)	0.573	0.979
Metered Finished Water Production (on days the WTP runs)	0.577	1.010
Raw Water Withdrawal (over 365 days)	0.493	--
Finished Water Production (over 365 days)	0.497	--
Metered to Distribution System (over 365 days)	0.497	0.787
Metered to Customers (from Local Water Supply Plan)	0.395	--
Metered to Customers (from Town billing department)	0.260	--

It can be inferred from the information in Table III-4 that the tracking and billing of potable water could be improved. In spite of the many ways this data can be interpreted, it is clear that billed water usage for which the Town receives revenue from customers (0.260 MGD) comprised only 52% of the water introduced to the distribution system on average (0.497 MGD) in 2011. See the following section for additional information about water loss.

State regulations require that at least one-half day of finished water storage be provided in the system. However, for improved reliability and fire protection, and is generally recommended that at least one full day of storage be provided. With a total of 2.575 million gallons of finished water storage, the system has more than adequate storage to meet the current finished water distribution system demand of 0.498 MGD (2011 average).

The water treatment source and treatment system has sufficient capacity for the local government, and there are no commitments of capacity to other units of local government.

C. PRESENT CONDITION

Although operation and maintenance of the water treatment plant is excellent and has sufficient production capacity for the local government, renovations and upgrades are necessary in order to modernize the facility. A substantial percentage of the distribution lines (40%) are made of either cast iron or asbestos cement, which belies the pipes' age since those materials are no longer installed as standard practice. Broken and leaking sections of these lines are common, and an estimated 1,100,000 gallons were lost due to leaks in 2011. It is also estimated that many of the Town's standard water meters are beyond the 10-15 year threshold at which time they are more likely to exhibit leakage and under-reporting.

A water audit performed by the North Carolina Rural Water Association estimated that combining metered usage and authorized or other losses (water main flushing, storage tank drainage, leaks and water used for system processes,) total accounted-for usage for 2011 was approximately 96,465,000 gallons. This equates to apparent unmeasured water or water losses of approximately 84,728,300 gallons, or 47% of the plant's net produced water of 181,193,300 gallons for the year. It should be noted that total estimated leaks and authorized losses accounted for only 1% of the water introduced into the distribution system.

Assumptions and estimates were integrated into this analysis, and an apparent limitation of the billing software system has made it impossible for Town staff to accurately delineate residential use from commercial, industrial and institutional uses. More detailed data collection methods and metering improvements on the water production, distribution, metering and billing sides may reveal the true percentage of un-allocated water that is being actually lost versus what is merely unmeasured or otherwise accounted-for.

As previously indicated, Burnsville's water distribution system consists of approximately 40 miles of 2-inch diameter through 12-inch diameter water lines constructed of cast iron (30% of total), ductile iron (30%), polyvinyl chloride (PVC, 30%) and asbestos cement (AC, 10%) pipe. Several areas of Town have too many homes on small-diameter lines, as well as fire hydrants that have been placed on 4-inch pipe and do not meet State regulations.

The water treatment plant is located outdoors, utilizing a conventional treatment process consisting of pre-treatment chlorination, flash mixing, coagulation with liquid aluminum sulfate (alum), flocculation, sedimentation, filtration and post-treatment chlorination with a design capacity of 1.0 MGD. The treatment process has remained mostly unchanged since the replacement plant was constructed. Soda ash is used before and after treatment for pH adjustment and orthophosphate is injected afterwards for corrosion protection. Sampling points are located throughout the process. Finished water flows to a 0.275 MG underground concrete clearwell, and then pumped to a shared line that either feeds an on-site 2.0 MG concrete storage tank or directly to the distribution system. Sludge is pumped to an on-site dewatering tank. The dewatering tank and clearwell are both remnants from the original 1920s plant construction, and the 2.0 MG storage tank was part of a 1972 upgrade. A small 2-inch booster system is tapped into the storage tank line for the purpose of providing adequate water supply to some homes located above the treatment plant.

A. GENERAL STATUS

The Town of Burnsville owns and operates a single wastewater treatment plant located on Pine Swamp Road in southwestern Burnsville and makes sewer service available to all residents of the Town from this location. The facility was originally constructed in 1963 as a 0.3 MGD contact stabilization plant. A second contact stabilization unit was added in the mid 1980s, which expanded the facility to its current 0.8 MGD capacity. Each unit contains an integral chlorine contact chamber and an aerated digester. The process of sludge composting also occurs at the facility and produces a Class A product, which achieves compliance with CFR 40, Part 503 requirements through Option 5 for vector attraction and Alternative 5, Option 1 (Composting) for pathogen reduction. This compost is stored on-site and has proven to be very popular, often utilized by farmers and other residents wishing to use it. The Town has therefore never had to enter into an agreement with a contract hauler for removal of the compost. Dechlorination of the treated effluent is achieved through the addition of sulfur dioxide prior to final discharge to the Cane River under NPDES Permit No. NC0020290, which contains the following discharge limits:

DISCHARGE PARAMETER	PERMIT LIMIT
FLOW	0.80 MGD (monthly)
BOD	30.0 mg/L (monthly) 45.0 mg/L (weekly)
TSS	30.0 mg/L (monthly) 45.0 mg/L (weekly)
FECAL COLIFORM	200 /100 mL (monthly) 400/mL (weekly)
pH	6.0 – 9.0
OIL & GREASE	30.0 mg/L (monthly) 60.0 mg/L (daily)
RESIDUAL CHLORINE	28.0 µg/L (daily)
CADMIUM	2.0 µg/L (daily)
LEAD	34 µg/L (daily)

On March 16, 2000 the North Carolina Division of Water Quality (DWQ) placed the Town of Burnsville on sewer moratorium. The reasons cited by the DWQ for this moratorium was a history of repeated non-compliance with the discharge permit that was issued to the wastewater treatment facility. The table below summarizes the permit violations that led to the issuance of the moratorium:

TABLE IV-2 NPDES PERMIT VIOLATIONS BEFORE MORATORIUM		
YEAR	NO. OF VIOLATIONS	PARAMETER VIOLATED
1994	4 monthly average violations	TSS
	3 monthly average violations	Fecal Coliform
1995	9 monthly average violations	TSS
	1 monthly average violation	BOD
	3 monthly average violations	Fecal Coliform
1996	4 monthly average violations	TSS
1997	2 monthly average violations	TSS
	1 monthly average violation	BOD
1998	1 monthly average violation	TSS
1999	4 monthly average violations	TSS
	4 monthly average violations	BOD
	2 monthly average violations	Fecal Coliform
2000	1 monthly average violation	TSS
	1 monthly average violation	BOD

In response to this moratorium, the Town of Burnsville commissioned the preparation of a Preliminary Engineering Report to make recommendations to improve the performance of the wastewater treatment plant. That report prioritized the necessary improvements at the facility into two phases.

Phase 1 improvements of the facility included a new belt filter press to dewater the sludge generated by the treatment process. The first phase of this work also included an improved compost handling area at the plant, and all Phase 1 construction was completed in 2002.

The performance of the wastewater treatment plant was dramatically improved after the completion of the Phase 1 improvements, but it was critical that the Town fulfill its obligation to complete all the improvements it committed to when the moratorium on the facility was lifted by the State. In order to fulfill those obligations, it was necessary to complete the Phase 2 portion of the project.

Phase 2 included a new automatic headworks assembly with integral grit removal system and a new flow splitter box utilizing weir gates. This equipment has significantly reduced the volume of problematic solids entering the treatment units, thereby improving their performance and allowing the operator of the facility to accurately split the wastewater flow among the treatment units. The materials removed from the wastewater by this equipment are deposited into a dumpster which is periodically emptied by an appropriate contractor.

A standby generator was also installed during Phase 2, which automatically engages when the main power supply to the facility is interrupted and allows the facility to remain fully operational for proper treatment of wastewater during periods of power failure. The facility had no source of standby power prior to this, and therefore lost function to all electrical equipment necessary for wastewater treatment during power interruption.

The relocation and rehabilitation of the existing chlorination and dechlorination equipment was also completed as part of the Phase 2 improvements. The previous location of this equipment made delivery and handling of the chemical cylinders difficult, and some of the previous system was not redundant. Therefore, the equipment was relocated into a new structure adjacent to the existing lab building, aged or worn system components were replaced, and redundant components including metering pumps were added. In accordance with OSHA regulations, these systems and their associated chemicals are now contained in separate rooms adjacent to the existing lab building. Each room has separate atmospheric control and monitors including heating, ventilation and lighting.

The facility previously obtained water for treatment operations from an on-site well located adjacent to one of the treatment units. This well was inadequate in providing the necessary

volume of water for the facility. The Town had installed pumps in the effluent wastewater stream in hopes of supplementing the well water, which returned this water to the plant for use in the chlorination and dechlorination equipment and the belt filter press. Doing so, however, resulted in high maintenance concerns due to the solids in the system clogging filters in the lines and within the equipment. Phase 2 incorporated an extension of the Town's potable water system to the wastewater treatment plant site. The water line extension provided potable water to the site, significantly reducing this maintenance, provided the capacity necessary for treatment processes and provided potable water to lab building and other locations. The extension of the water system consisted of approximately 3,000 linear feet of six-inch water line along Pine Swamp Road to the plant and other improvements which connected this source to the existing on-site water lines.

Replacement of the existing aeration blowers was also undertaken as part of the Phase 2 improvements project. Two (2) sets of centrifugal blowers were previously used in aerating the treatment units. The first set of two (2) blowers was installed in conjunction with the original construction of the 0.3 MGD facility in 1963, and the second set added when the capacity of the plant was expanded to 0.8 MGD in the mid 1980s. Both sets of blowers operated independently of each other and were dedicated to the treatment units for which they were originally installed. All of the existing blowers were significantly undersized based on modern design parameters for the treatment of municipal wastewater. Based on these needs, all four (4) of the previous blowers were replaced with three (3) new properly-sized centrifugal blowers. Each of the treatment units received one (1) blower sized specifically for it, and the third acts as a backup for either of the others. The aeration system improvements also included the replacement of deteriorated air piping and valves in each of the basins that did not function properly, as well as the complete replacement of previous aeration diffusers in each of the treatment units.

Finally, site lighting improvements were made at the treatment plant site. Several of the lighting fixtures at the facility either provided inadequate lighting or did not work at all. In addition, several critical areas of the facility were not equipped with lighting of any kind. New lighting fixtures were installed along the walkway in the center of each of the treatment

units and the new flow splitter box area between them. New lighting was also installed on the exterior eaves of the lab building near the new headworks and at the top of the steps near the old chlorination/dechlorination building. Phase 2 of the project also included the complete replacement of the asphalt shingles on the lab building, replacement of the water-damaged plywood roof sub-structure, new eaves, gutters and downspouts. All Phase 2 work was completed in 2010. Refer to the wastewater treatment plant flow diagram below for a graphical representation of the treatment process:

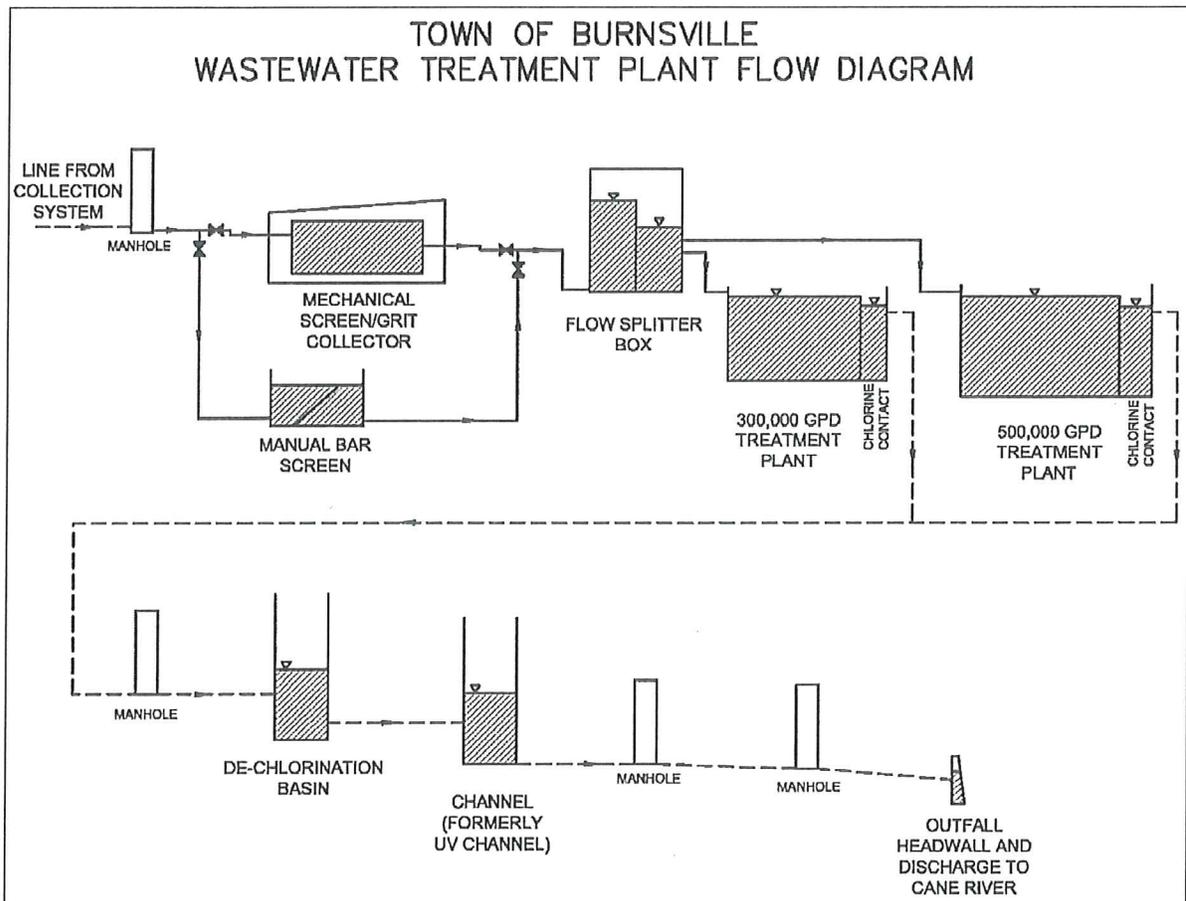


Figure IV-1: Wastewater Treatment Plant Flow Diagram.

The sewer system provided service to 1,066 customers according to the Town's billing information for calendar year 2011. An apparent limitation of the billing system software appears to make segregation of customers by type (residential, industrial, commercial, etc) impossible at this time; however, it is able to show that although the majority of customers

are located within the existing Town of Burnsville’s corporate limits (834 customers, or 78%), approximately 22% (232 sewer customers) are located outside the Town limits.

The wastewater collection system serving the Town of Burnsville consists of approximately 22.7 miles of gravity sewer lines ranging in size from 4-inch to 10-inch pipe made mostly of vitrified clay, PVC and ductile iron. Accurate individual percentages of each material are unknown at this time. The system also contains approximately 4.6 miles of force main ranging in size from 2 inches to 8 inches in diameter. Sewer collection service is made available to all residences and businesses within the Town of Burnsville and several areas outside the Town limits. According to system map revisions performed during the writing of this report, the size ranges and approximate total lengths of the Town’s sewer collection system pipes are as follows:

TABLE IV-3 SEWER COLLECTION PIPE SIZE RANGES		
Diameter (in)	Total Length (ft)	% of Total
4	18,203	12.6%
6	42,380	29.4%
8	45,518	31.6%
10	13,884	9.6%
Force Main (2"-8")	24,078	16.7%
TOTAL	144,063 ft	
	27.3 miles	

This information is subject to change as current and future projects, such as widening of U.S. 19E, are completed and more detailed information about existing infrastructure is collected.

As Burnsville is centered on a high point in the area, all sewer flow from the east side of town must be pumped to the top of the western gravity portion of the sewer system where it flows to the existing treatment plant. The pump station responsible for this critical task is located adjacent to the former Outboard Marine Corporation (OMC) manufacturing facility and is therefore known as the OMC Pump Station. Several other smaller pump stations currently operate on the east side of Town; however, all flow from the east side of town is ultimately pumped through the OMC Pump Station.

Current water and sewer rates are identical, and are more expensive in areas outside Town limits. In general, sewer collection is based on metered water usage and each user type is charged the same amount regardless of being residential, commercial, industrial or institutional. Each “inside town” connection is charged a minimum of \$18.00 per month for up to 3,000 gallons of water used, and “outside town” connections are charged a minimum of \$36.00 for the same amount. Water use (hence sewer billings) above 3,000 gallons are a flat \$6 per 1,000 gallons for inside, and \$12 per 1,000 gallons for outside, up to 9,999 gallons. After 10,000 gallons is used in a month, a capacity depletion impact (CDI) fee of \$3.00 (inside or outside) is charged, with an additional \$1.50 charge for each additional 5,000 gallons. For example, an “outside” industrial user who consumes 20,000 gallons of water in one month would be charged \$246 for sewer. See Table IV-4 for a summary of sewer rates:

TABLE IV-4		
CURRENT MONTHLY SEWER RATE SCHEDULE		
Description	Inside City Limits	Outside City Limits
All Customers Minimum (< 3,000 gal.)	\$18.00	\$36.00
> 3,000 gallons	\$6.00 per 1,000 gal.	\$12.00 per 1,000 gal.
Capacity Depletion Fee (> 9,999 gal.)	\$3.00 + \$1.50 per 5,000 gal.	\$3.00 + \$1.50 per 5,000 gal.

Further sewer rate analysis is included in the Water and Sewer Financial Analysis, attached in the Appendix.

Please refer to Figure IV-2 (next page) for an overview of the Town of Burnsville’s sewer collection system service area.

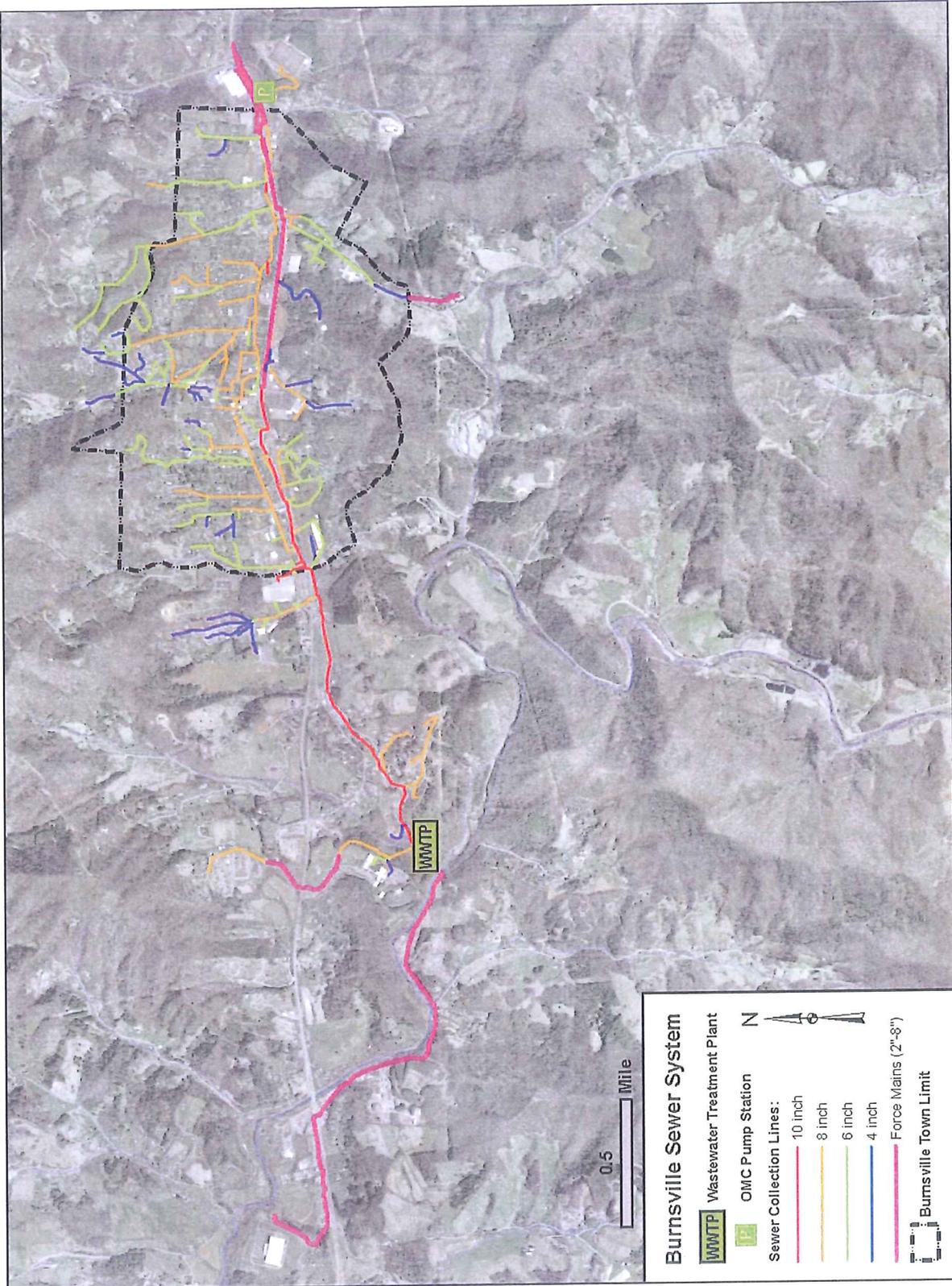


Figure IV-2: Sewer Collection System.

B. EXISTING CAPACITY

The Town of Burnsville's wastewater treatment plant has a permitted capacity of 0.8 MGD. Average daily use at the plant for calendar year 2011 was 0.364 MGD with a maximum daily reading of 1.098 MGD, according to the facility's required daily monitoring reports (DMRs). The average daily flow of 0.364 MGD leaves the plant with an excess treatment capacity of approximately 0.436 MGD (55%) on average.

There are no anticipated future commitments of capacity to other units of local government, and the existing wastewater treatment plant has adequate capacity for the needs of the Town. Inflow and infiltration (I/I) improvements are expected to begin in July 2012 on seven (7) segments of the sanitary sewer collection system, which will protect the treatment plant from severe wet-weather flow spikes and further ensure that needed treatment capacity is available for all residents, businesses and local government.

C. PRESENT CONDITION

Since the completion of the latest improvements at the wastewater treatment plant, the facility has been operating well within its NPDES discharge limits. There are many areas served by undersized and/or damaged collection lines, however, which do not meet State regulations. Per NCDENR's Minimum Design Criteria for the Permitting of Gravity Sewers, "No public gravity sewer conveying wastewater shall be less than 8 inches in diameter," and "Manholes shall be installed: at the end of each line, at all changes in grade, size, or alignment, at all intersections, and at distances not greater than 425 feet for all sewers unless documentation and specifications can be provided by the owner/authority stating they have the capability to perform routine cleaning and maintenance on the sewer at distances greater than 425 feet." Burnsville has many lines under the 8-inch minimum (approximately 42% per Table IV-3) and several locations where manhole spacing does not meet minimum criteria or no manholes exist at all. Many of these problem areas are to be brought into compliance with the construction of the recommended capital improvement projects described in this document.

I/I remains a problem in Burnsville, as described and estimated in the 2003 I/I study performed by McGill Associates. The sources of this I/I vary, and include cross connection with storm lines and downspouts, and cracked/broken sewer lines (predominantly clay material) and manholes. Fortunately, the largest I/I problems are believed to have been identified and seven (7) individual replacement and rehabilitation projects have been designed and adequately funded. Construction bids were received in June 2012 and renovations of the subject I/I contributory areas are expected to begin in July 2012. Therefore, mitigation of I/I in the Town's collection system is underway and it is impossible to surmise the specific amount of I/I that will have been eliminated after construction is complete.

The Town owns and operates a single wastewater treatment plant located on Pine Swamp Road in southwestern Burnsville and makes sewer service available to all residents of the Town from this location. The facility was originally constructed in 1963 as a 0.3 MGD contact stabilization plant, which was expanded to 0.8 MGD capacity with a second contact stabilization unit in the mid 1980s. Each unit contains an integral chlorine contact chamber and an aerated digester. The process of sludge composting occurs at the facility and produces a Class A compost product, which is stored on-site and has proven to be very popular with farmers and other residents wishing to use it. The facility utilizes a direct discharge to Cane River. Please refer to Figure IV-1 for the treatment process flow diagram.

Eight (8) violations have been issued to the Town WWTP in the last two (2) years, with two (2) of those proceeding to enforcement cases. Most of these violations were due to insufficient testing frequency and were not indicative of any treatment or discharge malfunctions at the plant. One (1) of the listed violations was for an exceeded allowable discharge value. See Table IV-5 (next page) for details:

TABLE IV-5 NOTICES OF NPDES PERMIT VIOLATIONS IN LAST TWO YEARS			
YEAR	PARAMETER	VIOLATION TYPE	VIOLATION ACTION
2010	Nitrogen, Ammonia Total	Frequency Violation	Proceed to NOV
	Nitrogen, Total (as N)	Frequency Violation	Proceed to Enforcement Case
	Phosphorus, Total (as P)	Frequency Violation	Proceed to Enforcement Case
2011	Cadmium, Total (as Cd)	Frequency Violation	Proceed to NOV
	Chlorine, Total Residual	Frequency Violation	Proceed to NOV
	pH	Frequency Violation	Proceed to NOV
	Lead, Total (as Pb)	Daily Maximum Exceeded	Proceed to NOV
	Lead, Total (as Pb)	Frequency Violation	Proceed to NOV
2012	None		

A. PREVIOUSLY COMPLETED STUDIES, ASSESSMENTS, ETC.

This study is consistent with previously-completed assessments, and relies on background information provided to McGill Associates by the Town of Burnsville and contained in the following documents and studies:

- “Water Distribution System Master Plan,” May 2001, by McGill Associates, P.A.
 - This document contained an evaluation of the existing water distribution system of Burnsville, and included recommendations for its improvement over a 20-year period. Several improvements have been made since the report was published, but three (3) projects from 2001 (Glendale Avenue, Meadow Road and Bill Young Road Improvements) have yet to be completed and are included as prioritized water system projects within this document.

- “Sanitary Sewer System Infiltration and Inflow Study,” April 2003, by McGill Associates, P.A.
 - The I/I study of 2003 identified many areas of the Town’s wastewater collection system that must be repaired or replaced in order to minimize the introduction of surface water and storm drainage as well as the spillage of untreated sewage.

- “Inflow and Infiltration Remediation Project,” February 2011, by McGill Associates, P.A.
 - The documents produced in this study were critical in securing the funding necessary to rehabilitate and/or repair I/I issues discovered during the aforementioned 2003 I/I study. It resulted in the design of a total of seven (7) I/I reduction projects. Bids were received in June 2012, and construction is expected to begin in July 2012.

There has not been a specific study relating to the assessment of rate and fee structures in the project area performed in the last ten years. This report includes, in addition to descriptions of many water and sewer capital improvement projects, a recommended capital budget that should be utilized by the Town for the prioritization and implementation of the recommended improvements.

B. SPECIFIC LIMITATIONS

The Town of Burnsville is not located in the Central or Southern Coastal Plain Capacity Use Areas, and is therefore not subject to withdrawal limitations of such. The area has adequate surface water resources on average, but does have an official Water Shortage Response Plan per General Statute 143-355 (l) that is to be followed in the case of drought events. A copy of the Town's Water Shortage Response Plan is included in the Appendix.

C. LONG-TERM POTENTIAL ALTERNATIVES

No long-term changes to water or sewer service delivery are predicted to occur over the 20-year planning period, with the exception of a proposed water service extension to the nearby Micaville community to the east, the bringing of water service to three (3) small areas that do not currently have it and normal population growth. See Table V-2. Burnsville expects a slow growth in population to be maintained, unless a large employer comes to the area. This is feasible due to the expansion of U.S. Highway 19 attracting new businesses, but is impossible to predict. The North Carolina Office of State Budget and Management does not project population increases for individual municipalities, but does anticipate that Yancey County will experience a slowing net increase in population of only 3.61% total over the next 20 years, from 18,245 persons to 18,904:

TABLE V-1 NC OSBM POPULATION FORECAST FOR YANCEY COUNTY		
Year	Total Population	% Increase
2012	18,245	--
2017	18,709	2.54%
2022	18,849	0.75%
2027	18,889	0.21%
2032	18,904	0.08%
20-Year Growth:		3.61%

By all accounts, population growth is expected to be relatively slow in the project area. From the North Carolina Rural Economic Development Center's online profile for the Town of Burnsville:

"The recent economic downturn has put the pinch on large plants and small businesses alike. Thriving Main Street businesses are separated by empty storefronts. The Avondale Mill, which closed its doors six years ago, sits vacant on the west side of town.

The construction industry, which replaced manufacturing as the town's largest employment sector in 2006, suffered when the housing bubble burst. The market for new home construction is less than half of what it was two years ago. The county's unemployment rate, which peaked at 14.5 percent in February 2009, dropped slightly to 12.6 percent in March 2010."

The Town's Local Water Supply Plan (LWSP) for 2011 forecasts a net 20-year increase in the service population (combined in-town and outside-town) of 104 persons, from 3,950 to 4,054 for a percent growth of 2.63%.

The aforementioned Micaville water service extension is set to be constructed in phases over the next several years, and this addition will likely be the largest increase in water use over the 20-year period. It is expected to ultimately serve Micaville Elementary School, the Hickory Springs furniture manufacturing facility, a small motel, the old Taylor Togs facility and approximately 100 homes and small businesses, for an estimated daily average water demand of approximately 50,125 gallons per day according to estimation rates provided by NCDENR Public Water Supply Section (15A NCAC 18C .0409).

Considering this projected population growth and water service extension information for the 20-year study period, as well as the average excess capacities of the water treatment (43%) and wastewater treatment (55%) plants, it is apparent that without a large employer or water-heavy industry relocating to the area it will be unnecessary to expand either the water or wastewater facilities in the next 20 years. It is instead recommended that the Town focus on improving its existing facilities and distribution/collection networks, and take positive steps toward the elimination of unaccounted-for water losses and I/I in the sewer collection system so that the flow peaks experienced by both treatment plants are minimized to the greatest possible extent.

TABLE V-2 ANTICIPATED NEW WATER CUSTOMERS IN 20-YEAR STUDY PERIOD	
Description	Expected Average Demand (GPD)
Micaville Water Extension	50,125
Project W7 – West Burnsville Church Road	10,000
Project W11 – Burnsville School Road	8,000
Project W13 – Comet Lane Trailer Park	13,200
Normal Population Growth (3.61%)	27,200
TOTAL	108,525

There is no expectation that the Town will draw or lose a large water-using employer or attempt to regionalize its water and/or sewer services in the near future; however, Burnsville is certainly interested in entertaining the possibility of a water reuse program in order to conserve potable water.

A. PROPOSED WATER SYSTEM IMPROVEMENTS

Recommended water system improvements are listed below. The recommended improvements are designed to correct present deficiencies, increase system reliability and provide capacity to meet projected year 2032 water demands. The following listing includes brief descriptions and estimated capital costs of the proposed water system improvement projects.

Project W1 – Cane River Intake Pump Replacement

The Town currently relies on the Cane River intake for 100% of its regular raw water supplies. Two (2) 200-horsepower Fairbanks Morse vertical turbine pumps were installed and put into service in 1991, with a normal operating condition of 700 GPM at 750 feet TDH. Replacement pump sections were delivered in 2005 and later installed in 2007-08, utilizing the original motors and discharge heads. One of the rebuilt pumps started having problems almost immediately, and it is believed to be leaking from the bowl assembly and is unable to build enough pressure to operate. The Cane River intake is now operating with only one pump and will use the Bowlens Creek intakes for emergencies if Cane River should fail.

This project includes the replacement of one (1) raw water pump assembly, minus the existing motor and discharge head, and the professional inspection of the other pump and remainder of the pump station components for a certified operational duplex raw water pump station.

PROJECT W1 CANE RIVER INTAKE PUMP REPLACEMENT					
ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENSION
1	Pump Bowl Assembly Replacement	1	EA	\$37,500	\$37,500
2	Pump Station Inspection	1	LS	\$4,200	\$4,200
TOTAL CONSTRUCTION COSTS					\$41,700
Construction Contingencies					\$8,300
TOTAL PROJECT COSTS					\$50,000

Project W2 – Automated Meter Reading (AMR) Project

This proposed project consists of the direct replacement of all existing Town water meters with automated radio-read water meters. As mentioned previously, and per the North Carolina Rural Water Association (NCRWA), the Town experienced an average daily water loss of approximately 0.232 million gallons (47%) per day in 2011, for a total of 84,728,300 gallons. This is well beyond the State of North Carolina's desirable level of 10% non-revenue water loss.

Meters over 10-15 years old are more likely to exhibit leakage and under-reporting characteristics. The existing system currently does not operate at peak efficiency due to its deteriorating condition, and the proposed project will not only upgrade all existing meters but give Town staff the opportunity to field assess all water connections in the process. Replacement of existing meters should reduce non-revenue water loss that the system currently encounters.

In addition, Town utility staff indicates that manually reading all customer meters takes several working days whereas a radio-read system could be completed in one or two days. The proposed project will provide an added monetary benefit to the Town and its customers. Installing automatic radio-read meters will result in less non-revenue water losses, increase the efficiency of the overall system, and reduce the costly repairs and man-hours required for the increasing maintenance on the existing water services. The Town therefore has a need to move forward with the proposed project in order to provide safe, reliable and cost effective water service to all current and future water system customers.

This project will include meter reading and tracking software, as well as a custom interface with the Town's existing billing software and training on the proper operation of the new system.

PROJECT W2 AUTOMATED METER READING (AMR) PROJECT					
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENSION
1	Mobilization	1	LS	\$19,600	\$19,600
WATER METER READING SYSTEM					
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENSION
1	Mobile Data Collector (laptop type)	1	EA	\$20,000	\$20,000
2	Software installation and setup, custom interface to existing billing software, training and support	1	LS	\$5,500	\$5,500
Sub-Total					\$25,500
WATER METERS (MATERIALS ONLY)					
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENSION
1	5/8" x 3/4" radio-read meter	1420	EA	\$180	\$255,600
2	1" radio-read meter	60	EA	\$280	\$16,800
3	2" compound radio-read meter	40	EA	\$1,900	\$76,000
4	3" compound radio-read meter	1	EA	\$2,300	\$2,300
5	4" compound radio-read meter	5	EA	\$2,900	\$14,500
6	6" compound radio-read meter	5	EA	\$4,500	\$22,500
Sub-Total					\$387,700
METER INSTALLATION					
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENSION
1	5/8" x 3/4" meter installation, direct replacement	1420	EA	\$36	\$51,120
2	5/8" x 3/4" setter installation (add new / replace existing)	425	EA	\$250	\$106,250
3	1" meter installation, direct replacement	60	EA	\$40	\$2,400
4	1" setter installation (add new / replace existing)	20	EA	\$340	\$6,800
5	2" compound meter installation, direct replacement	40	EA	\$135	\$5,400
6	2" compound meter vault/box/piping modification	15	EA	\$2,100	\$31,500
7	3" compound meter installation, direct replacement	1	EA	\$350	\$350
8	3" compound meter vault/box/piping modification	1	EA	\$2,500	\$2,500
9	4" compound meter installation, direct replacement	5	EA	\$450	\$2,250
10	4" compound meter vault/box/piping modification	3	EA	\$2,960	\$8,880
11	6" compound meter installation, direct replacement	5	EA	\$550	\$2,750
12	6" compound meter vault/box/piping modification	3	EA	\$3,600	\$10,800
13	Modification of existing box for exterior transmitter	600	EA	\$15	\$9,000
Sub-Total					\$240,000
TOTAL CONSTRUCTION COSTS					\$672,800
Construction Contingencies					\$134,600
Technical Services					\$134,600
Legal and Administrative					\$10,000
TOTAL PROJECT COSTS					\$952,000

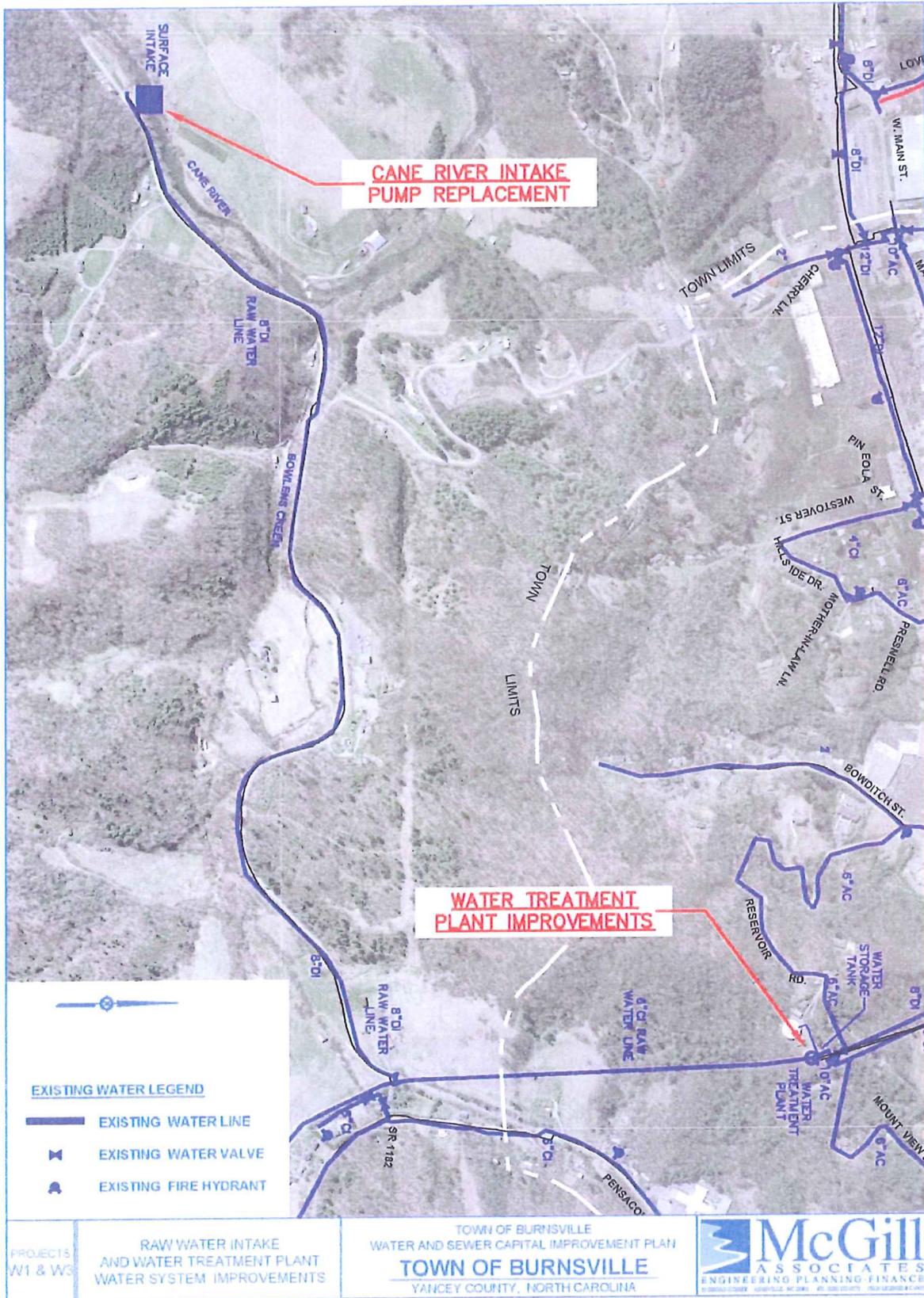
Project W3 – Water Treatment Plant Improvements

The water treatment plant has seen no major improvements or repairs for over 20 years. Needed improvements include structural inspection and probable repair work on some of the concrete tankage, which is experiencing localized leaking due to cracks and concrete spalling.

Also included is the desire to upgrade the sewer service to the plant, which currently relies on an old 4-inch service line, to a new 8-inch sewer line with manholes. This upgraded sewer line will allow for the abandonment of the sludge dewatering system, since discharged process water could be sent directly to the sewer collection system.

Another improvement needed for the water treatment plant is upgrading the draw and fill lines on the 2-MG finished water storage tank. The current dual 8-inch water lines are original to the system and newer pipes with an upgraded valve configuration would improve the operational flexibility of the 2-MG storage tank by allowing the operator to isolate the tank and more accurately track the amount of water sent to either the tank or distribution system.

PROJECT W3					
WATER TREATMENT PLANT IMPROVEMENTS					
ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENSION
1	Mobilization	1	LS	\$9,800	\$9,800
2	Concrete Tank Structural Inspection	1	LS	\$8,000	\$8,000
3	Concrete Tank Rehabilitation	1	LS	\$100,000	\$100,000
4	8" DIP Sanitary Sewer	1,800	LF	\$50	\$90,000
5	4' Dia. Manholes - Standard	12	EA	\$2,000	\$24,000
6	Abandon Sludge Dewatering System	1	LS	\$40,000	\$40,000
7	2MG Reservoir Piping Modifications	1	LS	\$65,000	\$65,000
TOTAL CONSTRUCTION COSTS					\$336,800
Construction Contingencies					\$67,400
Technical Services					\$101,000
Legal and administrative					\$10,000
TOTAL PROJECT COSTS					\$515,200

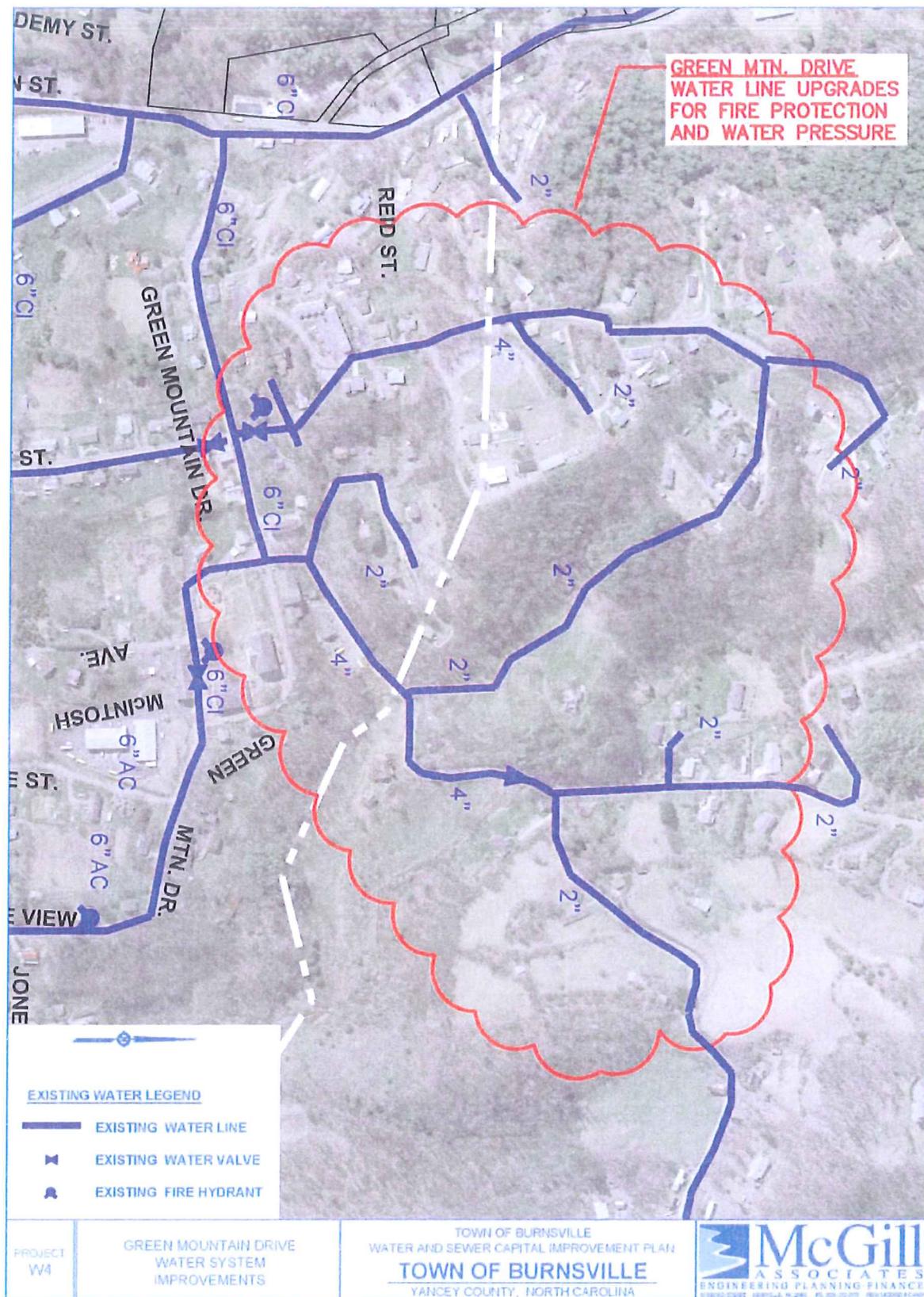


Project W4 – Green Mountain Drive Water Improvements (Lincoln Park)

The homes on Green Mountain Drive in the vicinity of Lincoln Park have had problems with low water pressure due to the elevation of the system relative to the hydraulic grade of the town. Water supply is also restricted by small diameter pipes. In order to fix the problems in this neighborhood, a new water booster pump station has been proposed to improve water pressure. In addition, new 6-inch and 2-inch water lines will be installed to improve water supply reliability. New water meters* and water service lines will also be included, as well as new fire hydrants for improvement of fire protection in the area.

*Project W2 would eliminate this need if completed before this project.

PROJECT W4 GREEN MOUNTAIN DRIVE WATER IMPROVEMENTS					
ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENSION
1	Mobilization	1	LS	\$12,800	\$12,800
2	6" Class 350 DIP Water Line	4,000	LF	\$25	\$100,000
3	6" Gate Valve and Box	4	EA	\$750	\$3,000
4	2" SDR 13.5 PVC	1,500	LF	\$12	\$18,000
5	2" Gate Valve and Box	3	EA	\$500	\$1,500
6	Misc. Fittings w/ Thrust Blocks	3,000	LBS	\$3	\$9,000
7	New Water Meters	20	EA	\$750	\$15,000
8	3/4" water service line	500	LF	\$10	\$5,000
9	Fire Hydrant complete w/ tee, valve, thrust blocks and rodding per detail	6	EA	\$3,000	\$18,000
10	Water Booster Pump Station	1	EA	\$200,000	\$200,000
11	2" Type SF 9.5A Bituminous Surface Course	250	SY	\$20	\$5,000
12	Pavement Repair (excluding overlay)	500	LF	\$35	\$17,500
13	CABC (shoulders and parking lots)	100	TONS	\$25	\$2,500
14	Asphalt Drive Repair per Detail	350	LF	\$20	\$7,000
15	Concrete Drive Repair per Detail	25	LF	\$50	\$1,250
16	Gravel Drive Repair per Detail	100	LF	\$8	\$800
17	Rock Excavation	200	CY	\$60	\$12,000
18	Select Backfill	500	CY	\$10	\$5,000
19	Culvert and Drop Inlet protection	15	EA	\$150	\$2,250
20	Silt Fence installed per detail	1500	LF	\$3	\$4,500
TOTAL CONSTRUCTION COSTS					\$440,100
Construction Contingencies					\$88,000
Technical Services					\$110,000
Legal and Administrative					\$5,000
TOTAL PROJECT COSTS					\$643,100



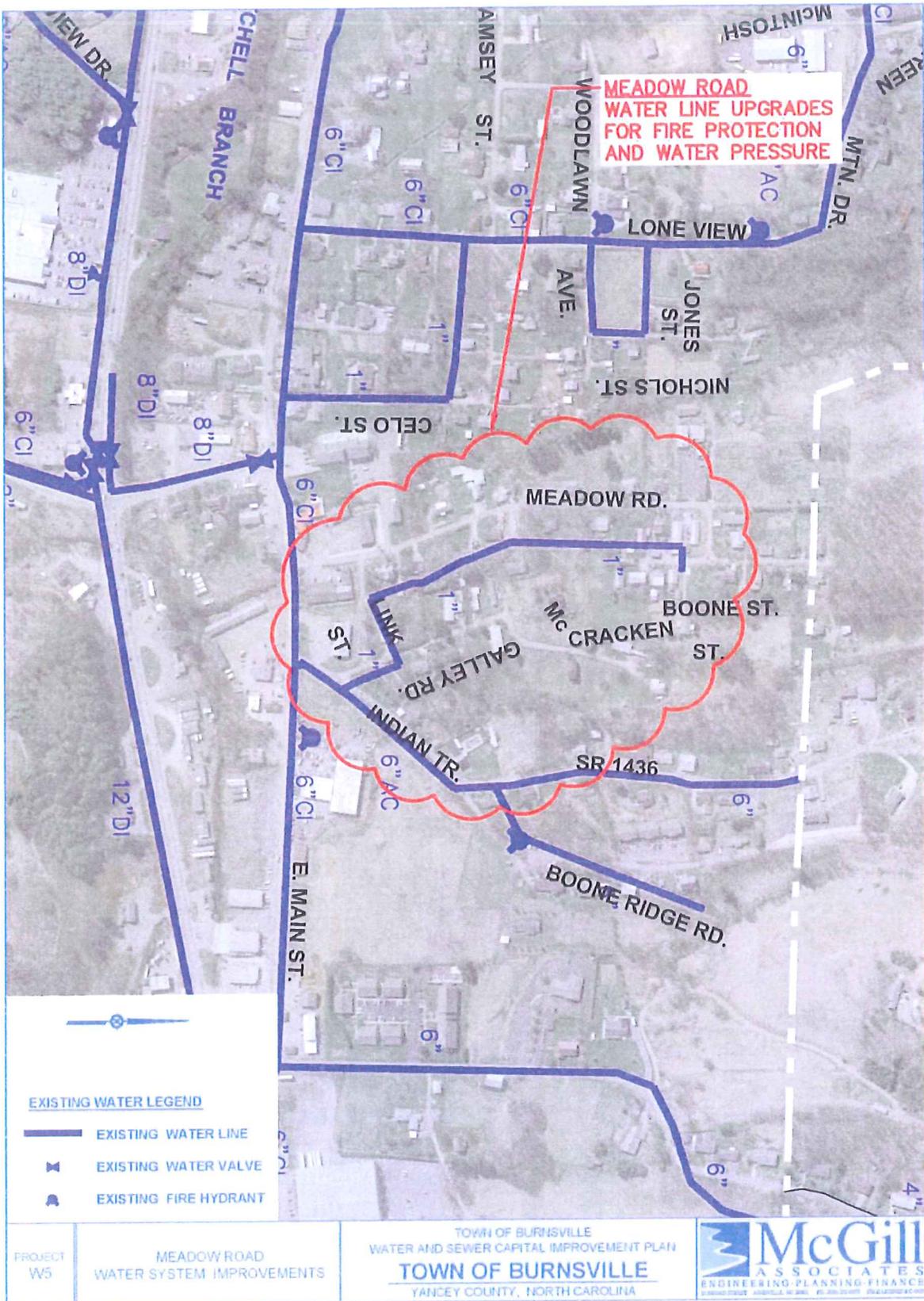
Project W5 – Meadow Road Water Line Improvements

The Meadow Road area currently has more than 20 homes being served by an old, galvanized, dead-end 1-inch water line. This line does not satisfy State criteria for home water distribution service. In addition, the accumulation of rust and mineral deposits in galvanized pipes result in the reduction of flow and pressure over time.

Proposed improvements include upgrading water service with 6-inch water lines, new fire hydrants and water services* for improved domestic supply and fire protection.

*Project W2 would eliminate this need if completed before this project.

PROJECT W5 MEADOW ROAD WATER LINE IMPROVEMENTS					
ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENSION
1	Mobilization	1	LS	\$7,100	\$7,100
2	6" Class 350 DIP Water Line	3,000	LF	\$25	\$75,000
3	6" Gate Valve and Box	6	EA	\$750	\$4,500
4	2" SDR 13.5 PVC	1,000	LF	\$12	\$12,000
5	2" Gate Valve and Box	4	EA	\$500	\$2,000
6	Misc. Fittings w/ Thrust Blocks	1,000	LBS	\$3	\$3,000
7	New Water Meters	45	EA	\$750	\$33,750
8	3/4" water service line	5,000	LF	\$10	\$50,000
9	Fire Hydrant complete w/ tee, valve, thrust blocks and rodding per detail	4	EA	\$3,000	\$12,000
10	2" Type SF 9.5A Bituminous Surface Course	200	SY	\$20	\$4,000
11	Pavement Repair (excluding overlay)	500	LF	\$35	\$17,500
12	CABC (shoulders and parking lots)	100	TONS	\$25	
13	Asphalt Drive Repair per Detail	300	LF	\$20	\$6,000
14	Concrete Drive Repair per Detail	50	LF	\$50	\$2,500
15	Gravel Drive Repair per Detail	200	LF	\$8	\$1,600
16	Rock Excavation	100	CY	\$60	\$6,000
17	Select Backfill	300	CY	\$10	\$3,000
18	Culvert and Drop Inlet protection	20	EA	\$150	\$3,000
19	Silt Fence installed per detail	500	LF	\$3	\$1,500
TOTAL CONSTRUCTION COSTS					\$244,450
Construction Contingencies					\$48,900
Technical Services					\$61,100
Legal and Administrative					\$5,000
TOTAL PROJECT COSTS					\$359,450



Project W6 – Main Street Water Line Improvements

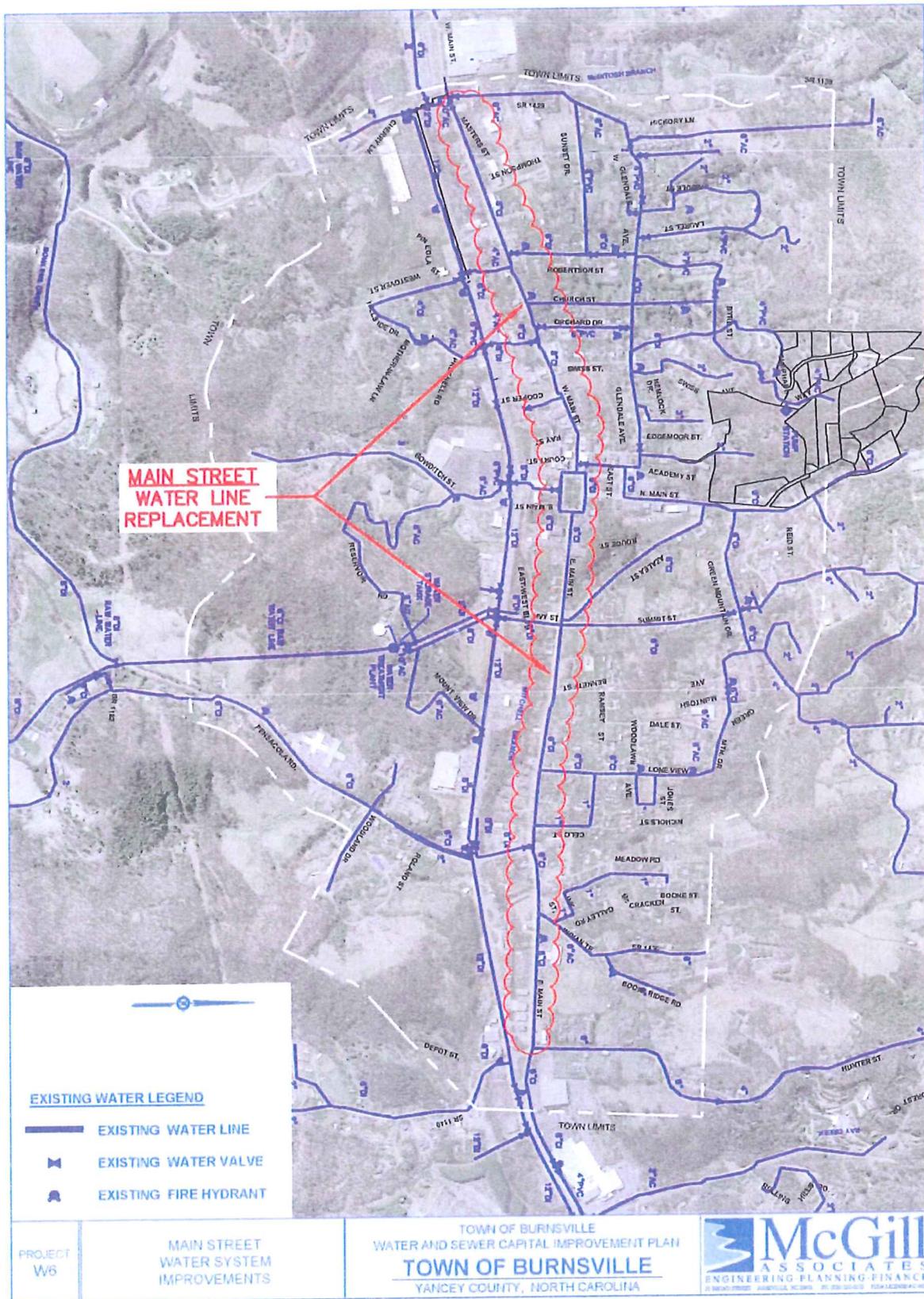
The water lines along Main Street are among the oldest in the system. Many of these pipes are also cast iron and therefore more brittle and susceptible to breaks than more modern materials. Due to the number of lateral lines connected to these water lines, maintaining them is critical to keeping Burnsville customers in service.

The proposed project will replace approximately 10,000 linear feet of existing 8-inch and 1,000 linear feet of 6-inch water line with newer ductile iron water line, new valves and replacement of the existing fire hydrants with new fire hydrants. Also included is replacement of some 2-inch laterals, ¾” service lines and water meter services*.

This project will be more costly than other replacement projects because the existing water line is under the Main Street and the new line will also need to be located under the street rather than in the shoulder of the road. Most of the old street is asphalt with old, thick concrete road underneath. Removal of the concrete for new water line construction will add to the cost of the project, as will the increased number of utilities that must be contended within the more developed section of Town.

*Project W2 would eliminate this need if completed before this project.

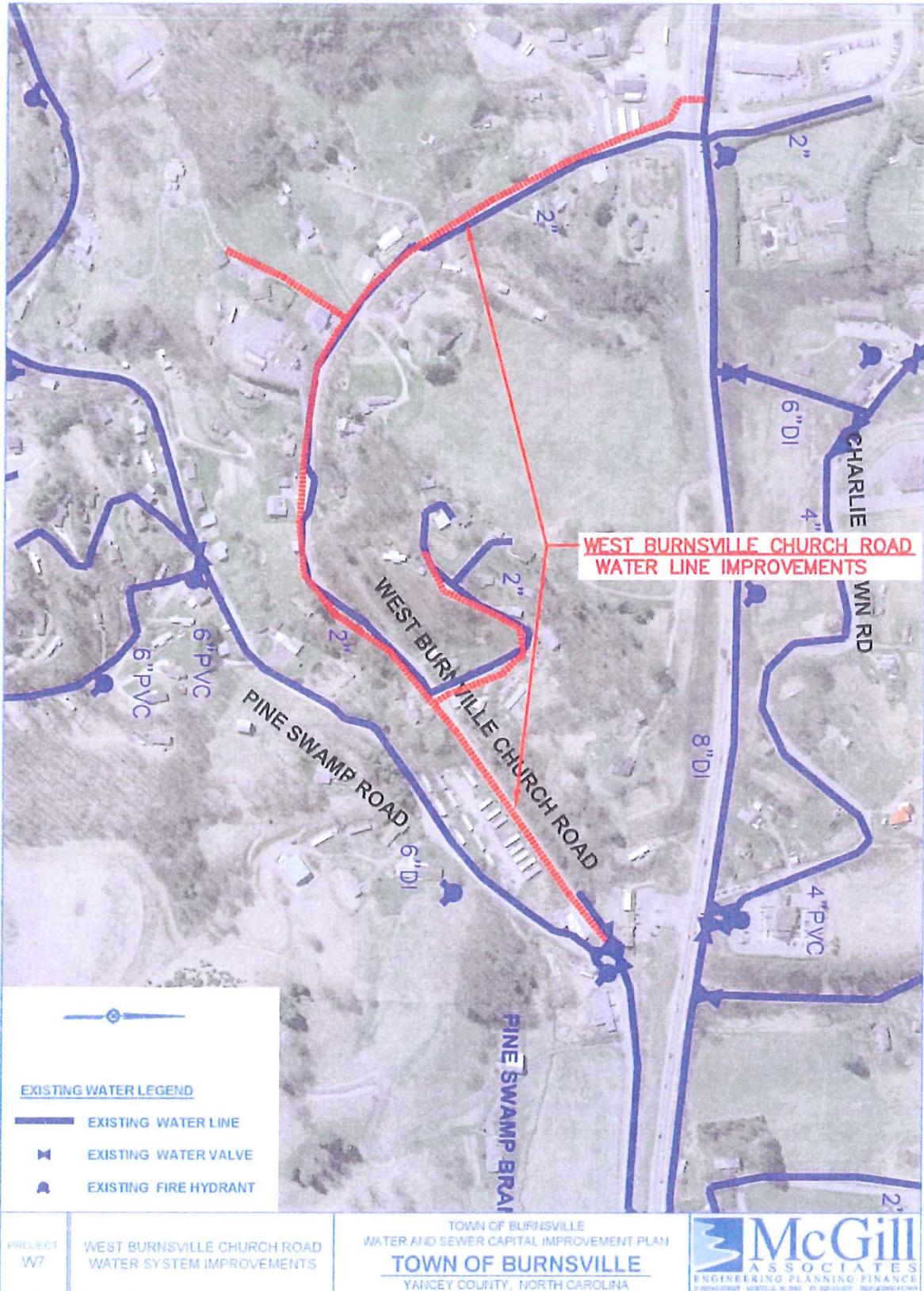
PROJECT W6 MAIN STREET WATER LINE IMPROVEMENTS					
ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENSION
1	Mobilization	1	LS	\$40,700	\$40,700
2	8" Class 350 DIP Water Line	10,000	LF	\$35	\$350,000
3	8" Gate Valve and Box	8	EA	\$1,000	\$8,000
4	6" Class 350 DIP Water Line	1,000	LF	\$30	\$30,000
5	6" Gate Valve and Box	12	EA	\$750	\$9,000
6	2" SDR 13.5 PVC	200	LF	\$12	\$2,400
7	2" Gate Valve and Box	4	EA	\$500	\$2,000
8	Sawcut and remove concrete street under existing asphalt	8,000	LF	\$15	\$120,000
9	Misc. Fittings w/ Thrust Blocks	7,000	LBS	\$3	\$21,000
10	New Water Meters	75	EA	\$750	\$56,250
11	3/4" water service line	3,000	LF	\$10	\$30,000
12	Fire Hydrant complete w/ tee, valve, thrust blocks and rodding per detail	20	EA	\$3,000	\$60,000
13	2" Type SF 9.5A Bituminous Surface Course	10,000	SY	\$20	\$200,000
14	Pavement Repair (excluding overlay)	12,000	LF	\$35	\$420,000
15	CABC (shoulders and parking lots)	200	TONS	\$25	\$5,000
16	Asphalt Drive Repair per Detail	200	LF	\$20	\$4,000
17	Concrete Drive Repair per Detail	50	LF	\$50	\$2,500
18	Gravel Drive Repair per Detail	50	LF	\$8	\$400
19	Rock Excavation	300	CY	\$60	\$18,000
20	Select Backfill	1,000	CY	\$10	\$10,000
21	Culvert and Drop Inlet protection	25	EA	\$150	\$3,750
22	Silt Fence installed per detail	2000	LF	\$3	\$6,000
TOTAL CONSTRUCTION COSTS					\$1,399,000
Construction Contingencies					\$279,800
Technical Services					\$279,800
Legal and Administrative					\$15,000
TOTAL PROJECT COSTS					\$1,973,600



Project W7 – West Burnsville Church Road Water Line Improvements

This project proposes to provide a 6-inch water line loop connecting existing water lines on Pine Swamp Road and U.S. 19 in order to provide water service and fire protection to an area currently without any water service. This will also provide some flexibility for the Town in operating the system in the event of any water line breaks or water shutoffs for maintenance or repair. Included are new fire hydrants, some 2-inch laterals, ¾” water service lines and new meters for the new customers.

PROJECT W7					
WEST BURNSVILLE CHURCH ROAD WATER LINE IMPROVEMENTS					
ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENSION
1	Mobilization	1	LS	\$6,800	\$6,800
2	6" Class 350 DIP Water Line	3,600	LF	\$25	\$90,000
3	6" Gate Valve and Box	3	EA	\$750	\$2,250
4	2" SDR 13.5 PVC	1,500	LF	\$12	\$18,000
5	2" Gate Valve and Box	4	EA	\$500	\$2,000
6	Misc. Fittings w/ Thrust Blocks	2,000	LBS	\$3	\$6,000
7	New Water Meters	25	EA	\$750	\$18,750
8	3/4" water service line	1,000	LF	\$10	\$10,000
9	Fire Hydrant complete w/ tee, valve, thrust blocks and rodding per detail	3	EA	\$3,000	\$9,000
10	24" Dia. x 0.250" Wall Thickness Steel Encasement Pipe, Bored and Jacked Complete w/ Carrier Pipe	80	LF	\$300	\$24,000
11	2" Type SF 9.5A Bituminous Surface Course	250	SY	\$20	\$5,000
12	Pavement Repair (excluding overlay)	100	LF	\$35	\$3,500
13	CABC (shoulders and parking lots)	200	TONS	\$25	\$5,000
14	Asphalt Drive Repair per Detail	500	LF	\$20	\$10,000
15	Concrete Drive Repair per Detail	20	LF	\$50	\$1,000
16	Gravel Drive Repair per Detail	150	LF	\$8	\$1,200
17	Rock Excavation	150	CY	\$60	\$9,000
18	Select Backfill	300	CY	\$10	\$3,000
19	Culvert and Drop Inlet protection	10	EA	\$150	\$1,500
20	Silt Fence installed per detail	2,500	LF	\$3	\$7,500
TOTAL CONSTRUCTION COSTS					\$233,500
Construction Contingencies					\$46,700
Technical Services					\$58,400
Legal and Administrative					\$5,000
TOTAL PROJECT COSTS					\$343,600

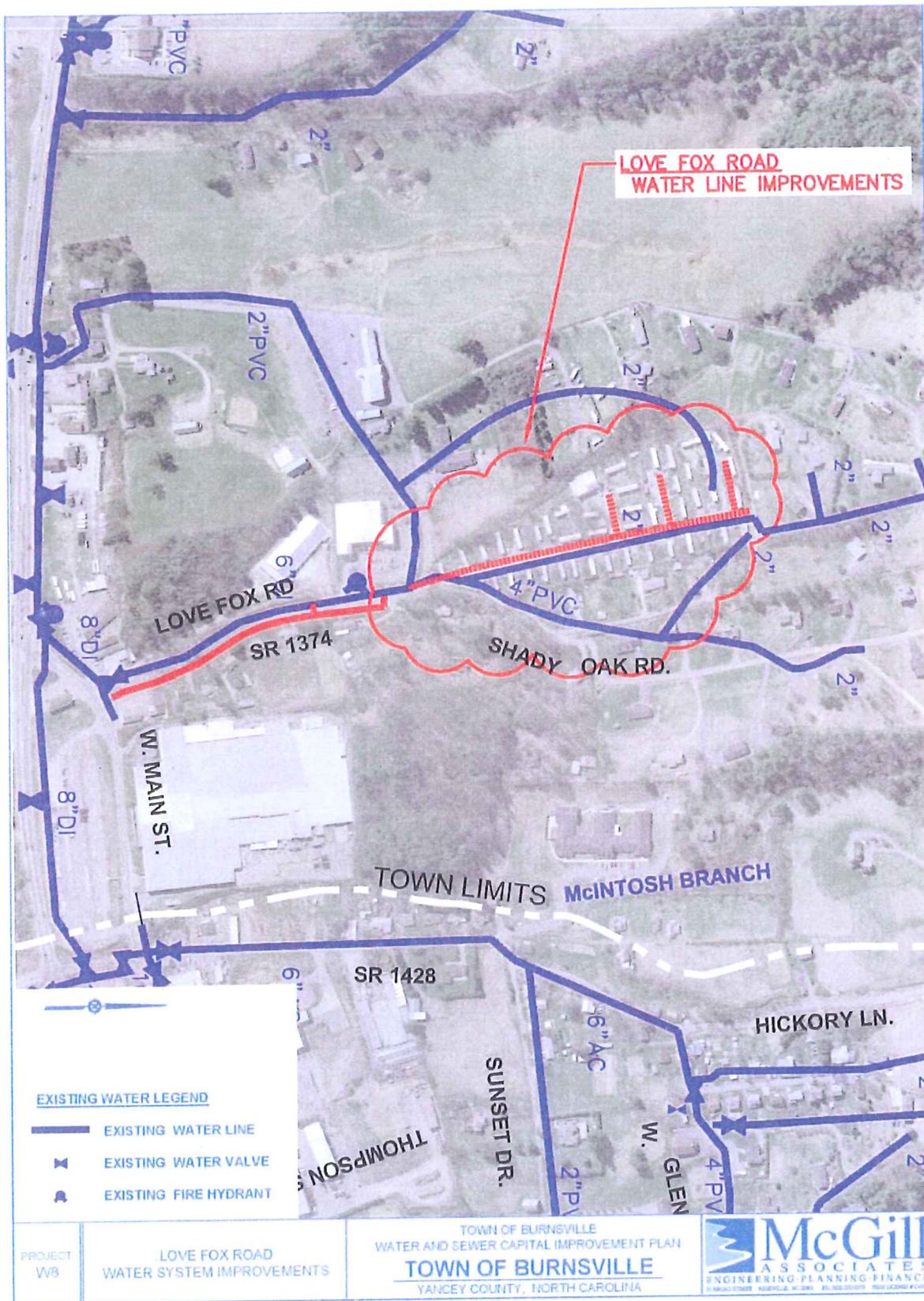


Project W8 – Love Fox Road Trailer Park Water Improvements

The trailer park at the end of Love Fox Road has approximately 50 water services on 2-inch water lines, many at unknown locations. The proposed project will include the installation of 1,200 linear feet of new 6-inch and 500 linear feet of 2-inch water lines in the neighborhood for better water service and fire protection. New water meters* and water service lines would also be installed for all the homes. This will reduce the leaks in the system and improve water service in the area.

*Project W2 would eliminate this need if completed before this project.

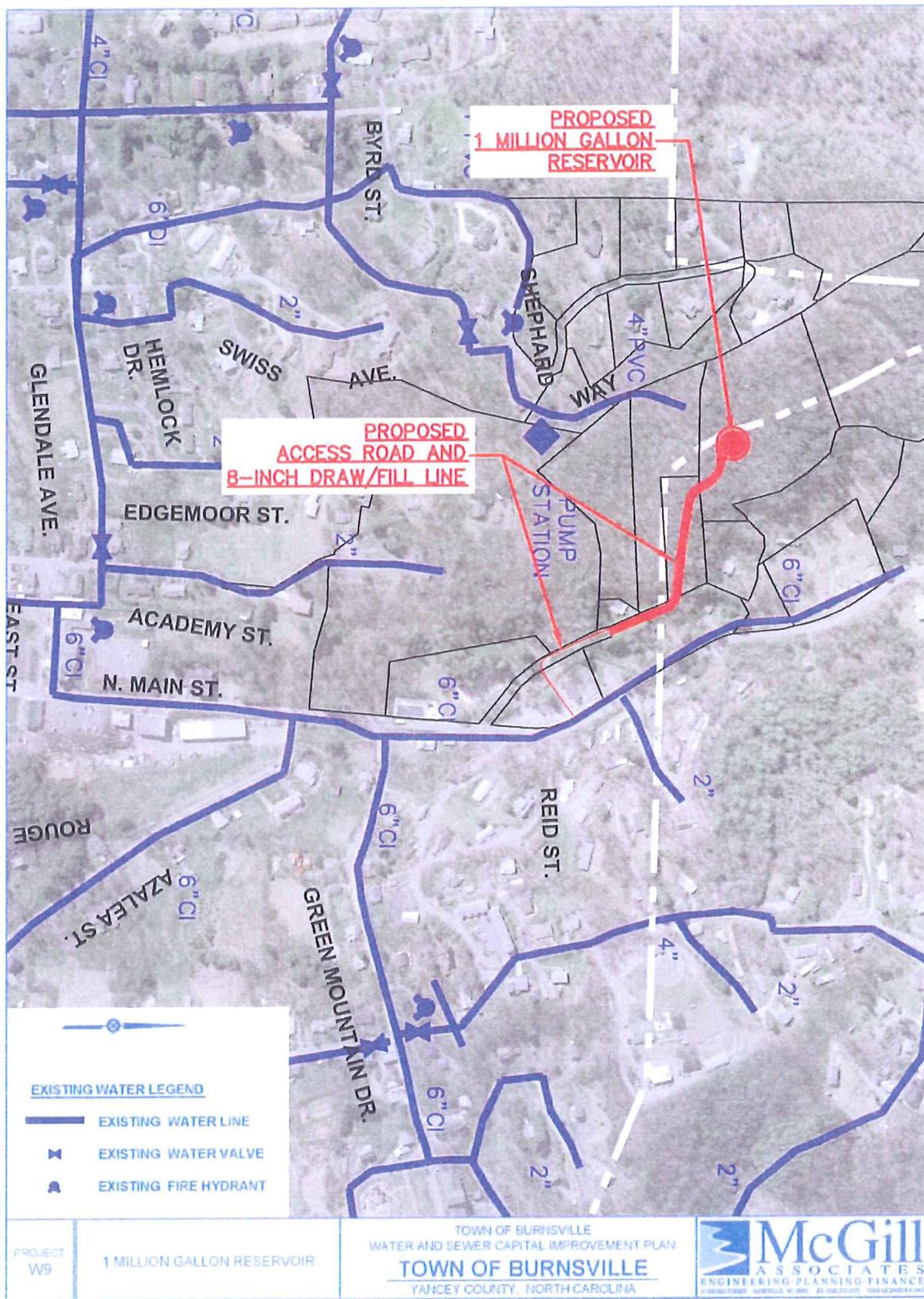
PROJECT W8					
LOVE FOX ROAD TRAILER PARK WATER IMPROVEMENTS					
ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENSION
1	Mobilization	1	LS	\$3,900	\$3,900
2	6" Class 350 DIP Water Line	1,200	LF	\$25	\$30,000
3	6" Gate Valve and Box	3	EA	\$750	\$2,250
4	2" SDR 13.5 PVC	500	LF	\$12	\$6,000
5	2" Gate Valve and Box	3	EA	\$500	\$1,500
6	Misc. Fittings w/ Thrust Blocks	500	LBS	\$3	\$1,500
7	New Water Meters	50	EA	\$750	\$37,500
8	3/4" water service line	1,000	LF	\$10	\$10,000
9	Fire Hydrant complete w/ tee, valve, thrust blocks and rodding per detail	2	EA	\$3,000	\$6,000
10	24" Dia. x 0.250" Wall Thickness Steel Encasement Pipe, Bored and Jacked Complete w/ Carrier Pipe	40	LF	\$300	\$12,000
11	2" Type SF 9.5A Bituminous Surface Course	350	SY	\$20	\$7,000
12	Pavement Repair (excluding overlay)	100	LF	\$35	\$3,500
13	CABC (shoulders and parking lots)	100	TONS	\$25	\$2,500
14	Asphalt Drive Repair per Detail	100	LF	\$20	\$2,000
15	Concrete Drive Repair per Detail	20	LF	\$50	\$1,000
16	Gravel Drive Repair per Detail	100	LF	\$8	\$800
17	Rock Excavation	50	CY	\$60	\$3,000
18	Select Backfill	200	CY	\$10	\$2,000
19	Culvert and Drop Inlet protection	5	EA	\$150	\$750
20	Silt Fence installed per detail	500	LF	\$3	\$1,500
TOTAL CONSTRUCTION COSTS					\$134,700
Construction Contingencies					\$26,900
Technical Services					\$40,400
Legal and Administrative					\$5,000
TOTAL PROJECT COSTS					\$207,000



Project W9 – 1 Million Gallon Reservoir

The water treatment plant is located high on a hill on the south side of Town, and all notable finished water storage is located on the same property. There is no alternative backup water storage for the main pressure zone if something should happen to one or both of the two (2) distribution lines between the facility and the Town, nor any storage structure that would allow the Town to take its existing 2-MG storage reservoir offline for refurbishment, repainting or for any other reason without the plant actively running and pumping straight to customers at all times. This project will remedy the lack of water storage redundancy and place the capacity of approximately two (2) days worth of current water demand on the north side of Town and at the same hydraulic elevation as the existing 2-MG reservoir.

PROJECT W9 1 MILLION GALLON RESERVOIR					
ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENSION
1	Mobilization	1	LS	\$25,800	\$25,800
2	1 Million Gallon Concrete Water Storage Tank	1	LS	\$615,000	\$615,000
3	8" Class 350 DIP Water Line	1,200	LF	\$30	\$36,000
4	Property Acquisition	1	LS	\$125,000	\$125,000
5	Site Work	1	LS	\$60,000	\$60,000
6	Access Road	750	LF	\$30	\$22,500
TOTAL CONSTRUCTION COSTS					\$884,300
Construction Contingencies					\$176,900
Technical Services					\$265,300
Legal and administrative					\$15,000
TOTAL PROJECT COSTS					\$1,341,500

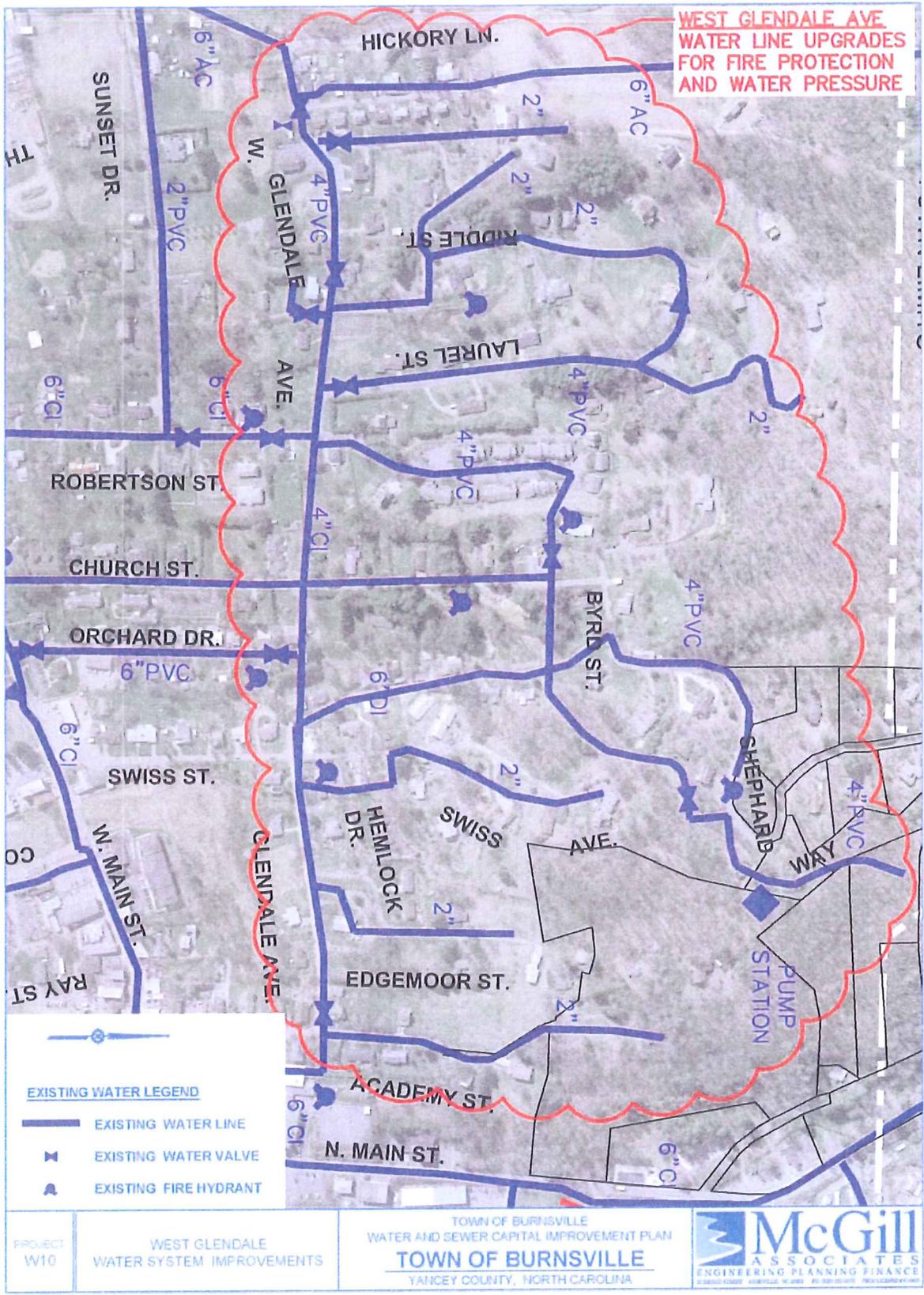


Project W10 – West Glendale Avenue Water Improvements

Because of the elevation and the use of 2-inch water lines, this area suffers from low water pressure and inadequate fire protection. The recommended project will include construction of a booster pump station, and installation of approximately 6,500 linear feet of 6-inch water line, 2,000 linear feet of 2-inch water line, new fire hydrants and approximately 40 new water services*.

*Project W2 would eliminate this need if completed before this project.

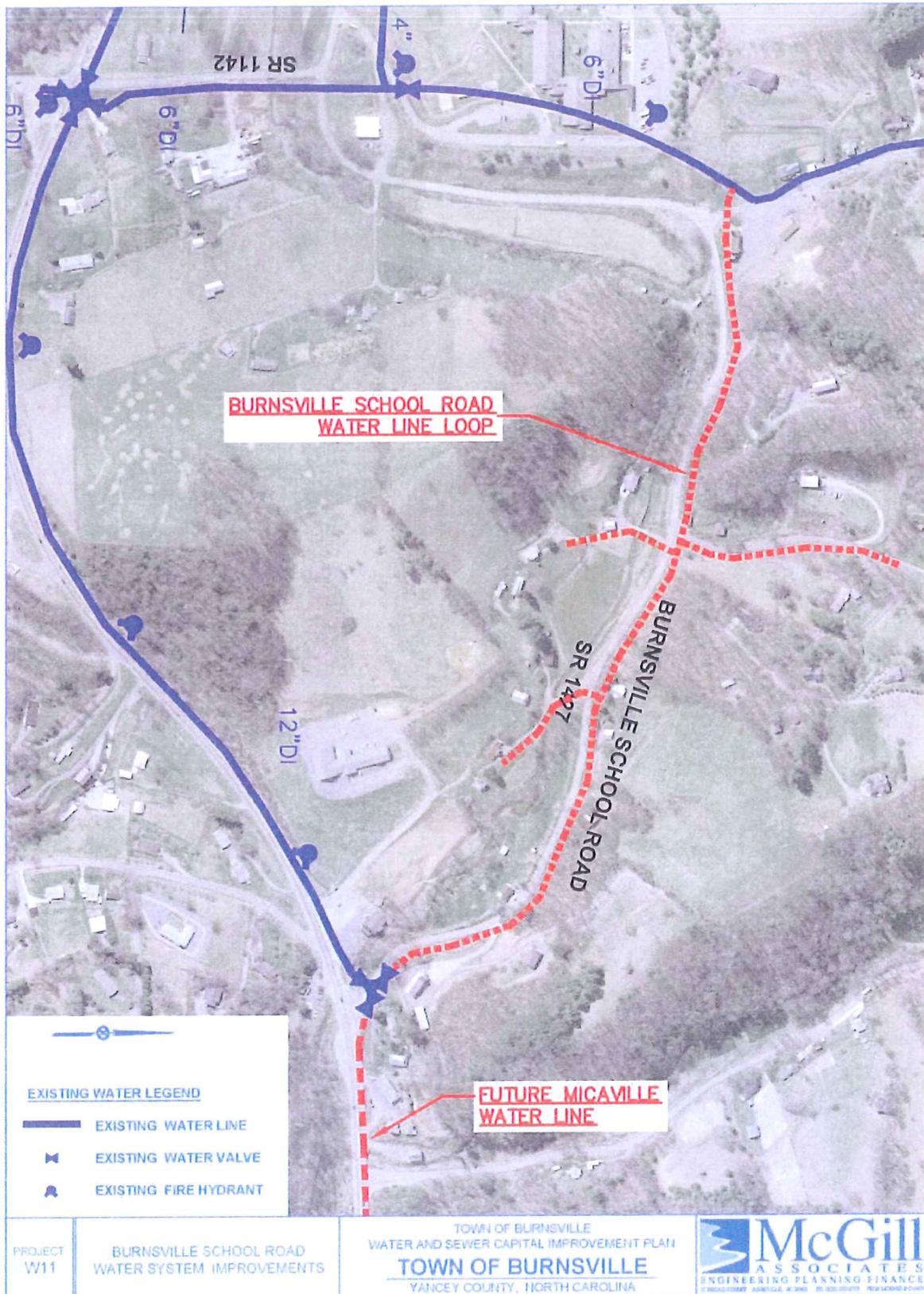
PROJECT W10 WEST GLENDALE AVENUE WATER IMPROVEMENTS					
ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENSION
1	Mobilization	1	LS	\$16,200	\$16,200
2	6" Class 350 DIP Water Line	6,500	LF	\$25	\$162,500
3	6" Gate Valve and Box	6	EA	\$750	\$4,500
4	2" SDR 13.5 PVC	2,000	LF	\$12	\$24,000
5	2" Gate Valve and Box	6	EA	\$500	\$3,000
6	Misc. Fittings w/ Thrust Blocks	4,000	LBS	\$3	\$12,000
7	New Water Meters	40	EA	\$750	\$30,000
8	3/4" water service line	500	LF	\$10	\$5,000
9	Fire Hydrant complete w/ tee, valve, thrust blocks and rodding per detail	8	EA	\$3,000	\$24,000
10	Water Booster Pump Station	1	EA	\$200,000	\$200,000
11	2" TypeSF 9.5A Bituminous Surface Course	350	SY	\$20	\$7,000
12	Pavement Repair (excluding overlay)	500	LF	\$35	\$17,500
13	CABC (shoulders and parking lots)	100	TONS	\$25	\$2,500
14	Asphalt Drive Repair per Detail	500	LF	\$20	\$10,000
15	Concrete Drive Repair per Detail	50	LF	\$50	\$2,500
16	Gravel Drive Repair per Detail	200	LF	\$8	\$1,600
17	Rock Excavation	300	CY	\$60	\$18,000
18	Select Backfill	600	CY	\$10	\$6,000
19	Culvert and Drop Inlet protection	15	EA	\$150	\$2,250
20	Silt Fence installed per detail	2000	LF	\$3	\$6,000
TOTAL CONSTRUCTION COSTS					\$554,550
Construction Contingencies					\$110,900
Technical Services					\$110,900
Legal and Administrative					\$10,000
TOTAL PROJECT COSTS					\$786,350



Project W11 – Burnsville School Road Water Line Improvements

This project will provide water service to an area currently without water service or fire protection. It will also provide a loop in the water system that will allow operational flexibility for water line breaks or repairs. The project consists of approximately 3,000 linear feet of 8-inch water line, 1,500 linear feet of 2-inch water line, 20 new water services with 3/4-inch service lines and fire hydrants along the route.

PROJECT W11 BURNSVILLE SCHOOL ROAD WATER LINE IMPROVEMENTS					
ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENSION
1	Mobilization	1	LS	\$6,600	\$6,600
2	8" Class 350 DIP Water Line	3,000	LF	\$30	\$90,000
3	8" Gate Valve and Box	3	EA	\$1,000	\$3,000
4	2" SDR 13.5 PVC	1,500	LF	\$12	\$18,000
5	2" Gate Valve and Box	2	EA	\$500	\$1,000
6	Misc. Fittings w/ Thrust Blocks	2,500	LBS	\$3	\$7,500
7	New Water Meters	20	EA	\$750	\$15,000
8	3/4" water service line	3,000	LF	\$10	\$30,000
9	Fire Hydrant complete w/ tee, valve, thrust blocks and rodding per detail	3	EA	\$3,000	\$9,000
10	24" Dia. x 0.250" Wall Thickness Steel Encasement Pipe, Bored and Jacked Complete w/ Carrier Pipe	40	LF	\$300	\$12,000
11	2" Type SF 9.5A Bituminous Surface Course	150	SY	\$20	\$3,000
12	Pavement Repair (excluding overlay)	50	LF	\$35	\$1,750
13	CABC (shoulders and parking lots)	150	TONS	\$25	\$3,750
14	Asphalt Drive Repair per Detail	200	LF	\$20	\$4,000
15	Concrete Drive Repair per Detail	20	LF	\$50	\$1,000
16	Gravel Drive Repair per Detail	100	LF	\$8	\$800
17	Rock Excavation	150	CY	\$60	\$9,000
18	Select Backfill	300	CY	\$10	\$3,000
19	Culvert and Drop Inlet protection	10	EA	\$150	\$1,500
20	Silt Fence installed per detail	2500	LF	\$3	\$7,500
TOTAL CONSTRUCTION COSTS					\$227,400
Construction Contingencies					\$45,500
Technical Services					\$56,900
Legal and Administrative					\$5,000
TOTAL PROJECT COSTS					\$334,800

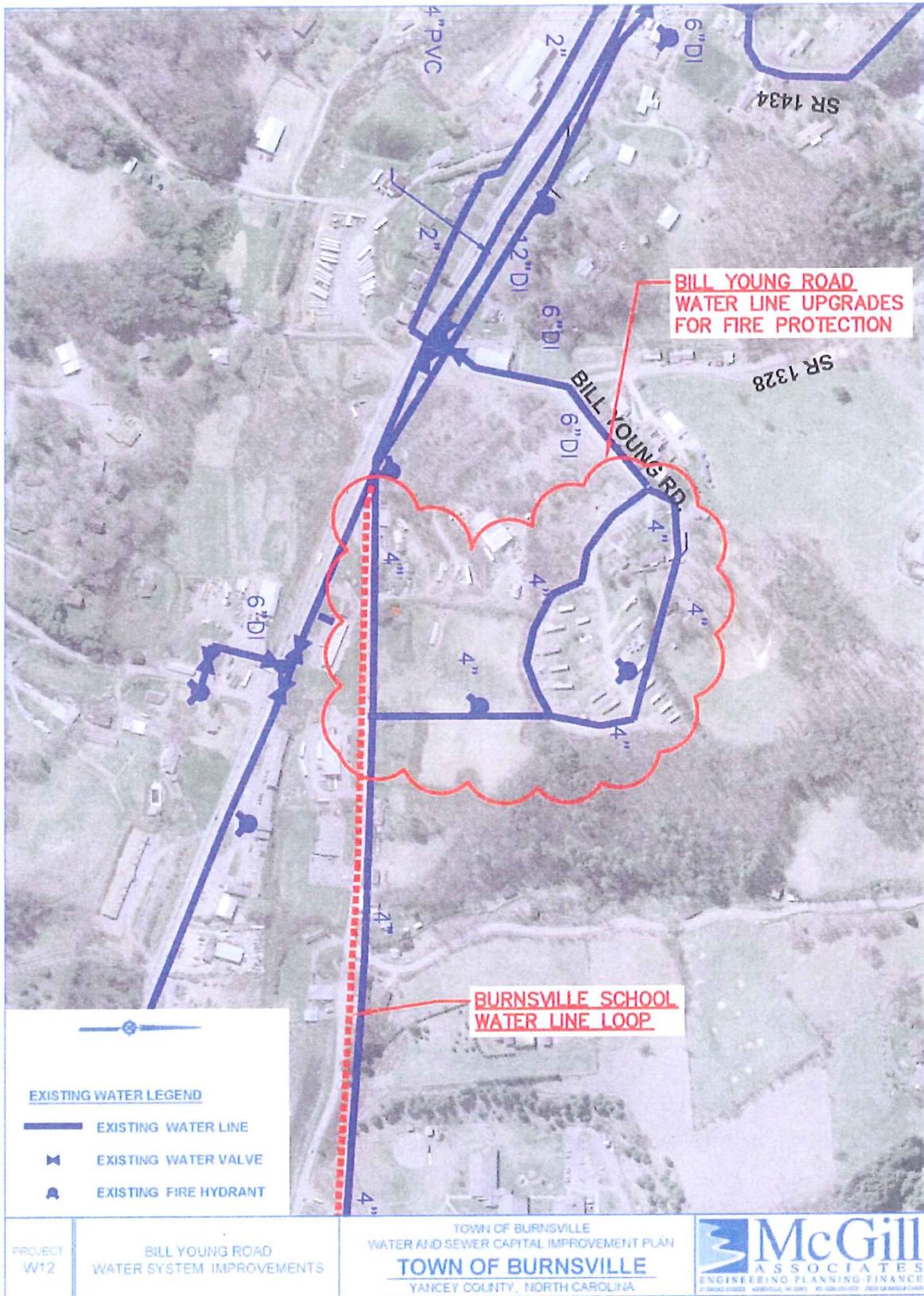


Project W12 – Bill Young Road Water Line Improvements

This area is currently served by a 4-inch water line with fire hydrants. In order to improve water service and fire protection, these lines need to be upgraded with approximately 4,000 linear feet of 6-inch line, 1,000 linear feet of 2-inch water line and new fire hydrants. Approximately 25 new water meters are also included*. An additional section of 6-inch water line, extending to Burnsville Elementary School and connected to an existing larger line would also improve service to the area and provide the Town a looped section of water line for increased operational flexibility.

*Project W2 would eliminate this need if completed before this project.

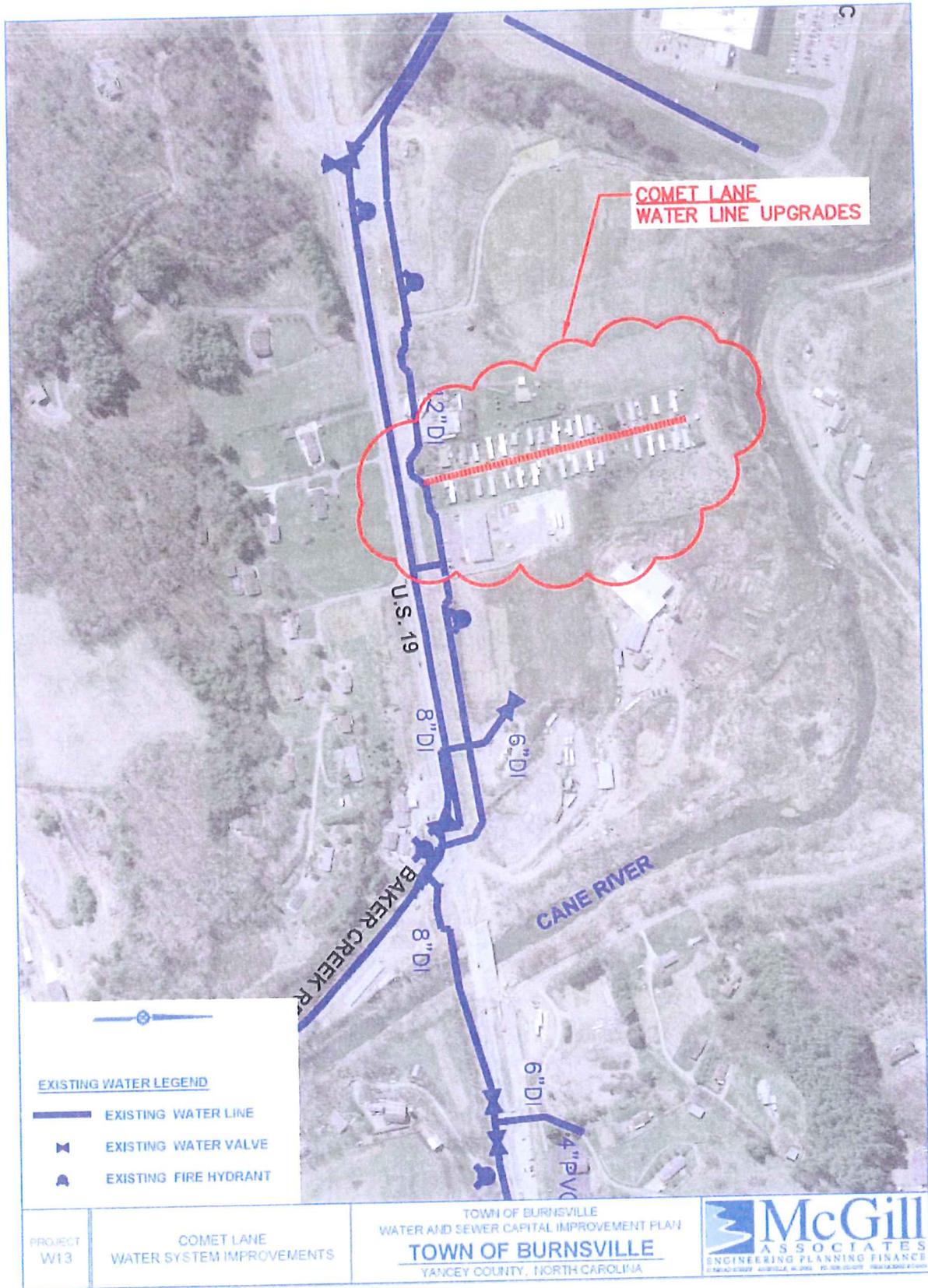
PROJECT W12					
BILL YOUNG ROAD WATER LINE IMPROVEMENTS					
ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENSION
1	Mobilization	1	LS	\$5,300	\$5,300
2	6" Class 350 DIP Water Line	4,400	LF	\$25	\$110,000
3	6" Gate Valve and Box	3	EA	\$750	\$2,250
4	2" SDR 13.5 PVC	1,000	LF	\$12	\$12,000
5	2" Gate Valve and Box	2	EA	\$500	\$1,000
6	Misc. Fittings w/ Thrust Blocks	1,500	LBS	\$3	\$4,500
7	New Water Meters	25	EA	\$750	\$18,750
8	3/4" water service line	300	LF	\$10	\$3,000
9	Fire Hydrant complete w/ tee, valve, thrust blocks and rodding per detail	3	EA	\$3,000	\$9,000
10	2" Type SF 9.5A Bituminous Surface Course	100	SY	\$20	\$2,000
11	Pavement Repair (excluding overlay)	50	LF	\$35	\$1,750
12	CABC (shoulders and parking lots)	150	TONS	\$25	
13	Asphalt Drive Repair per Detail	75	LF	\$20	\$1,500
14	Concrete Drive Repair per Detail	20	LF	\$50	\$1,000
15	Gravel Drive Repair per Detail	100	LF	\$8	\$800
16	Rock Excavation	75	CY	\$60	\$4,500
17	Select Backfill	200	CY	\$10	\$2,000
18	Culvert and Drop Inlet protection	5	EA	\$150	\$750
19	Silt Fence installed per detail	1000	LF	\$3	\$3,000
TOTAL CONSTRUCTION COSTS					\$183,100
Construction Contingencies					\$36,600
Technical Services					\$54,900
Legal and Administrative					\$5,000
TOTAL PROJECT COSTS					\$279,600



Project W13 – Comet Lane Trailer Park Water Improvements

The trailer park on Comet Lane is currently operating on well water, and residents are experiencing problems such as low water supply and poor water quality. The recommended improvement project will connect this trailer park to the Town’s distribution system, and includes approximately 500 linear feet of 6-inch water line, at least one new fire hydrant, 500 linear feet of 2-inch water line and 33 new water services, including new ¾-inch water lines.

PROJECT W13 COMET LANE TRAILER PARK WATER IMPROVEMENTS					
ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENSION
1	Mobilization	1	LS	\$3,100	\$3,100
2	6" Class 350 DIP Water Line	500	LF	\$25	\$12,500
3	6" Gate Valve and Box	2	EA	\$750	\$1,500
4	2" SDR 13.5 PVC	500	LF	\$12	\$6,000
5	2" Gate Valve and Box	2	EA	\$500	\$1,000
6	Misc. Fittings w/ Thrust Blocks	500	LBS	\$3	\$1,500
7	New Water Meters	33	EA	\$750	\$24,750
8	¾" water service line	3,000	LF	\$10	\$30,000
9	Fire Hydrant complete w/ tee, valve, thrust blocks and rodding per detail	1	EA	\$3,000	\$3,000
10	2" Type SF 9.5A Bituminous Surface Course	200	SY	\$20	\$4,000
11	Pavement Repair (excluding overlay)	150	LF	\$35	\$5,250
12	CABC (shoulders and parking lots)	100	TONS	\$25	\$2,500
13	Asphalt Drive Repair per Detail	200	LF	\$20	\$4,000
14	Concrete Drive Repair per Detail	20	LF	\$50	\$1,000
15	Gravel Drive Repair per Detail	60	LF	\$8	\$480
16	Rock Excavation	50	CY	\$60	\$3,000
17	Select Backfill	150	CY	\$10	\$1,500
18	Culvert and Drop Inlet protection	2	EA	\$150	\$300
19	Silt Fence installed per detail	100	LF	\$3	\$300
TOTAL CONSTRUCTION COSTS					\$105,680
Construction Contingencies					\$21,100
Technical Services					\$26,400
Legal and Administrative					\$2,000
TOTAL PROJECT COSTS					\$155,180



B. PROPOSED SEWER SYSTEM IMPROVEMENTS

Improvements to the wastewater system have been recommended herein for purposes of correcting system deficiencies and upgrading the system sufficiently to handle anticipated future growth.

Project S1 – Main Sewer Interceptor Videos

In order to ensure the continued reliability of the heart of Burnsville’s sewer collection system, it is recommended that both the east-side 8-inch and west-side 10-inch sewer interceptors are video inspected and repaired or replaced as necessary. Results of this inspection project will affect later sewer system improvement projects for each of the subject interceptor lines. The project includes the video inspection of approximately 12,000 LF of 10-inch sewer and 6,500 LF of 8-inch sewer, with associated bypass pumping and line cleaning.

PROJECT S1 MAIN SEWER INTERCEPTOR VIDEOS					
ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENSION
1	Mobilization	1	LS	\$2,200	\$2,200
2	Video Inspection of West side 10-inch interceptor, including required bypass pumping and cleaning	12,000	LF	\$4	\$48,000
3	Video Inspection of East side 8-inch interceptor, including required bypass pumping and cleaning	6,500	LF	\$4	\$26,000
TOTAL CONSTRUCTION COSTS					\$76,200
Technical Services					\$11,400
TOTAL PROJECT COSTS					\$87,600

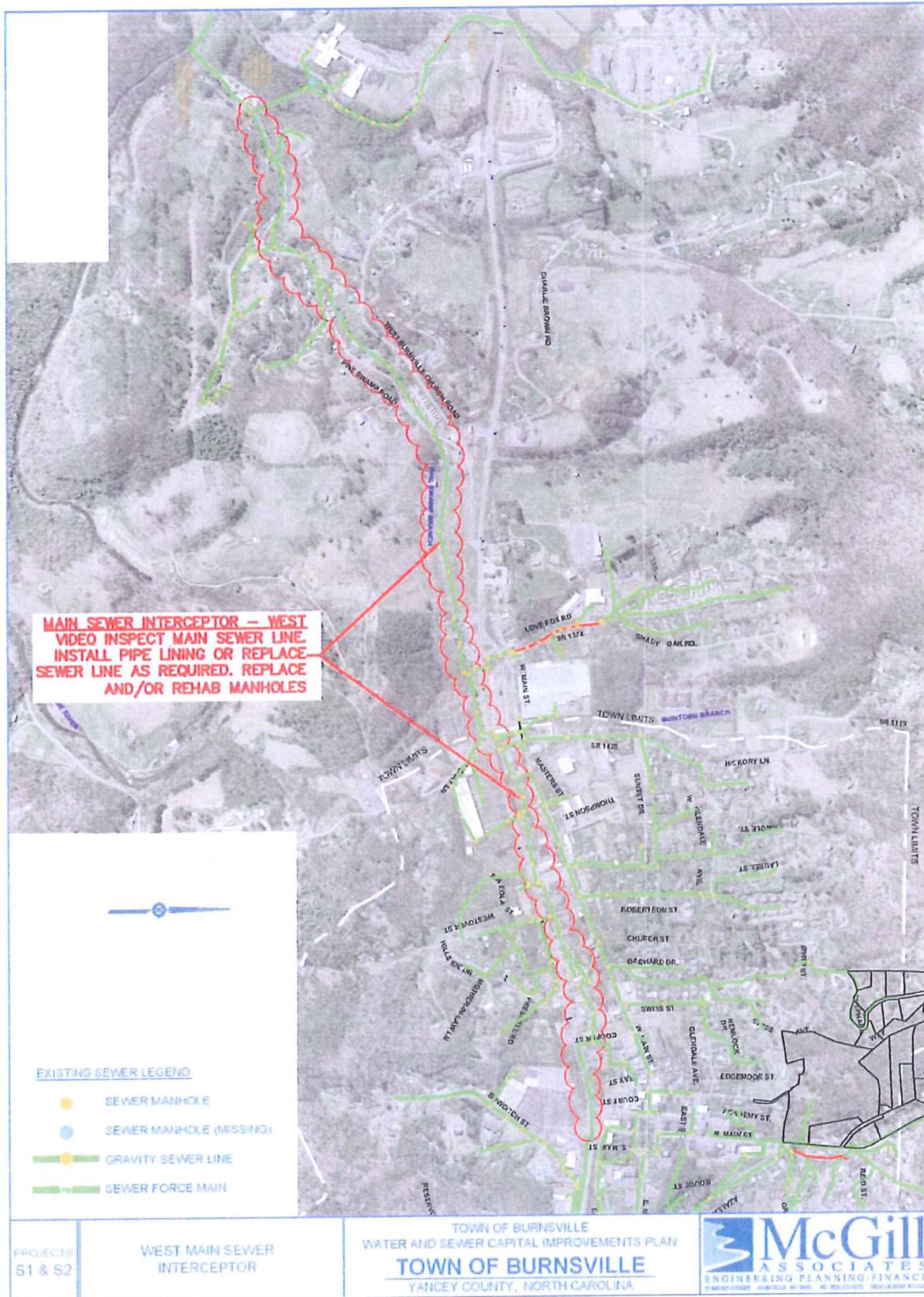
Project S2 – Main Sewer Interceptor (West) Improvements

The main sewer interceptors are the oldest sewer pipes in the Town's system and are comprised predominantly of clay pipe, which due to advanced age have resulted in many sources of infiltration and inflow for a sewer system. Final recommendations for this project will be dependent on the results of video inspection; however, it is anticipated that approximately 10,000 linear feet of the existing sewer line can be lined with cured-in-place-pipe (CIPP) to provide more structural stability and seal off ground water infiltration caused by pipe cracking and spacing of the pipe joints over time. Use of pipe lining will minimize the disturbance of existing businesses and residents along the route and should save some of the expense of deep excavation in highly developed areas.

It is estimated that approximately 2,000 linear feet of sewer line will require direct replacement because of pipe collapse, grade problems or other unforeseen issues. These sections will have to be replaced by conventional construction techniques including trenching and backfill, bore and encasement and pavement repair where necessary.

It is estimated that approximately half of the manholes are able to be rehabilitated in-place and approximately half will be too degenerated for rehabilitation and must be replaced completely. The preliminary cost estimate includes renewing approximately 145 sewer service taps, some from inside the pipe during pipe lining and others by the installation of a new tap while the pipe is being replaced.

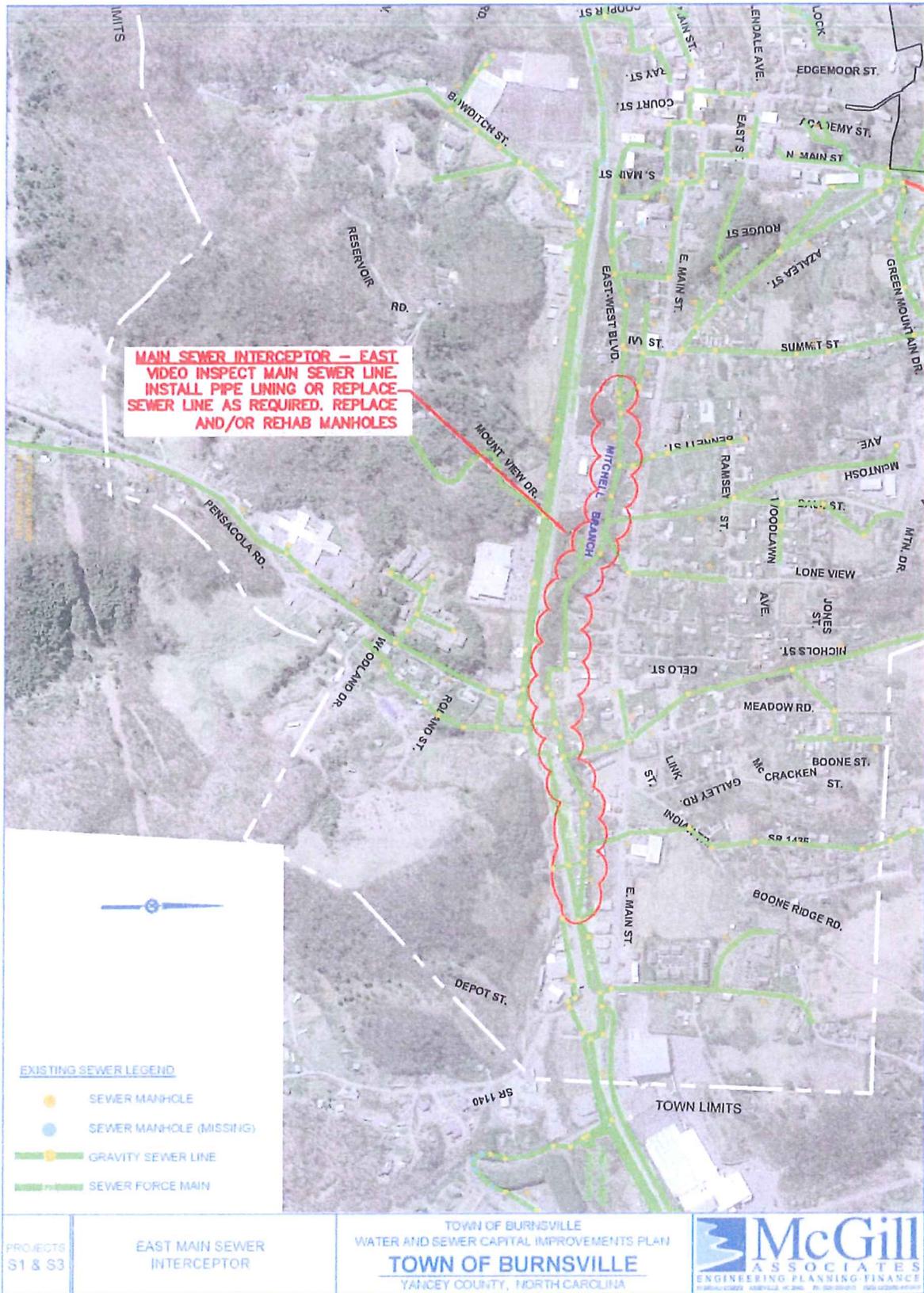
PROJECT S2 MAIN SEWER INTERCEPTOR (WEST) IMPROVEMENTS					
ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENSION
1	Mobilization	1	LS	\$27,000	\$27,000
2	10-inch Cured-in-place Pipe lining, including bypass pumping, cleaning, pre and post video inspections	10,000	LF	\$55	\$550,000
3	Point Repairs to 10-inch sewer line	12	EA	\$1,000	\$12,000
4	New 10-inch DIP Sewer Line	2,000	LF	\$60	\$120,000
5	Sanitary Sewer Service Taps (Pipe Liner Sections)	100	EA	\$500	\$50,000
6	Point Repair Sewer Service Taps (Pipe Liner Sections)	20	EA	\$1,000	\$20,000
7	Sanitary Sewer Service Taps (Replacement Sections)	25	EA	\$750	\$18,750
8	Manhole Rehabilitation	20	LS	\$1,000	\$20,000
9	Manhole Replacement	20	LF	\$3,000	\$60,000
10	2" Type SF 9.5A Bituminous Surface Course	200	SY	\$20	\$4,000
11	CABC (shoulders and parking lots)	250	TONS	\$25	\$6,250
12	Misc. Concrete	25	CY	\$200	\$5,000
13	Washed Stone Embedment per Detail (DIP)	2,000	LF	\$3	\$6,000
14	Washed Stone Undercut per 6" depth as directed by Engineer	1,000	LF	\$3	\$3,000
15	Rock Excavation	100	CY	\$60	\$6,000
16	Select Backfill	750	CY	\$15	\$11,250
17	Erosion Control	1	LS	\$7,500	\$7,500
TOTAL CONSTRUCTION COSTS					\$926,750
Construction Contingencies					\$185,400
Technical Services					\$185,400
Legal and Administrative					\$10,000
TOTAL PROJECT COSTS					\$1,307,550



Project S3 – Main Sewer Interceptor (East) Improvements

As in the Project S2, this section of the sewer collection system is very old and made mostly of clay pipe material. Specific quantities of each repair method must be revised after the line has been video-inspected. However, it is estimated that approximately 5,500 linear feet of 8-inch sewer line can be lined with CIPP liner and approximately 1,000 linear feet must be installed by conventional construction methods. There will be an estimated 30 manholes for rehabilitation and 10 manhole replacements, along with 105 new sewer service taps, either during pipe lining or conventional replacement.

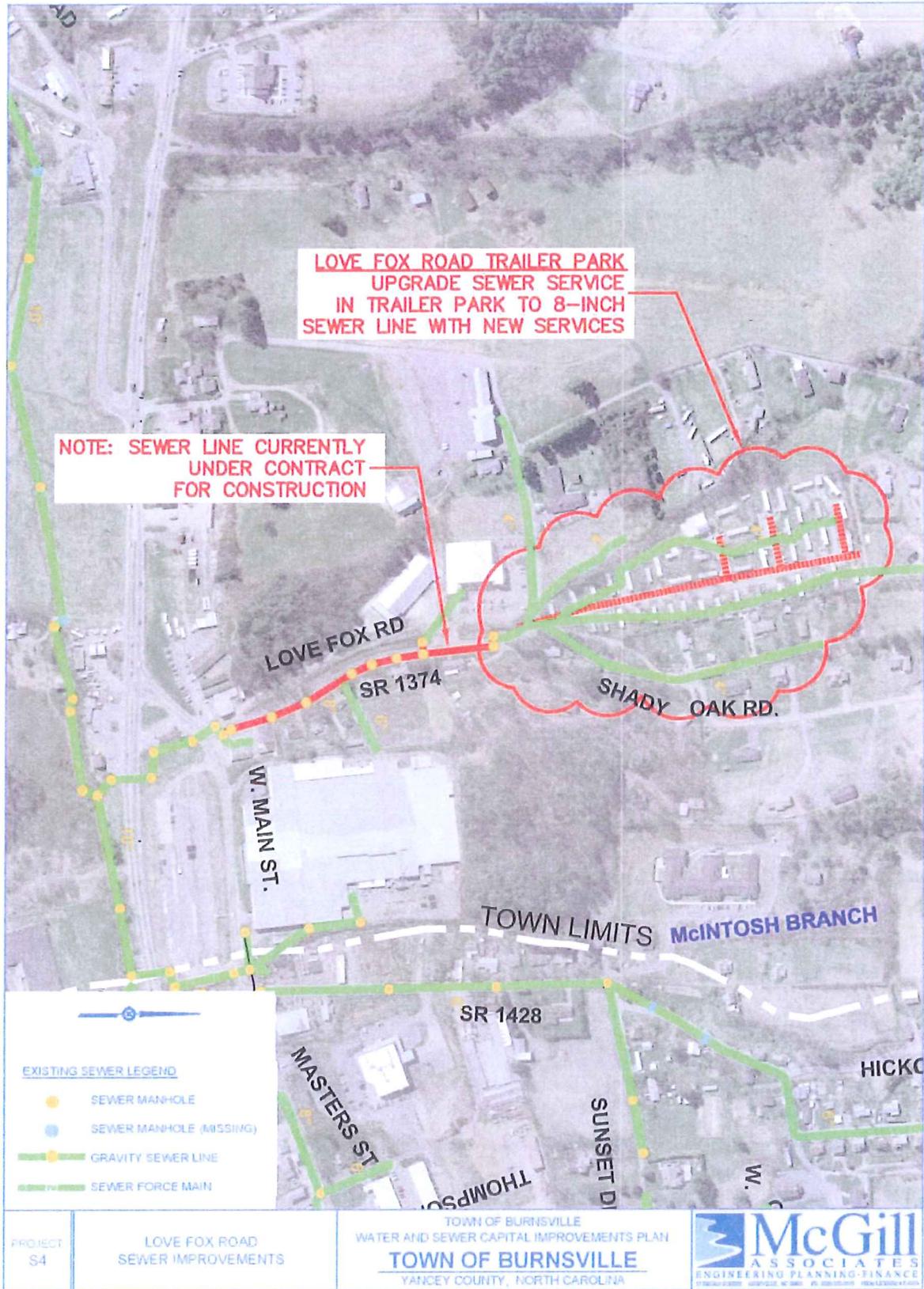
PROJECT S3 MAIN SEWER INTERCEPTOR (EAST) IMPROVEMENTS					
ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENSION
1	Mobilization	1	LS	\$14,700	\$14,700
2	8-inch Cured-in-place Pipe lining, including bypass pumping, cleaning, pre and post video inspections	5,500	LF	\$50	\$275,000
3	Point Repairs to 8-inch sewer line	6	EA	\$1,000	\$6,000
4	New 8-inch DIP Sewer Line	1,000	LF	\$55	\$55,000
5	Sanitary Sewer Service Taps (Pipe Liner Sections)	70	EA	\$500	\$35,000
6	Point Repair Sewer Service Taps (Pipe Liner Sections)	10	EA	\$1,000	\$10,000
7	Sanitary Sewer Service Taps (Replacement Sections)	25	EA	\$750	\$18,750
8	Manhole Rehabilitation	30	EA	\$1,000	\$30,000
9	Manhole Replacement	10	EA	\$3,000	\$30,000
10	2" Type SF 9.5A Bituminous Surface Course	100	SY	\$20	\$2,000
11	CABC (shoulders and parking lots)	150	TONS	\$25	\$3,750
12	Misc. Concrete	10	CY	\$200	\$2,000
13	Washed Stone Embedment per Detail (DIP)	1,000	LF	\$3	\$3,000
14	Washed Stone Undercut per 6" depth as directed by Engineer	500	LF	\$3	\$1,500
15	Rock Excavation	100	CY	\$60	\$6,000
16	Select Backfill	500	CY	\$15	\$7,500
17	Erosion Control	1	LS	\$3,500	\$3,500
TOTAL CONSTRUCTION COSTS					\$503,700
Construction Contingencies					\$100,700
Technical Services					\$100,700
Legal and Administrative					\$5,000
TOTAL PROJECT COSTS					\$710,100



Project S4 – Love Fox Road Trailer Park Sewer Improvements

The trailer park on Love Fox Road currently has approximately 50 service taps, all on 4-inch sewer lines. Much of the sewer system is in unknown locations and has experienced many stoppages and clogging problems. The proposed project will include installation of new 8-inch sewer lines and manholes in this area, which will bring sewer collection into compliance with State minimum requirements for public sewer lines. New sewer taps and service lines will also be installed to insure proper operation of the sewer system. An estimated 2,000 linear feet of 8-inch sewer line, 1,000 linear feet of 4-inch service line, 10 manholes and 50 service taps are required for the project.

PROJECT S4					
LOVE FOX ROAD TRAILER PARK SEWER IMPROVEMENTS					
ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENSION
1	Mobilization	1	LS	\$6,300	\$6,300
2	8" DIP Sanitary Sewer	2000	LF	\$50	\$100,000
3	4' Dia. Manholes - Standard	10	EA	\$2,000	\$20,000
4	Sanitary Sewer Service Taps	50	EA	\$750	\$37,500
5	4" PVC sewer service line	1000	LF	\$12	\$12,000
6	24" Dia. x 0.250" Wall Thickness Steel Encasement Pipe, Bored and Jacked Complete w/ Carrier Pipe	40	LF	\$300	\$12,000
7	2" Type SF 9.5A Bituminous Surface Course	250	SY	\$20	\$5,000
8	CABC (shoulders and parking lots)	200	TONS	\$25	\$5,000
9	Asphalt Drive Repair per Detail	200	LF	\$20	\$4,000
10	Concrete Drive Repair per Detail	20	LF	\$50	\$1,000
11	Gravel Drive Repair per Detail	100	LF	\$8	\$800
12	Misc. Concrete	10	CY	\$200	\$2,000
13	Washed Stone Embedment per Detail (DIP)	500	LF	\$3	\$1,500
14	Washed Stone Undercut per 6" depth as directed by Engineer	100	LF	\$3	\$300
15	Rock Excavation	100	CY	\$60	\$6,000
16	Select Backfill	100	CY	\$10	\$1,000
17	Culvert and Drop Inlet protection	5	EA	\$150	\$750
18	Silt Fence installed per detail	200	LF	\$3	\$600
TOTAL CONSTRUCTION COSTS					\$215,750
Construction Contingencies					\$43,200
Technical Services					\$53,900
Legal and Administrative					\$10,000
TOTAL PROJECT COSTS					\$322,850



Project S5 – OMC Pump Station Replacement

This project is a proposed replacement of the existing wet pit/dry pit pump station at the former OMC plant with a new submersible pump station. The existing pump station is well beyond its useful life span and is increasingly difficult to maintain and operate reliably. The existing pump station is absolutely critical to conveyance of the eastern half of the Town’s collected wastewater and must remain online during construction. Due to this concern, the new pump station will be constructed adjacent to the current one. New controls, wiring and a new backup generator capable of running both pumps will also be included in the project.

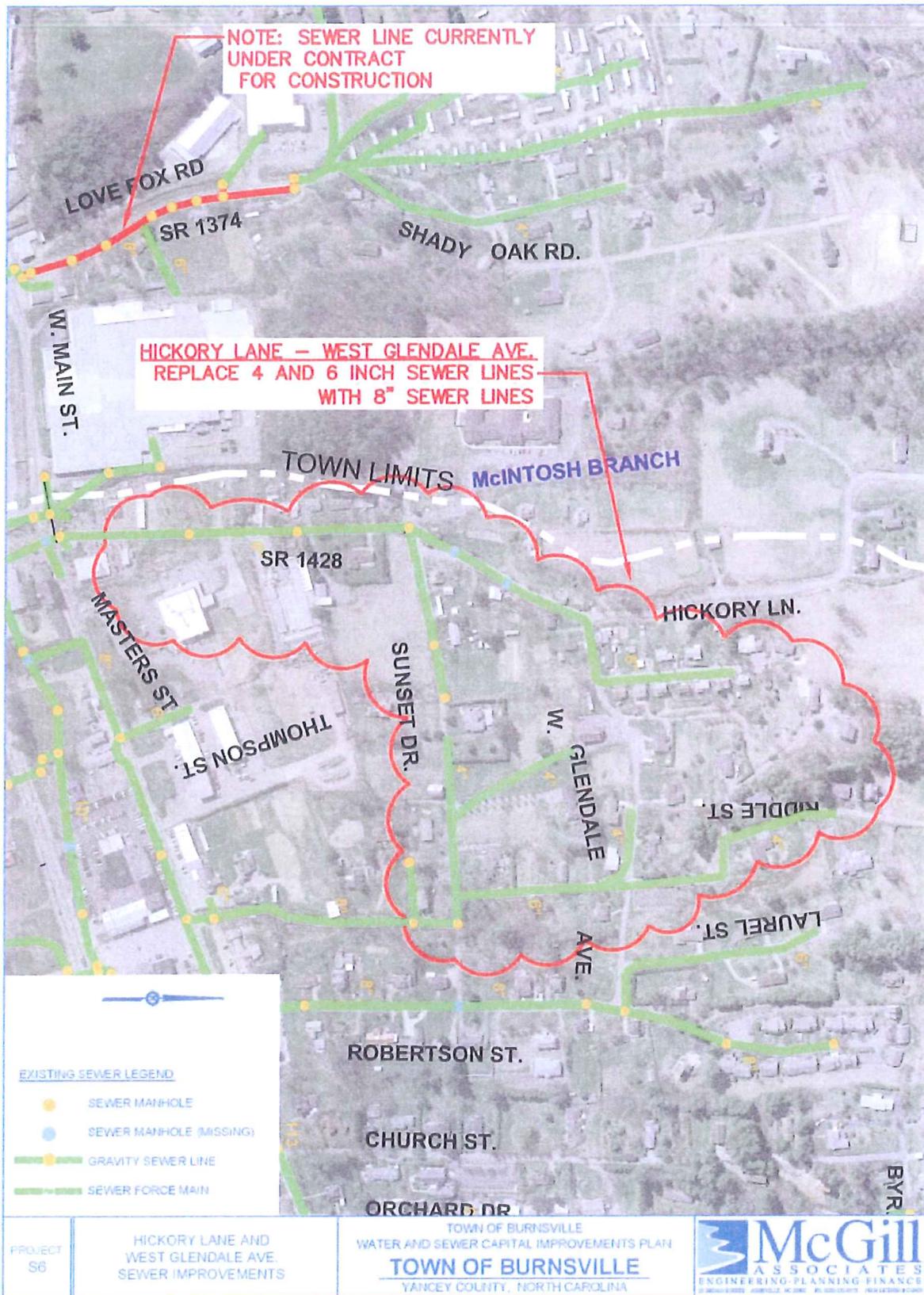
PROJECT S5 OMC PUMP STATION REPLACEMENT					
ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENSION
1	Mobilization	1	LS	\$9,600	\$9,600
2	8" DIP Sanitary Sewer	50	LF	\$50	\$2,500
3	4' Dia. Manholes - Standard	2	EA	\$2,000	\$4,000
4	8" DIP Sewer Force Main	50	LF	\$50	\$2,500
5	Temporary Bypass Piping and Pumping	1	LS	\$5,000	\$5,000
6	New Submersible Pump Station on Existing Site	1	LS	\$225,000	\$225,000
7	Misc. Site Work - including additional grading and fencing	1	LS	\$20,000	\$20,000
8	Backup Power Generator	1	LS	\$60,000	\$60,000
TOTAL CONSTRUCTION COSTS					\$328,600
Construction Contingencies					\$65,700
Technical Services					\$82,200
Legal and Administrative					\$5,000
TOTAL PROJECT COSTS					\$481,500



Project S6 – Hickory Lane and West Glendale Avenue Sewer Line Improvements

This area is currently served with 6-inch and 4-inch sewer lines and few manholes for maintenance, so it is therefore not in compliance with State regulations for public sewer. Some of the older pipes are also clay, increasing the amount of infiltration and inflow into the sewer system. The proposed project includes the installation of approximately 5,000 linear feet of 8-inch sewer line with 24 manholes, 50 new sewer service taps and 1,000 feet of new 4-inch service lines.

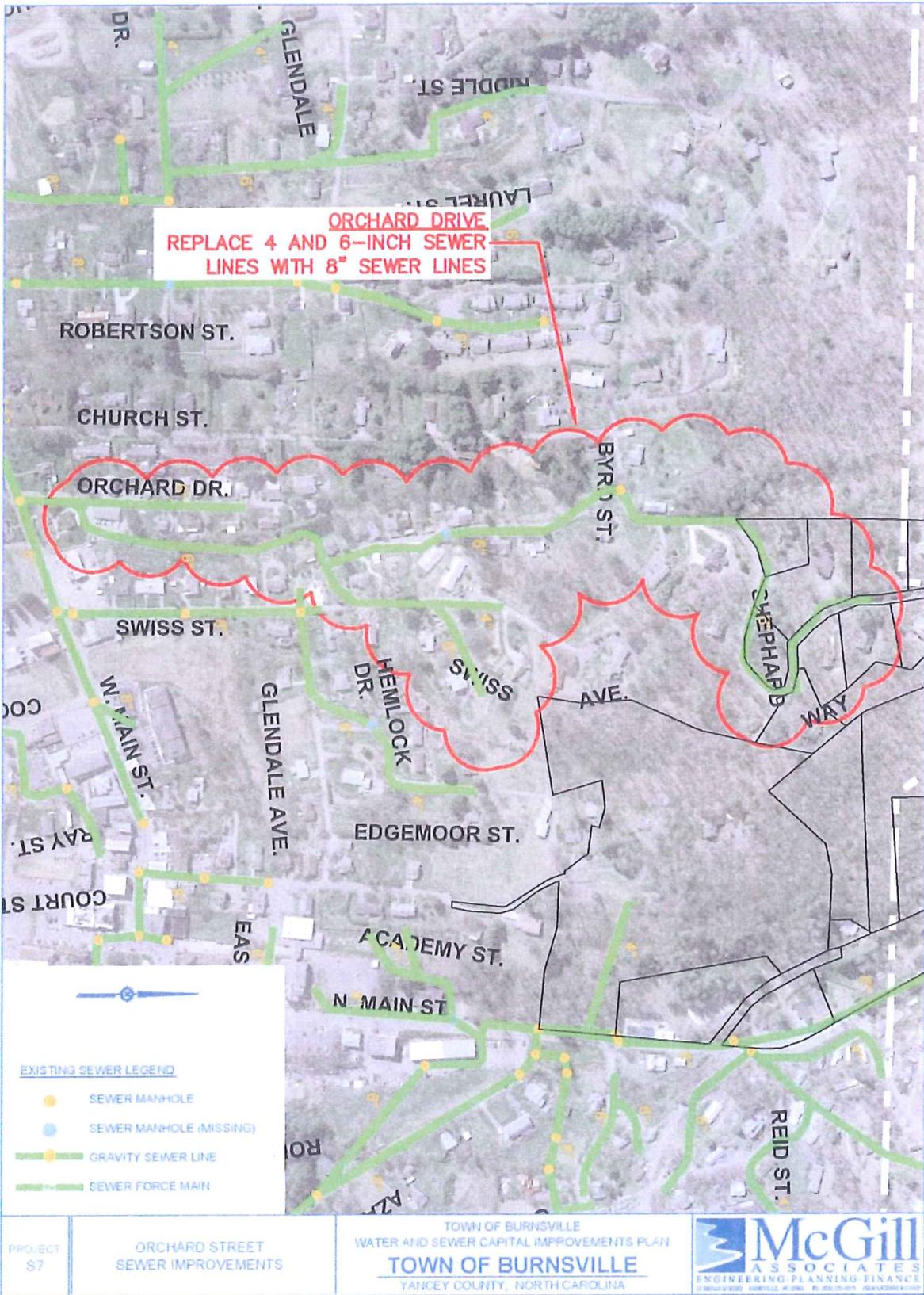
PROJECT S6					
HICKORY LANE AND WEST GLENDALE AVENUE SEWER LINE IMPROVEMENTS					
ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENSION
1	Mobilization	1	LS	\$12,900	\$12,900
2	8" DIP Sanitary Sewer	5000	LF	\$50	\$250,000
3	4' Dia. Manholes - Standard	24	EA	\$2,000	\$48,000
4	Sanitary Sewer Service Taps	50	EA	\$750	\$37,500
5	4" PVC sewer service line	1000	LF	\$12	\$12,000
6	20" Dia. x 0.250" Wall Thickness Steel Encasement Pipe, Bored and Jacked Complete w/ Carrier Pipe	50	LF	\$300	\$15,000
7	2" Type SF 9.5A Bituminous Surface Course	250	SY	\$20	\$5,000
8	Pavement Repair (excluding overlay)	500	LF	\$35	\$17,500
9	CABC (shoulders and parking lots)	100	TONS	\$25	\$2,500
10	Asphalt Drive Repair per Detail	250	LF	\$20	\$5,000
11	Concrete Drive Repair per Detail	20	LF	\$50	\$1,000
12	Gravel Drive Repair per Detail	100	LF	\$8	\$800
13	Misc. Concrete	10	CY	\$200	\$2,000
14	Washed Stone Embedment per Detail (DIP)	2000	LF	\$3	\$6,000
15	Washed Stone Undercut per 6" depth as directed by Engineer	500	LF	\$3	\$1,500
16	Rock Excavation	200	CY	\$60	\$12,000
17	Select Backfill	500	CY	\$10	\$5,000
18	Culvert and Drop Inlet protection	12	EA	\$150	\$1,800
19	Silt Fence installed per detail	2000	LF	\$3	\$6,000
TOTAL CONSTRUCTION COSTS					\$441,500
Construction Contingencies					\$88,300
Technical Services					\$88,300
Legal and Administrative					\$15,000
TOTAL PROJECT COSTS					\$633,100



Project S7 – Orchard Drive Sewer Line Improvements

Orchard Drive is another area currently served by 4 and 6-inch sewer lines with few manholes and is therefore not in compliance with State standards for public sewer. The recommended project consists of approximately 5,000 linear feet of 8-inch sewer line, 25 manholes, 30 new sewer service taps and 600 feet of 4-inch sewer service pipe.

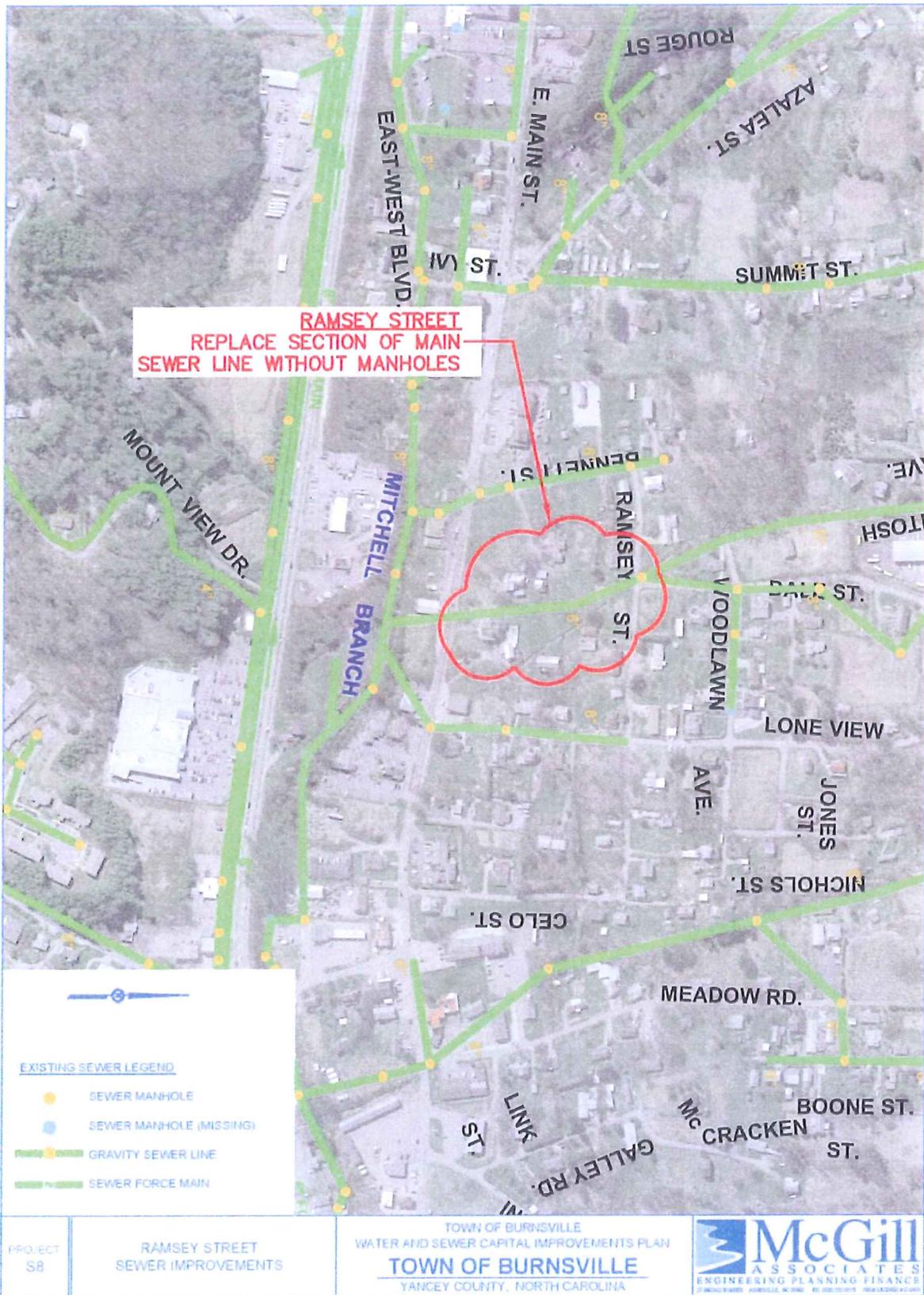
PROJECT S7 ORCHARD DRIVE SEWER LINE IMPROVEMENTS					
ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENSION
1	Mobilization	1	LS	\$12,300	\$12,300
2	8" DIP Sanitary Sewer	5000	LF	\$50	\$250,000
3	4' Dia. Manholes - Standard	25	EA	\$2,000	\$50,000
4	Sanitary Sewer Service Taps	30	EA	\$750	\$22,500
5	4" PVC sewer service line	600	LF	\$12	\$7,200
7	2" Type SF 9.5A Bituminous Surface Course	500	SY	\$20	\$10,000
8	Pavement Repair (excluding overlay)	1000	LF	\$35	\$35,000
9	CABC (shoulders and parking lots)	100	TONS	\$25	\$2,500
10	Asphalt Drive Repair per Detail	200	LF	\$20	\$4,000
11	Concrete Drive Repair per Detail	10	LF	\$50	\$500
12	Gravel Drive Repair per Detail	60	LF	\$8	\$480
13	Misc. Concrete	10	CY	\$200	\$2,000
14	Washed Stone Embedment per Detail (DIP)	2500	LF	\$3	\$7,500
15	Washed Stone Undercut per 6" depth as directed by Engineer	500	LF	\$3	\$1,500
16	Rock Excavation	150	CY	\$60	\$9,000
17	Select Backfill	300	CY	\$10	\$3,000
18	Culvert and Drop Inlet protection	10	EA	\$150	\$1,500
19	Silt Fence installed per detail	1500	LF	\$3	\$4,500
TOTAL CONSTRUCTION COSTS					\$423,480
Construction Contingencies					\$84,700
Technical Services					\$84,700
Legal and Administrative					\$15,000
TOTAL PROJECT COSTS					\$607,880



Project S8 – Ramsey Street Sewer Line Improvements

The Ramsey Street area is in need of replacement and realignment of a section of 8-inch sewer line. While the original pipe is large enough for public sewer standards, it was installed without manholes and instead utilized bends and fittings. This presents maintenance problems and is not within State standards. Approximately 850 linear feet of new 8-inch sewer line is estimated to be needed, including 5 new manholes, 5 new sewer service taps and 100 feet of new 4-inch sewer service pipe.

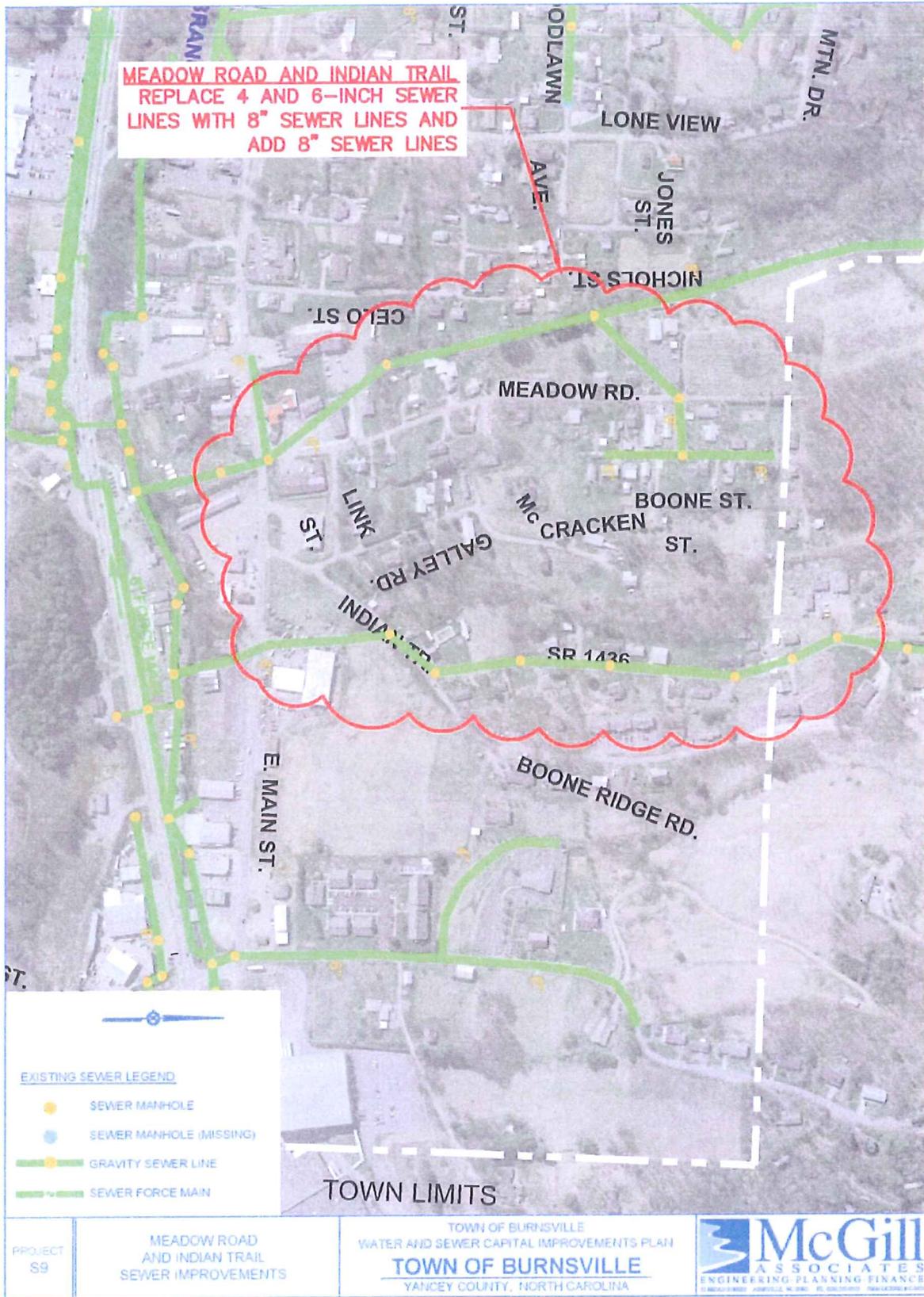
PROJECT S8 RAMSEY STREET SEWER LINE IMPROVEMENTS					
ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENSION
1	Mobilization	1	LS	\$2,400	\$2,400
2	8" DIP Sanitary Sewer	850	LF	\$50	\$42,500
3	4' Dia. Manholes - Standard	5	EA	\$2,000	\$10,000
4	Sanitary Sewer Service Taps	5	EA	\$750	\$3,750
5	4" PVC sewer service line	100	LF	\$12	\$1,200
6	24" Dia. x 0.250" Wall Thickness Steel Encasement Pipe, Bored and Jacked Complete w/ Carrier Pipe	40	LF	\$300	\$12,000
7	2" Type SF 9.5A Bituminous Surface Course	50	SY	\$20	\$1,000
8	Pavement Repair (excluding overlay)	25	LF	\$35	\$875
9	Asphalt Drive Repair per Detail	25	LF	\$20	\$500
10	Washed Stone Embedment per Detail	750	LF	\$3	\$2,250
11	Washed Stone Undercut per 6" depth as directed by Engineer	200	LF	\$3	\$600
12	Rock Excavation	25	CY	\$60	\$1,500
13	Select Backfill	100	CY	\$10	\$1,000
14	Culvert and Drop Inlet protection	3	EA	\$150	\$450
15	Silt Fence installed per detail	700	LF	\$3	\$2,100
TOTAL CONSTRUCTION COSTS					\$82,125
Construction Contingencies					\$16,400
Technical Services					\$24,600
Legal and Administrative					\$5,000
TOTAL PROJECT COSTS					\$128,125



Project S9 – Meadow Road and Indian Trail Sewer Line Improvements

This project intends to improve another area of Town currently served by 4 and 6-inch sewer lines with few manholes. In addition, there is one area where it cannot be determined if any sewer line has been installed at all. The project will include the installation of approximately 6,000 linear feet of new 8-inch sewer line, 30 new manholes, 50 service taps and about 1,000 feet of new 4-inch sewer service line.

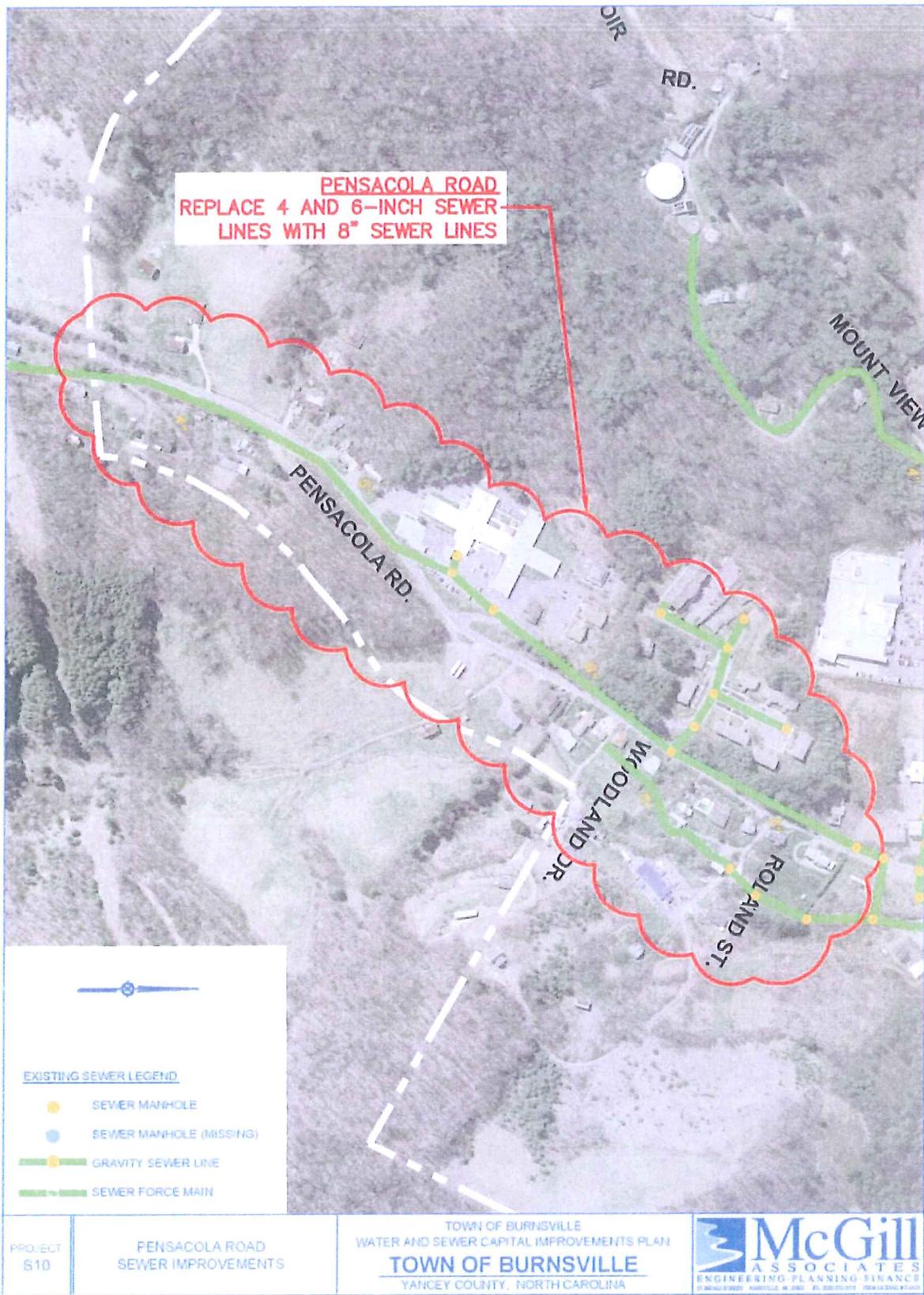
PROJECT S9 MEADOW ROAD AND INDIAN TRAIL SEWER LINE IMPROVEMENTS					
ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENSION
1	Mobilization	1	LS	\$15,900	\$15,900
2	8" DIP Sanitary Sewer	6000	LF	\$50	\$300,000
3	4' Dia. Manholes - Standard	30	EA	\$2,000	\$60,000
4	Sanitary Sewer Service Taps	50	EA	\$750	\$37,500
5	4" PVC sewer service line	1000	LF	\$12	\$12,000
7	2" Type SF 9.5A Bituminous Surface Course	1500	SY	\$20	\$30,000
8	Pavement Repair (excluding overlay)	1000	LF	\$35	\$35,000
9	CABC (shoulders and parking lots)	100	TONS	\$25	\$2,500
10	Asphalt Drive Repair per Detail	500	LF	\$20	\$10,000
11	Concrete Drive Repair per Detail	25	LF	\$50	\$1,250
12	Gravel Drive Repair per Detail	50	LF	\$8	\$400
13	Misc. Concrete	10	CY	\$200	\$2,000
14	Washed Stone Embedment per Detail (DIP)	4000	LF	\$3	\$12,000
15	Washed Stone Undercut per 6" depth as directed by Engineer	500	LF	\$3	\$1,500
16	Rock Excavation	200	CY	\$60	\$12,000
17	Select Backfill	500	CY	\$10	\$5,000
18	Culvert and Drop Inlet protection	20	EA	\$150	\$3,000
19	Silt Fence installed per detail	2000	LF	\$3	\$6,000
TOTAL CONSTRUCTION COSTS					\$546,050
Construction Contingencies					\$109,200
Technical Services					\$109,200
Legal and Administrative					\$15,000
TOTAL PROJECT COSTS					\$779,450



Project S10 – Pensacola Road Sewer Line Improvements

While there have been recent improvements in the sewer infrastructure in the vicinity of the U.S. 19 and Pensacola Road intersection, the rest of the drainage area is served by a sewer system that utilizes 4 and 6-inch sewer lines. There are a number of manholes on these lines, but neither the sewer line size nor the construction of the manholes themselves is adequate for public sewer standards. The proposed project will include approximately 3,500 linear feet of 8-inch sewer line, 18 new manholes, 12 sewer service taps and 1,000 feet of new 4-inch sewer service pipe.

PROJECT S10 PENSACOLA ROAD SEWER LINE IMPROVEMENTS					
ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENSION
1	Mobilization	1	LS	\$8,100	\$8,100
2	8" DIP Sanitary Sewer	3500	LF	\$50	\$175,000
3	4' Dia. Manholes - Standard	18	EA	\$2,000	\$36,000
4	Sanitary Sewer Service Taps	12	EA	\$750	\$9,000
5	4" PVC sewer service line	200	LF	\$12	\$2,400
7	2" Type SF 9.5A Bituminous Surface Course	150	SY	\$20	\$3,000
8	Pavement Repair (excluding overlay)	50	LF	\$35	\$1,750
9	CABC (shoulders and parking lots)	100	TONS	\$25	\$2,500
10	Asphalt Drive Repair per Detail	200	LF	\$20	\$4,000
11	Concrete Drive Repair per Detail	20	LF	\$50	\$1,000
12	Gravel Drive Repair per Detail	50	LF	\$8	\$400
13	Misc. Concrete	10	CY	\$200	\$2,000
14	Washed Stone Embedment per Detail (DIP)	2500	LF	\$3	\$7,500
15	Washed Stone Undercut per 6" depth as directed by Engineer	1000	LF	\$3	\$3,000
16	Rock Excavation	200	CY	\$60	\$12,000
17	Select Backfill	500	CY	\$10	\$5,000
18	Culvert and Drop Inlet protection	10	EA	\$150	\$1,500
19	Silt Fence installed per detail	1000	LF	\$3	\$3,000
TOTAL CONSTRUCTION COSTS					\$277,150
Construction Contingencies					\$55,400
Technical Services					\$69,300
Legal and Administrative					\$10,000
TOTAL PROJECT COSTS					\$411,850



Project S11 – Westover Drive and Presnell Road Sewer Line Improvements

This area is another location served by 4 and 6-inch sewer lines with very few manholes for maintenance. The proposed improvement project will bring the system to State standards by installing approximately 3,000 linear feet of 8-inch sewer line, 15 new manholes, 25 sewer service taps and 500 feet of new 4-inch sewer service lines.

PROJECT S11 WESTOVER DRIVE AND PRESNELL ROAD SEWER LINE IMPROVEMENTS					
ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENSION
1	Mobilization	1	LS	\$7,800	\$7,800
2	8" DIP Sanitary Sewer	3000	LF	\$50	\$150,000
3	4' Dia. Manholes - Standard	15	EA	\$2,000	\$30,000
4	Sanitary Sewer Service Taps	25	EA	\$750	\$18,750
5	4" PVC sewer service line	500	LF	\$12	\$6,000
7	2" Type SF 9.5A Bituminous Surface Course	350	SY	\$20	\$7,000
8	Pavement Repair (excluding overlay)	500	LF	\$35	\$17,500
9	CABC (shoulders and parking lots)	50	TONS	\$25	\$1,250
10	Asphalt Drive Repair per Detail	250	LF	\$20	\$5,000
11	Concrete Drive Repair per Detail	20	LF	\$50	\$1,000
12	Gravel Drive Repair per Detail	50	LF	\$8	\$400
13	Misc. Concrete	10	CY	\$200	\$2,000
14	Washed Stone Embedment per Detail (DIP)	1500	LF	\$3	\$4,500
15	Washed Stone Undercut per 6" depth as directed by Engineer	500	LF	\$3	\$1,500
16	Rock Excavation	100	CY	\$60	\$6,000
17	Select Backfill	500	CY	\$10	\$5,000
18	Culvert and Drop Inlet protection	10	EA	\$150	\$1,500
19	Silt Fence installed per detail	1000	LF	\$3	\$3,000
TOTAL CONSTRUCTION COSTS					\$268,200
Construction Contingencies					\$53,600
Technical Services					\$67,100
Legal and Administrative					\$10,000
TOTAL PROJECT COSTS					\$398,900



A Capital Improvements Plan (CIP) is a valuable tool utilized by local governments to schedule and plan for financing of projects to upgrade and expand their facilities. Typically, the Capital Improvements Plan is developed for a five to seven-year period. Based on the prioritization schedules shown below for the water and sewer system improvements, it is recommended that the Town of Burnsville develop their projects with that in mind. Planning elements of the most critical water and sewer system projects in the prioritization schedules should be included in the upcoming and initial years of the CIP, with construction of the projects generally planned for the later part or beyond the limits of the CIP. The proposed water and sewer system capital improvements plan projects have been prioritized to address the most urgent needs of the Town. It is recommended that the projects be designed and constructed in the order provided below as soon as project funding can be secured.

WATER SYSTEM PROJECTS PRIORITIZATION SCHEDULE

- 1. Cane River Intake Pump Replacement**
Replacement of one (1) pump assembly, detailed inspection of entire pump station
- 2. Automated Meter Reading (AMR) Project**
Replacement of all Town water meters with radio-read meters and all appurtenances.
- 3. Water Treatment Plant Improvements**
Concrete storage tank repairs and fill/draw piping improvements, new sewer service line, abandonment of sludge dewatering system.
- 4. Green Mountain Drive Water Improvements (Lincoln Park)**
Booster pump station, 4,000 LF 6-inch DIP, 1,500 LF 2-inch PVC, 500 LF ¾-inch service line, 6 fire hydrants and 20 water meters*
- 5. Meadow Road Water Line Improvements**
Replacement of 2-inch service line serving 20+ homes with new 6-inch water line, service line, fire hydrants and water meters*
- 6. Main Street Water Line Improvements**
10,000 LF 8-inch DIP, 1,000 LF 6-inch DIP, 200 LF 2-inch PVC, 3,000 LF ¾-inch service line, 20 fire hydrants and 75 water meters*
- 7. West Burnsville Church Road Water Line Improvements**
3,600 LF 6-inch DIP, 1,500 LF 2-inch PVC, 1,000 LF ¾-inch service line, 3 fire hydrants and 25 water meters
- 8. Love Fox Road Trailer Park Water Line Improvements**
1,200 LF 6-inch DIP, 500 LF 2-inch PVC, 1,000 LF ¾-inch service line, 2 fire hydrants and 50 water meters
- 9. 1 Million Gallon Reservoir**
- 10. West Glendale Avenue Water Improvements**
Booster pump station, 6,500 LF 6-inch DIP, 2,000 LF 2-inch PVC, 500 LF ¾-inch service line, 8 fire hydrants and 40 water meters*
- 11. Burnsville School Road Water Line Improvements**
3,000 LF 8-inch DIP, 1,500 LF 2-inch PVC, 3,000 LF ¾-inch service line, 3 fire hydrants, 20 water meters
- 12. Bill Young Road Water Line Improvements**
2,000 LF 6-inch DIP, 1,000 LF 2-inch PVC, 300 LF ¾-inch service line, 3 fire hydrants and 25 water meters*
- 13. Comet Lane Trailer Park Water Improvements**
500 LF 6-inch DIP, 500 LF 2-inch PVC, service line, fire hydrants and 33 water meters

*The AMR Project may eliminate the need for this line item if completed earlier.

WASTEWATER SYSTEM PROJECTS PRIORITIZATION SCHEDULE

- 1. Main Sewer Interceptor Videos**
Video inspection of 12,000 LF 10-inch sewer and 6,500 LF 8-inch sewer
- 2. Main Sewer Interceptor (West) Improvements**
Pending video analysis: 10,000 LF 10-inch CIPP lining, 2,000 LF 10-inch DIP, 20 manhole rehabilitations, 20 manhole replacements and 145 service taps
- 3. Main Sewer Interceptor (East) Improvements**
Pending video analysis: 5,500 LF 8-inch CIPP lining, 1,000 LF 8-inch DIP, 30 manhole rehabilitations, 10 manhole replacements and 105 service taps
- 4. Love Fox Road Trailer Park Sewer Improvements**
2,000 LF 8-inch DIP, 1,000 LF 4-inch PVC service line, 10 manholes and 50 service taps
- 5. OMC Pump Station Replacement**
Installation of a duplex submersible pump station, generator and all accessories
- 6. Hickory Lane and West Glendale Avenue Sewer Line Improvements**
5,000 LF 8-inch DIP, 1,000 LF 4-inch PVC service line, 24 manholes and 50 service taps
- 7. Orchard Drive Sewer Line Improvements**
5,000 LF 8-inch DIP, 600 LF 4-inch PVC service line, 25 manholes and 30 service taps
- 8. Ramsey Street Sewer Line Improvements**
850 LF 8-inch DIP, 100 LF 4-inch PVC service line, 5 manholes and 5 service taps
- 9. Meadow Road and Indian Trail Sewer Line Improvements**
6,000 LF 8-inch DIP, 1,000 LF 4-inch PVC service line, 30 manholes and 50 service taps
- 10. Pensacola Road Sewer Line Improvements**
3,500 LF 8-inch DIP, 200 LF 4-inch PVC service line, 18 manholes and 12 service taps
- 11. Westover Drive and Presnell Road Sewer Line Improvements**
3,000 LF 8-inch DIP, 500 LF 4-inch PVC service line, 15 manholes and 25 service taps

A. GENERAL

Implementation of the recommended improvements identified herein over a 20-year period will provide the Town's water and sewer systems with the capacity to meet existing and future needs. The costs of the recommended improvements as developed have been estimated based on Year 2012 construction prices and also include allowances for construction contingencies, engineering, administrative, legal and easement acquisition fees. For the purposes of this study, the recommended improvements have been placed into separate projects, which in turn have been prioritized based on relative necessity. The projects thus delineated may be phased over an indefinite period of years as dictated by the availability of funds and/or future development patterns.

B. SYSTEM MANAGEMENT AND PLANNING RECOMMENDATIONS

The Town of Burnsville should consider implementing additional management programs to improve the overall efficiency of the water and wastewater systems, such as the following:

1. Water and Wastewater System Mapping – Updates to all infrastructure mapping should continue on a regular basis. Accurate geographic mapping and gathering of infrastructure attribute information are invaluable tools that benefit the operation and maintenance of water distribution and sewer collection systems.
2. Water System Monitoring and Data Collection – As an extension of the previous planning recommendation, all pump stations and water storage tanks should be fitted with functional monitoring and data collection capabilities in order to accurately supervise the water distribution system. Installing master flow meters on all pump stations will provide the Town with the opportunity to compare flow into each secondary pressure zone with billing records for those zones and thereby give insight into water losses in specific areas. Install pressure transducers and/or float systems with SCADA integration on all tanks,

and overflow metering on all system blow-offs and areas that must be flushed for chlorine residual purposes, to further track the water supply.

3. Water System Hydraulic Modeling Study – This study will determine flows and pressures throughout the distribution system and serve as a tool to support recommendations and predict system behavior for proposed future upgrades and extensions. The construction of a static model for the main pressure zone is a first step, and will require additional static and dynamic calibration data (such as the aforementioned water system monitoring and data collection activities) in order to provide accurate real-time estimation of system behavior during specific situations.
4. Water Loss Detection Program – The Town should continue to locate leaks in their distribution system on a regular basis and keep detailed records of all repairs. A structured approach to monitoring water loss in the system should be utilized, with water audits and surveys to investigate leakage and unaccounted-for water. Staggered water meter replacements to ensure accurate measurement should be included in this program.
5. Infiltration/Inflow (I/I) Analysis – The Town should calculate I/I in the wastewater collection system on an annual basis. Continue this program and repair and/or replace damaged sewer appurtenances on a priority basis.
6. Manhole Replacement / Rehabilitation – All manholes within the Town collection system should be inspected and documented regularly, and repaired or replaced on a priority basis.
7. Preventative Maintenance Program – A program to schedule regular maintenance of existing equipment should be implemented. New equipment purchased for the system should trend toward standardization.

8. Safety Program and Emergency Procedures Training – All Town utility employees should be familiar with pertinent regulations and procedures for personal safety and making emergency repairs to critical water and sewer systems. Items such as contamination avoidance for workers exposed to wastewater, water borne disease prevention, confined space procedures, atmospheric hazards related to wastewater collection and treatment systems, traffic hazards during field repairs, proper trenching and shoring techniques for utility installation and repair, chemical hazards at treatment plants, “call before you dig” regulations, avoiding injury from heavy lifting and exposure to electrical systems and other medical emergencies should be discussed at regular training meetings. Procedures for what to do during and after an emergency should be clearly established and conveyed to all personnel.

9. Customer Service, Public Relations and Education – Reach out to school students and the water and sewer customer base with billing statement inserts and/or Town meetings on issues that affect the health and wellness of the townspeople and environment. Possible topics of discussion include education regarding what is permissible for disposal into the wastewater system and landfills, water conservation methods, protection of waterways, anti-littering campaigns and recycling efforts.

10. Administrative Improvements – The following useful tools should be compiled and used to standardize new/replacement utility installations and extensions into unserved areas, particularly when private or commercial developers wish to install infrastructure on their properties in-house and turn over maintenance and operation to the Town:
 - a. *Water and Sewer Design Standards*
 - b. *Policies and Procedures Manual*
 - c. *Standard Specifications and Drawings*
 - d. *Lists of Standard Materials*

APPENDIX 1

DEMOGRAPHICS



DP-1

Profile of General Population and Housing Characteristics: 2010

2010 Demographic Profile Data

NOTE: For more information on confidentiality protection, nonsampling error, and definitions, see <http://www.census.gov/prod/cen2010/doc/dpsf.pdf>.

Geography: Burnsville town, North Carolina

Subject	Number	Percent
SEX AND AGE		
Total population	1,693	100.0
Under 5 years	81	4.8
5 to 9 years	107	6.3
10 to 14 years	87	5.1
15 to 19 years	89	5.3
20 to 24 years	86	5.1
25 to 29 years	91	5.4
30 to 34 years	103	6.1
35 to 39 years	82	4.8
40 to 44 years	107	6.3
45 to 49 years	104	6.1
50 to 54 years	103	6.1
55 to 59 years	113	6.7
60 to 64 years	115	6.8
65 to 69 years	78	4.6
70 to 74 years	83	4.9
75 to 79 years	79	4.7
80 to 84 years	96	5.7
85 years and over	89	5.3
Median age (years)	45.6	(X)
16 years and over	1,400	82.7
18 years and over	1,362	80.4
21 years and over	1,312	77.5
62 years and over	492	29.1
65 years and over	425	25.1
Male population		
Under 5 years	40	2.4
5 to 9 years	70	4.1
10 to 14 years	51	3.0
15 to 19 years	36	2.1
20 to 24 years	45	2.7
25 to 29 years	55	3.2
30 to 34 years	49	2.9
35 to 39 years	42	2.5
40 to 44 years	61	3.6
45 to 49 years	49	2.9
50 to 54 years	48	2.8
55 to 59 years	46	2.7
60 to 64 years	55	3.2
65 to 69 years	39	2.3
70 to 74 years	37	2.2
75 to 79 years	27	1.6
80 to 84 years	34	2.0
85 years and over	16	0.9

Subject	Number	Percent
Median age (years)	41.6	(X)
16 years and over	635	37.5
18 years and over	615	36.3
21 years and over	595	35.1
years and over	188	11.1
65 years and over	153	9.0
Female population	893	52.7
Under 5 years	41	2.4
5 to 9 years	37	2.2
10 to 14 years	36	2.1
15 to 19 years	53	3.1
20 to 24 years	41	2.4
25 to 29 years	36	2.1
30 to 34 years	54	3.2
35 to 39 years	40	2.4
40 to 44 years	46	2.7
45 to 49 years	55	3.2
50 to 54 years	55	3.2
55 to 59 years	67	4.0
60 to 64 years	60	3.5
65 to 69 years	39	2.3
70 to 74 years	46	2.7
75 to 79 years	52	3.1
80 to 84 years	62	3.7
85 years and over	73	4.3
Median age (years)	50.6	(X)
16 years and over	765	45.2
18 years and over	747	44.1
21 years and over	717	42.4
62 years and over	304	18.0
5 years and over	272	16.1
E		
Total population	1,693	100.0
One Race	1,674	98.9
White	1,551	91.6
Black or African American	39	2.3
American Indian and Alaska Native	11	0.6
Asian	2	0.1
Asian Indian	0	0.0
Chinese	1	0.1
Filipino	0	0.0
Japanese	0	0.0
Korean	1	0.1
Vietnamese	0	0.0
Other Asian [1]	0	0.0
Native Hawaiian and Other Pacific Islander	0	0.0
Native Hawaiian	0	0.0
Guamanian or Chamorro	0	0.0
Samoan	0	0.0
Other Pacific Islander [2]	0	0.0
Some Other Race	71	4.2
Two or More Races	19	1.1
White; American Indian and Alaska Native [3]	3	0.2
White; Asian [3]	0	0.0
White; Black or African American [3]	11	0.6
White; Some Other Race [3]	2	0.1
Race alone or in combination with one or more other s: [4]		
White	1,569	92.7
Black or African American	52	3.1
American Indian and Alaska Native	15	0.9

Subject	Number	Percent
Asian	3	0.2
Native Hawaiian and Other Pacific Islander	1	0.1
Some Other Race	74	4.4
HISPANIC OR LATINO		
Total population	1,693	100.0
Hispanic or Latino (of any race)	176	10.4
Mexican	151	8.9
Puerto Rican	3	0.2
Cuban	4	0.2
Other Hispanic or Latino [5]	18	1.1
Not Hispanic or Latino	1,517	89.6
HISPANIC OR LATINO AND RACE		
Total population	1,693	100.0
Hispanic or Latino	176	10.4
White alone	86	5.1
Black or African American alone	4	0.2
American Indian and Alaska Native alone	9	0.5
Asian alone	0	0.0
Native Hawaiian and Other Pacific Islander alone	0	0.0
Some Other Race alone	69	4.1
Two or More Races	8	0.5
Not Hispanic or Latino	1,517	89.6
White alone	1,465	86.5
Black or African American alone	35	2.1
American Indian and Alaska Native alone	2	0.1
Asian alone	2	0.1
Native Hawaiian and Other Pacific Islander alone	0	0.0
Some Other Race alone	2	0.1
Two or More Races	11	0.6
RELATIONSHIP		
Total population	1,693	100.0
In households	1,537	90.8
Householder	736	43.5
Spouse [6]	281	16.6
Child	390	23.0
Own child under 18 years	296	17.5
Other relatives	63	3.7
Under 18 years	24	1.4
65 years and over	16	0.9
Nonrelatives	67	4.0
Under 18 years	7	0.4
65 years and over	5	0.3
Unmarried partner	37	2.2
In group quarters	156	9.2
Institutionalized population	134	7.9
Male	67	4.0
Female	67	4.0
Noninstitutionalized population	22	1.3
Male	8	0.5
Female	14	0.8
HOUSEHOLDS BY TYPE		
Total households	736	100.0
Family households (families) [7]	386	52.4
With own children under 18 years	155	21.1
Husband-wife family	281	38.2
With own children under 18 years	96	13.0
Male householder, no wife present	26	3.5
With own children under 18 years	10	1.4
Female householder, no husband present	79	10.7
With own children under 18 years	49	6.7

Subject	Number	Percent
Nonfamily households [7]	350	47.6
Householder living alone	324	44.0
Male	107	14.5
65 years and over	36	4.9
Female	217	29.5
65 years and over	119	16.2
Households with individuals under 18 years	172	23.4
Households with individuals 65 years and over	269	36.5
Average household size	2.09	(X)
Average family size [7]	2.90	(X)
HOUSING OCCUPANCY		
Total housing units	879	100.0
Occupied housing units	736	83.7
Vacant housing units	143	16.3
For rent	54	6.1
Rented, not occupied	3	0.3
For sale only	10	1.1
Sold, not occupied	4	0.5
For seasonal, recreational, or occasional use	34	3.9
All other vacants	38	4.3
Homeowner vacancy rate (percent) [8]	2.7	(X)
Rental vacancy rate (percent) [9]	12.4	(X)
HOUSING TENURE		
Occupied housing units	736	100.0
Owner-occupied housing units	358	48.6
Population in owner-occupied housing units	787	(X)
Average household size of owner-occupied units	2.20	(X)
Renter-occupied housing units	378	51.4
Population in renter-occupied housing units	750	(X)
Average household size of renter-occupied units	1.98	(X)

X Not applicable.

[1] Other Asian alone, or two or more Asian categories.

[2] Other Pacific Islander alone, or two or more Native Hawaiian and Other Pacific Islander categories.

[3] One of the four most commonly reported multiple-race combinations nationwide in Census 2000.

[4] In combination with one or more of the other races listed. The six numbers may add to more than the total population, and the six percentages may add to more than 100 percent because individuals may report more than one race.

[5] This category is composed of people whose origins are from the Dominican Republic, Spain, and Spanish-speaking Central or South American countries. It also includes general origin responses such as "Latino" or "Hispanic."

[6] "Spouse" represents spouse of the householder. It does not reflect all spouses in a household. Responses of "same-sex spouse" were edited during processing to "unmarried partner."

[7] "Family households" consist of a householder and one or more other people related to the householder by birth, marriage, or adoption. They do not include same-sex married couples even if the marriage was performed in a state issuing marriage certificates for same-sex couples. Same-sex couple households are included in the family households category if there is at least one additional person related to the householder by birth or adoption. Same-sex couple households with no relatives of the householder present are tabulated in nonfamily households. "Nonfamily households" consist of people living alone and households which do not have any members related to the householder.

[8] The homeowner vacancy rate is the proportion of the homeowner inventory that is vacant "for sale." It is computed by dividing the total number of vacant units "for sale only" by the sum of owner-occupied units, vacant units that are "for sale only," and vacant units that have been sold but not yet occupied; and then multiplying by 100.

[9] The rental vacancy rate is the proportion of the rental inventory that is vacant "for rent." It is computed by dividing the total number of vacant units "for rent" by the sum of the renter-occupied units, vacant units that are "for rent," and vacant units that have been rented but not yet occupied; and then multiplying by 100.

Source: U.S. Census Bureau, 2010 Census.



DP-1

Profile of General Population and Housing Characteristics: 2010

2010 Demographic Profile Data

NOTE: For more information on confidentiality protection, nonsampling error, and definitions, see <http://www.census.gov/prod/cen2010/doc/dpsf.pdf>.

Geography: Yancey County, North Carolina

Subject	Number	Percent
SEX AND AGE		
Total population	17,818	100.0
Under 5 years	853	4.8
5 to 9 years	982	5.5
10 to 14 years	1,064	6.0
15 to 19 years	1,031	5.8
20 to 24 years	796	4.5
25 to 29 years	812	4.6
30 to 34 years	972	5.5
35 to 39 years	1,101	6.2
40 to 44 years	1,172	6.6
45 to 49 years	1,242	7.0
50 to 54 years	1,336	7.5
55 to 59 years	1,391	7.8
60 to 64 years	1,394	7.8
65 to 69 years	1,146	6.4
70 to 74 years	910	5.1
75 to 79 years	693	3.9
80 to 84 years	477	2.7
85 years and over	446	2.5
Median age (years)	45.5	(X)
16 years and over	14,724	82.6
18 years and over	14,256	80.0
21 years and over	13,707	76.9
25 years and over	11,485	64.5
30 years and over	9,672	54.2
35 years and over	8,146	45.6
40 years and over	6,972	39.1
45 years and over	5,972	33.5
50 years and over	5,146	28.8
55 years and over	4,485	25.2
60 years and over	3,972	22.2
65 years and over	3,672	20.6
Male population	8,744	49.1
Under 5 years	448	2.5
5 to 9 years	545	3.1
10 to 14 years	546	3.1
15 to 19 years	518	2.9
20 to 24 years	399	2.2
25 to 29 years	426	2.4
30 to 34 years	464	2.6
35 to 39 years	573	3.2
40 to 44 years	606	3.4
45 to 49 years	611	3.4
50 to 54 years	644	3.6
55 to 59 years	674	3.8
60 to 64 years	666	3.7
65 to 69 years	562	3.2
70 to 74 years	414	2.3
75 to 79 years	326	1.8
80 to 84 years	194	1.1
85 years and over	128	0.7

Subject	Number	Percent
Median age (years)	43.9	(X)
16 years and over	7,130	40.0
18 years and over	6,893	38.7
21 years and over	6,601	37.0
25 years and over	2,013	11.3
65 years and over	1,624	9.1
Female population	9,074	50.9
Under 5 years	405	2.3
5 to 9 years	437	2.5
10 to 14 years	518	2.9
15 to 19 years	513	2.9
20 to 24 years	397	2.2
25 to 29 years	386	2.2
30 to 34 years	508	2.9
35 to 39 years	528	3.0
40 to 44 years	566	3.2
45 to 49 years	631	3.5
50 to 54 years	692	3.9
55 to 59 years	717	4.0
60 to 64 years	728	4.1
65 to 69 years	584	3.3
70 to 74 years	496	2.8
75 to 79 years	367	2.1
80 to 84 years	283	1.6
85 years and over	318	1.8
Median age (years)	47.2	(X)
16 years and over	7,594	42.6
18 years and over	7,363	41.3
21 years and over	7,106	39.9
62 years and over	2,472	13.9
65 years and over	2,048	11.5
65 years and over		
65 years and over		
Total population	17,818	100.0
One Race	17,650	99.1
White	16,967	95.2
Black or African American	145	0.8
American Indian and Alaska Native	79	0.4
Asian	34	0.2
Asian Indian	7	0.0
Chinese	8	0.0
Filipino	4	0.0
Japanese	4	0.0
Korean	6	0.0
Vietnamese	0	0.0
Other Asian [1]	5	0.0
Native Hawaiian and Other Pacific Islander	5	0.0
Native Hawaiian	0	0.0
Guamanian or Chamorro	3	0.0
Samoan	2	0.0
Other Pacific Islander [2]	0	0.0
Some Other Race	420	2.4
Two or More Races	168	0.9
White; American Indian and Alaska Native [3]	77	0.4
White; Asian [3]	16	0.1
White; Black or African American [3]	35	0.2
White; Some Other Race [3]	22	0.1
Race alone or in combination with one or more other races: [4]		
White	17,130	96.1
Black or African American	191	1.1
American Indian and Alaska Native	167	0.9

Subject	Number	Percent
Asian	55	0.3
Native Hawaiian and Other Pacific Islander	10	0.1
Some Other Race	444	2.5
HISPANIC OR LATINO		
Total population	17,818	100.0
Hispanic or Latino (of any race)	814	4.6
Mexican	706	4.0
Puerto Rican	24	0.1
Cuban	29	0.2
Other Hispanic or Latino [5]	55	0.3
Not Hispanic or Latino	17,004	95.4
HISPANIC OR LATINO AND RACE		
Total population	17,818	100.0
Hispanic or Latino	814	4.6
White alone	315	1.8
Black or African American alone	17	0.1
American Indian and Alaska Native alone	37	0.2
Asian alone	0	0.0
Native Hawaiian and Other Pacific Islander alone	3	0.0
Some Other Race alone	414	2.3
Two or More Races	28	0.2
Not Hispanic or Latino	17,004	95.4
White alone	16,652	93.5
Black or African American alone	128	0.7
American Indian and Alaska Native alone	42	0.2
Asian alone	34	0.2
Native Hawaiian and Other Pacific Islander alone	2	0.0
Some Other Race alone	6	0.0
Two or More Races	140	0.8
RELATIONSHIP		
Total population	17,818	100.0
Households	17,653	99.1
Householder	7,644	42.9
Spouse [6]	4,283	24.0
Child	4,401	24.7
Own child under 18 years	3,159	17.7
Other relatives	795	4.5
Under 18 years	342	1.9
65 years and over	137	0.8
Nonrelatives	530	3.0
Under 18 years	56	0.3
65 years and over	37	0.2
Unmarried partner	305	1.7
In group quarters	165	0.9
Institutionalized population	134	0.8
Male	67	0.4
Female	67	0.4
Noninstitutionalized population	31	0.2
Male	13	0.1
Female	18	0.1
HOUSEHOLDS BY TYPE		
Total households	7,644	100.0
Family households (families) [7]	5,216	68.2
With own children under 18 years	1,770	23.2
Husband-wife family	4,283	56.0
With own children under 18 years	1,365	17.9
Male householder, no wife present	315	4.1
With own children under 18 years	134	1.8
Female householder, no husband present	618	8.1
With own children under 18 years	271	3.5

Subject	Number	Percent
Nonfamily households [7]	2,428	31.8
Householder living alone	2,170	28.4
Male	874	11.4
65 years and over	303	4.0
Female	1,296	17.0
65 years and over	767	10.0
Households with individuals under 18 years	1,990	26.0
Households with individuals 65 years and over	2,644	34.6
Average household size	2.31	(X)
Average family size [7]	2.82	(X)
HOUSING OCCUPANCY		
Total housing units	11,032	100.0
Occupied housing units	7,644	69.3
Vacant housing units	3,388	30.7
For rent	344	3.1
Rented, not occupied	18	0.2
For sale only	236	2.1
Sold, not occupied	58	0.5
For seasonal, recreational, or occasional use	2,081	18.9
All other vacants	651	5.9
Homeowner vacancy rate (percent) [8]	3.8	(X)
Rental vacancy rate (percent) [9]	15.9	(X)
HOUSING TENURE		
Occupied housing units	7,644	100.0
Owner-occupied housing units	5,837	76.4
Population in owner-occupied housing units	13,554	(X)
Average household size of owner-occupied units	2.32	(X)
Renter-occupied housing units	1,807	23.6
Population in renter-occupied housing units	4,099	(X)
Average household size of renter-occupied units	2.27	(X)

X Not applicable.

[1] Other Asian alone, or two or more Asian categories.

[2] Other Pacific Islander alone, or two or more Native Hawaiian and Other Pacific Islander categories.

[3] One of the four most commonly reported multiple-race combinations nationwide in Census 2000.

[4] In combination with one or more of the other races listed. The six numbers may add to more than the total population, and the six percentages may add to more than 100 percent because individuals may report more than one race.

[5] This category is composed of people whose origins are from the Dominican Republic, Spain, and Spanish-speaking Central or South American countries. It also includes general origin responses such as "Latino" or "Hispanic."

[6] "Spouse" represents spouse of the householder. It does not reflect all spouses in a household. Responses of "same-sex spouse" were edited during processing to "unmarried partner."

[7] "Family households" consist of a householder and one or more other people related to the householder by birth, marriage, or adoption. They do not include same-sex married couples even if the marriage was performed in a state issuing marriage certificates for same-sex couples. Same-sex couple households are included in the family households category if there is at least one additional person related to the householder by birth or adoption. Same-sex couple households with no relatives of the householder present are tabulated in nonfamily households. "Nonfamily households" consist of people living alone and households which do not have any members related to the householder.

[8] The homeowner vacancy rate is the proportion of the homeowner inventory that is vacant "for sale." It is computed by dividing the total number of vacant units "for sale only" by the sum of owner-occupied units, vacant units that are "for sale only," and vacant units that have been sold but not yet occupied; and then multiplying by 100.

[9] The rental vacancy rate is the proportion of the rental inventory that is vacant "for rent." It is computed by dividing the total number of vacant units "for rent" by the sum of the renter-occupied units, vacant units that are "for rent," and vacant units that have been rented but not yet occupied; and then multiplying by 100.

Source: U.S. Census Bureau, 2010 Census.

U.S. Census Bureau

American FactFinder

Burnsville town, North Carolina

S1701. Poverty Status in the Past 12 Months

Data Set: 2005-2009 American Community Survey 5-Year Estimates

Survey: American Community Survey

NOTE: For information on confidentiality protection, sampling error, nonsampling error, and definitions, see Survey Methodology.

Subject	Total	Margin of Error	Below poverty level	Margin of Error	Percent below poverty level	Margin of Error
Population for whom poverty status is determined	1,902	+/-417	451	+/-184	23.7%	+/-7.5
AGE						
Under 18 years	299	+/-158	110	+/-84	36.8%	+/-18.8
Related children under 18 years	299	+/-158	110	+/-84	36.8%	+/-18.8
18 to 64 years	1,211	+/-297	250	+/-119	20.6%	+/-8.6
65 years and over	392	+/-92	91	+/-43	23.2%	+/-9.7
SEX						
Male	887	+/-246	170	+/-105	19.2%	+/-9.2
Female	1,015	+/-202	281	+/-90	27.7%	+/-7.2
RACE AND HISPANIC OR LATINO ORIGIN						
One race	1,816	+/-402	451	+/-184	24.8%	+/-7.6
White	1,714	+/-377	371	+/-160	21.6%	+/-7.6
Black or African American	51	+/-54	29	+/-44	56.9%	+/-41.0
American Indian and Alaska Native	5	+/-8	5	+/-8	100.0%	+/-100.0
Asian	4	+/-7	4	+/-7	100.0%	+/-100.0
Native Hawaiian and Other Pacific Islander	0	+/-127	0	+/-127	-	**
Some other race	42	+/-56	42	+/-56	100.0%	+/-49.2
Two or more races	86	+/-113	0	+/-127	0.0%	+/-33.7
Hispanic or Latino origin (of any race)	187	+/-173	106	+/-123	56.7%	+/-42.8
White alone, not Hispanic or Latino	1,657	+/-342	323	+/-123	19.5%	+/-6.9
EDUCATIONAL ATTAINMENT						
Population 25 years and over	1,413	+/-276	307	+/-122	21.7%	+/-7.1
Less than high school graduate	258	+/-100	136	+/-72	52.7%	+/-16.1
High school graduate (includes equivalency)	473	+/-142	96	+/-38	20.3%	+/-9.2
Some college, associate's degree	400	+/-136	72	+/-54	18.0%	+/-11.3
Bachelor's degree or higher	282	+/-100	3	+/-5	1.1%	+/-1.7
EMPLOYMENT STATUS						
Civilian labor force 16 years and over	893	+/-259	110	+/-84	12.3%	+/-8.3
Employed	855	+/-253	100	+/-78	11.7%	+/-8.0
Male	480	+/-151	57	+/-52	11.9%	+/-9.2
Female	375	+/-136	43	+/-34	11.5%	+/-8.5
Unemployed	38	+/-32	10	+/-12	26.3%	+/-35.6
Male	6	+/-10	0	+/-127	0.0%	+/-100.0
Female	32	+/-31	10	+/-12	31.3%	+/-44.6
WORK EXPERIENCE						
Population 16 years and over	1,637	+/-315	345	+/-133	21.1%	+/-6.8

Worked full-time, year-round in the past 12 months	471	+/-182	26	+/-34	5.5%	+/-6.7
Worked part-time or part-year in the past 12 months	503	+/-141	103	+/-65	20.5%	+/-11.7
Did not work	663	+/-132	216	+/-80	32.6%	+/-10.3
All Individuals below:						
50 percent of poverty level	79	+/-45	(X)	(X)	(X)	(X)
125 percent of poverty level	529	+/-191	(X)	(X)	(X)	(X)
150 percent of poverty level	628	+/-197	(X)	(X)	(X)	(X)
185 percent of poverty level	701	+/-213	(X)	(X)	(X)	(X)
200 percent of poverty level	788	+/-234	(X)	(X)	(X)	(X)
Unrelated individuals for whom poverty status is determined						
	537	+/-141	137	+/-49	25.5%	+/-8.5
Male	198	+/-96	21	+/-14	10.6%	+/-7.1
Female	339	+/-102	116	+/-47	34.2%	+/-12.2
Mean income deficit for unrelated individuals (dollars)						
	4,741	+/-1,418	(X)	(X)	(X)	(X)
Worked full-time, year-round in the past 12 months	120	+/-82	0	+/-127	0.0%	+/-26.3
Worked less than full-time, year-round in the past 12 months	137	+/-97	29	+/-28	21.2%	+/-20.9
Did not work	280	+/-73	108	+/-41	38.6%	+/-13.6
PERCENT IMPUTED						
Poverty status for individuals	24.6%	(X)	(X)	(X)	(X)	(X)

Source: U.S. Census Bureau, 2005-2009 American Community Survey

Data are based on a sample and are subject to sampling variability. The degree of uncertainty for an estimate arising from sampling variability is represented through the use of a margin of error. The value shown here is the 90 percent margin of error. The margin of error can be interpreted roughly as providing a 90 percent probability that the interval defined by the estimate minus the margin of error and the estimate plus the margin of error (the lower and upper confidence bounds) contains the true value. In addition to sampling variability, the ACS estimates are subject to nonsampling error (for a discussion of nonsampling variability, see Accuracy of the Data). The effect of nonsampling error is not represented in these tables.

Notes:

- While the 2005-2009 American Community Survey (ACS) data generally reflect the November 2008 Office of Management and Budget (OMB) definitions of metropolitan and micropolitan statistical areas; in certain instances the names, codes, and boundaries of the principal cities shown in ACS tables may differ from the OMB definitions due to differences in the effective dates of the geographic entities.
- Estimates of urban and rural population, housing units, and characteristics reflect boundaries of urban areas defined based on Census 2000 data. Boundaries for urban areas have not been updated since Census 2000. As a result, data for urban and rural areas from the ACS do not necessarily reflect the results of ongoing urbanization.

Explanation of Symbols:

1. An '***' entry in the margin of error column indicates that either no sample observations or too few sample observations were available to compute a standard error and thus the margin of error. A statistical test is not appropriate.
2. An '-' entry in the estimate column indicates that either no sample observations or too few sample observations were available to compute an estimate, or a ratio of medians cannot be calculated because one or both of the median estimates falls in the lowest interval or upper interval of an open-ended distribution.
3. An '-' following a median estimate means the median falls in the lowest interval of an open-ended distribution.
4. An '+' following a median estimate means the median falls in the upper interval of an open-ended distribution.
5. An '****' entry in the margin of error column indicates that the median falls in the lowest interval or upper interval of an open-ended distribution. A statistical test is not appropriate.
6. An '*****' entry in the margin of error column indicates that the estimate is controlled. A statistical test for sampling variability is not appropriate.
7. An 'N' entry in the estimate and margin of error columns indicates that data for this geographic area cannot be displayed because the number of sample cases is too small.
8. An '(X)' means that the estimate is not applicable or not available.

State & County QuickFacts

Yancey County, North Carolina

People QuickFacts	Yancey County	North Carolina
Population, 2010	17,818	9,535,483
Population, percent change, 2000 to 2010	0.2%	18.5%
Population, 2000	17,774	8,049,313
Persons under 5 years, percent, 2010	4.8%	6.6%
Persons under 18 years, percent, 2010	20.0%	23.9%
Persons 65 years and over, percent, 2010	20.6%	12.9%
Female persons, percent, 2010	50.9%	51.3%
White persons, percent, 2010 (a)	95.2%	68.5%
Black persons, percent, 2010 (a)	0.8%	21.5%
American Indian and Alaska Native persons, percent, 2010 (a)	0.4%	1.3%
Asian persons, percent, 2010 (a)	0.2%	2.2%
Native Hawaiian and Other Pacific Islander, percent, 2010 (a)	0.0%	0.1%
Persons reporting two or more races, percent, 2010	0.9%	2.2%
Persons of Hispanic or Latino origin, percent, 2010 (b)	4.6%	8.4%
White persons not Hispanic, percent, 2010	93.5%	65.3%
Living in same house 1 year & over, 2005-2009	91.5%	82.7%
Foreign born persons, percent, 2005-2009	5.8%	6.8%
Language other than English spoken at home, pct age 5+, 2005-2009	5.5%	9.6%
High school graduates, percent of persons age 25+, 2005-2009	78.3%	83.0%
Bachelor's degree or higher, pct of persons age 25+, 2005-2009	15.7%	25.8%
Veterans, 2005-2009	1,331	741,429
Mean travel time to work (minutes), workers age 16+, 2005-2009	26.2	23.2
Housing units, 2010	11,032	4,327,528
Homeownership rate, 2005-2009	78.4%	68.1%
Housing units in multi-unit structures, percent, 2005-2009	7.8%	16.8%
Median value of owner-occupied housing units, 2005-2009	\$132,500	\$143,700
Households, 2005-2009	7,412	3,541,807
Persons per household, 2005-2009	2.47	2.47
Per capita money income in past 12 months (2009 dollars) 2005-2009	\$17,939	\$24,547
Median household income, 2009	\$34,148	\$43,754
Persons below poverty level, percent, 2009	17.8%	16.2%

Business QuickFacts	Yancey County	North Carolina
Private nonfarm establishments, 2009	355	218,987 ¹
Private nonfarm employment, 2009	2,919	3,353,931 ¹
Private nonfarm employment, percent change 2000-2009	-22.3%	-0.9% ¹
Nonemployer establishments, 2009	1,590	620,363
Total number of firms, 2007	1,686	798,791
Black-owned firms, percent, 2007	F	10.5%

American Indian and Alaska Native owned firms, percent, 2007	F	1.0%
Asian-owned firms, percent, 2007	F	2.5%
Native Hawaiian and Other Pacific Islander owned firms, percent, 2007	F	0.1%
Hispanic-owned firms, percent, 2007	S	2.7%
Women-owned firms, percent, 2007	26.2%	28.2%
<hr/>		
Manufacturers shipments, 2007 (\$1000)	127,399	205,867,299
Merchant wholesaler sales, 2007 (\$1000)	7,082	88,795,885
Retail sales, 2007 (\$1000)	149,078	114,578,173
Retail sales per capita, 2007	\$8,103	\$12,641
Accommodation and food services sales, 2007 (\$1000)	10,518	16,126,939
Building permits, 2010	44	33,889
Federal spending, 2009	163,413	85,843,896 ¹
	Yancey	
Geography QuickFacts	County	North Carolina
Land area in square miles, 2010	312.60	48,617.91
Persons per square mile, 2010	57.0	196.1
FIPS Code	199	37
Metropolitan or Micropolitan Statistical Area	None	

1: Includes data not distributed by county.

(a) Includes persons reporting only one race.

(b) Hispanics may be of any race, so also are included in applicable race categories.

D: Suppressed to avoid disclosure of confidential information

F: Fewer than 100 firms

FN: Footnote on this item for this area in place of data

NA: Not available

S: Suppressed; does not meet publication standards

∞: Not applicable

∠: Value greater than zero but less than half unit of measure shown

Source U.S. Census Bureau: State and County QuickFacts. Data derived from Population Estimates, American Community Survey, Census of Population and Housing, Small Area Income and Poverty Estimates, State and County Housing Unit Estimates, County Business Patterns, Nonemployer Statistics, Economic Census, Survey of Business Owners, Building Permits, Consolidated Federal Funds Report

Last Revised: Thursday, 27-Oct-2011 16:53:14 EDT

U.S. Census Bureau

American FactFinder

Burnsville town, North Carolina

S1901. Income in the Past 12 Months (In 2009 Inflation-Adjusted Dollars)

Data Set: 2005-2009 American Community Survey 5-Year Estimates

Survey: American Community Survey

NOTE: For information on confidentiality protection, sampling error, nonsampling error, and definitions, see Survey Methodology.

Subject	Households	Margin of Error	Families	Margin of Error	Married-couple families	Margin of Error	Nonfamily households	Margin of Error
Total	882	+/-144	461	+/-105	356	+/-93	421	+/-98
Less than \$10,000	15.6%	+/-4.7	8.5%	+/-6.6	3.7%	+/-5.4	26.1%	+/-9.3
\$10,000 to \$14,999	14.1%	+/-6.1	8.0%	+/-5.3	7.3%	+/-5.9	20.7%	+/-10.3
\$15,000 to \$24,999	13.9%	+/-6.0	10.4%	+/-6.2	5.6%	+/-7.2	19.0%	+/-10.2
\$25,000 to \$34,999	11.9%	+/-7.5	7.2%	+/-7.1	7.9%	+/-9.1	14.5%	+/-11.8
\$35,000 to \$49,999	15.9%	+/-5.6	22.3%	+/-9.2	21.3%	+/-10.5	7.6%	+/-5.7
\$50,000 to \$74,999	16.6%	+/-6.1	25.4%	+/-8.7	30.6%	+/-11.3	6.9%	+/-6.8
\$75,000 to \$99,999	4.6%	+/-3.6	8.9%	+/-6.6	11.5%	+/-8.2	0.0%	+/-8.5
\$100,000 to \$149,999	5.1%	+/-3.2	5.0%	+/-3.6	6.5%	+/-4.7	5.2%	+/-5.8
\$150,000 to \$199,999	1.2%	+/-1.3	2.4%	+/-2.5	3.1%	+/-3.2	0.0%	+/-8.5
\$200,000 or more	1.0%	+/-1.5	2.0%	+/-2.9	2.5%	+/-3.7	0.0%	+/-8.5
Median income (dollars)	29,621	+/-7,488	47,007	+/-4,541	51,172	+/-5,009	16,164	+/-8,244
Mean income (dollars)	39,496	+/-5,499	52,093	+/-9,009	N	N	24,770	+/-6,322

PERCENT IMPUTED

Household income in the past 12 months	31.7%	(X)	(X)	(X)	(X)	(X)	(X)	(X)
Family income in the past 12 months	(X)	(X)	37.7%	(X)	(X)	(X)	(X)	(X)
Nonfamily income in the past 12 months	(X)	(X)	(X)	(X)	(X)	(X)	22.6%	(X)

Source: U.S. Census Bureau, 2005-2009 American Community Survey

Data are based on a sample and are subject to sampling variability. The degree of uncertainty for an estimate arising from sampling variability is represented through the use of a margin of error. The value shown here is the 90 percent margin of error. The margin of error can be interpreted roughly as providing a 90 percent probability that the interval defined by the estimate minus the margin of error and the estimate plus the margin of error (the lower and upper confidence bounds) contains the true value. In addition to sampling variability, the ACS estimates are subject to nonsampling error (for a discussion of nonsampling variability, see Accuracy of the Data). The effect of nonsampling error is not represented in these tables.

Notes:

- While the 2005-2009 American Community Survey (ACS) data generally reflect the November 2008 Office of Management and Budget (OMB) definitions of metropolitan and micropolitan statistical areas; in certain instances the names, codes, and boundaries of the principal cities shown in ACS tables may differ from the OMB definitions due to differences in the effective dates of the geographic entities.
- Estimates of urban and rural population, housing units, and characteristics reflect boundaries of urban areas defined based on Census 2000 data. Boundaries for urban areas have not been updated since Census 2000. As a result, data for urban and rural areas from the ACS do not necessarily reflect the results of ongoing urbanization.

Explanation of Symbols:

1. An "" entry in the margin of error column indicates that either no sample observations or too few sample observations were available to compute a standard error and thus the margin of error. A statistical test is not appropriate.
2. An "-" entry in the estimate column indicates that either no sample observations or too few sample observations were available to compute an estimate, or a ratio of medians cannot be calculated because one or both of the median estimates falls in the lowest interval or upper interval of an open-ended distribution.

3. An '-' following a median estimate means the median falls in the low est interval of an open-ended distribution.
4. An '+' following a median estimate means the median falls in the upper interval of an open-ended distribution.
5. An '****' entry in the margin of error column indicates that the median falls in the low est interval or upper interval of an open-ended distribution. A statistical test is not appropriate.
6. An '*****' entry in the margin of error column indicates that the estimate is controlled. A statistical test for sampling variability is not appropriate.
7. An 'N' entry in the estimate and margin of error columns indicates that data for this geographic area cannot be displayed because the number of sample cases is too small.
8. An '(X)' means that the estimate is not applicable or not available.

APPENDIX 2

SOIL REPORT



United States
Department of
Agriculture



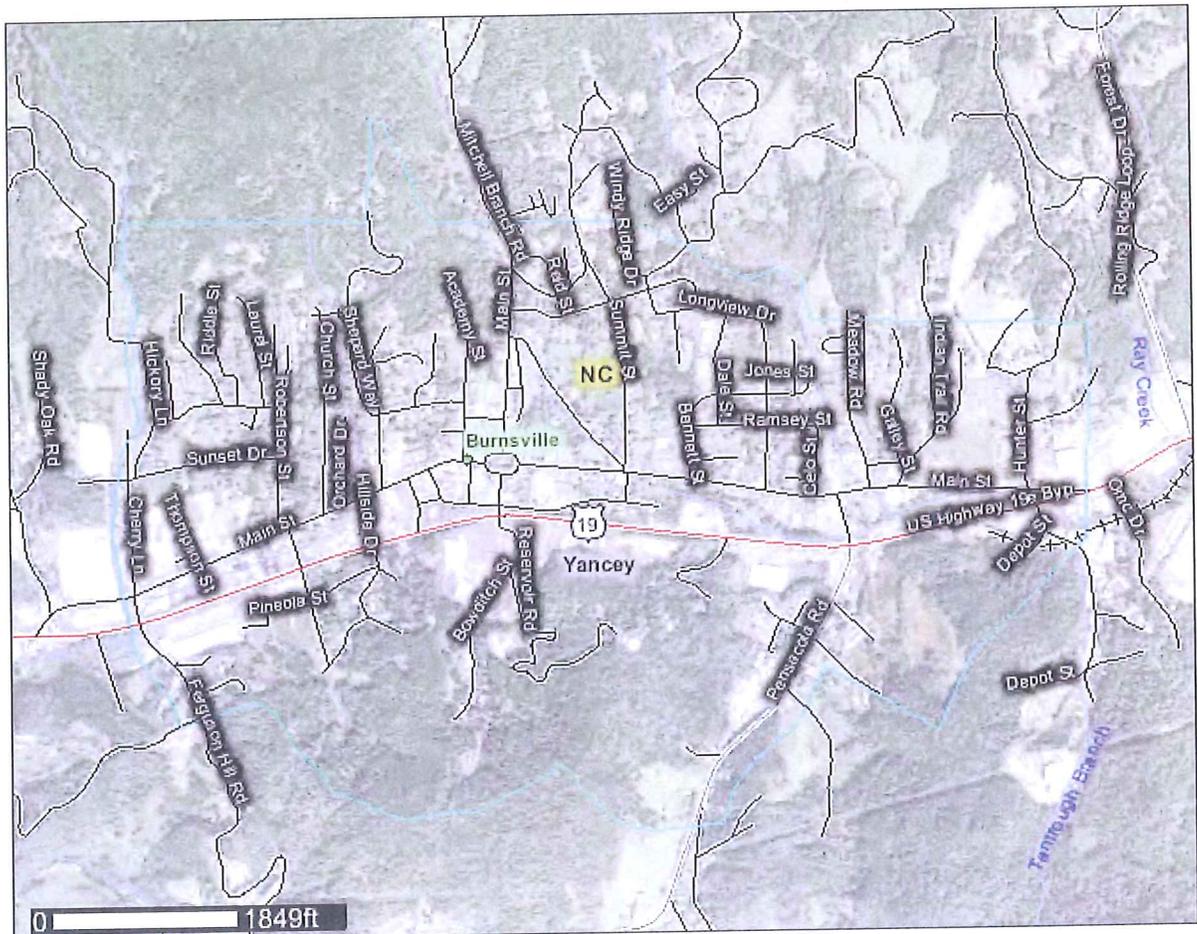
NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for Yancey County, North Carolina

Town of Burnsville



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://soils.usda.gov/sqi/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<http://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://soils.usda.gov/contact/state_offices/).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Soil Data Mart Web site or the NRCS Web Soil Survey. The Soil Data Mart is the data storage site for the official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means

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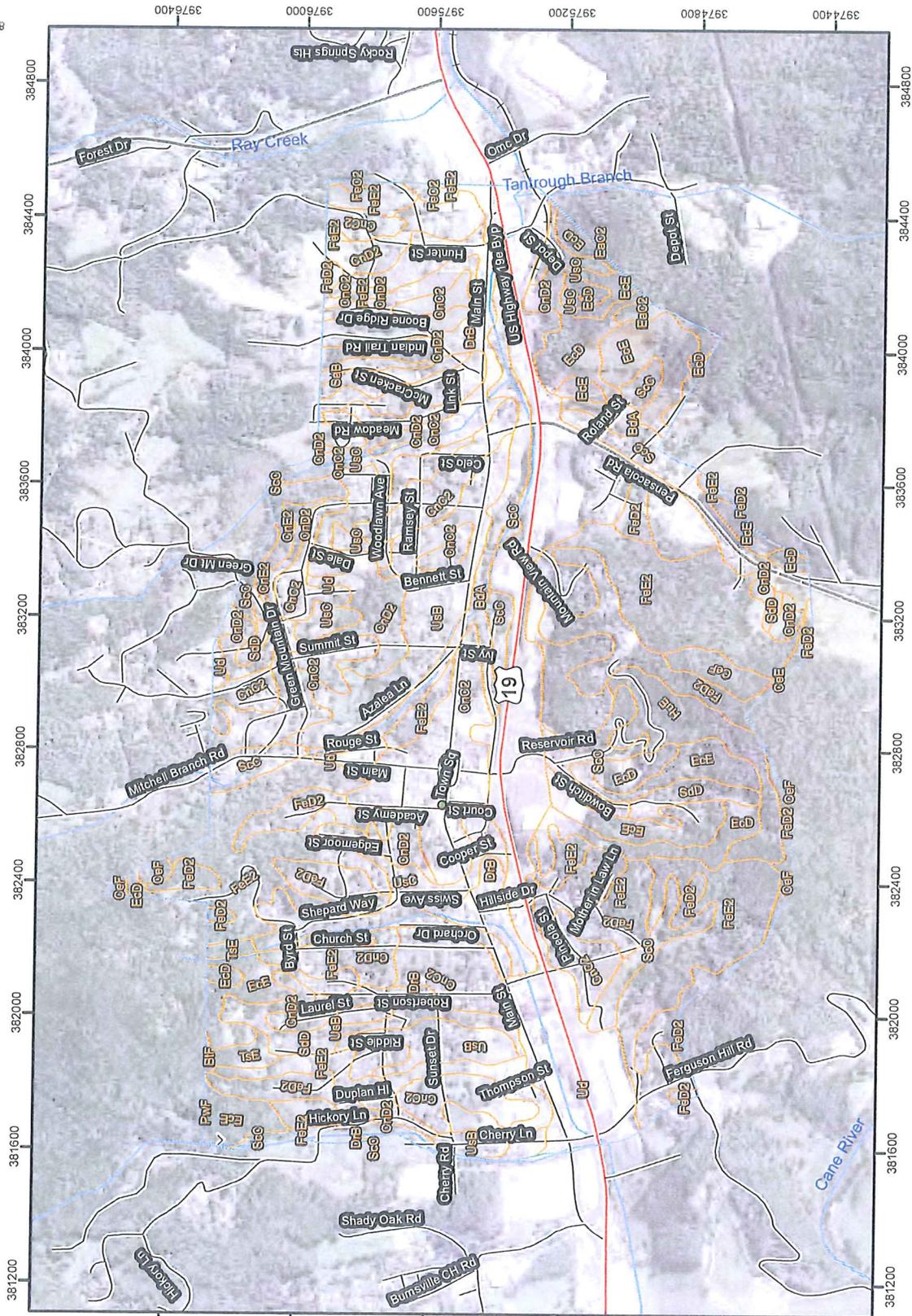
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 - Legend..... 7
 - Map Unit Legend..... 8
- Soil Information for All Uses..... 9**
 - Soil Reports..... 9
 - Water Features..... 9
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Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Source Report
Soil Map

35° 55' 41" 35° 55' 43" 82° 19' 4" 82° 16' 29"



35° 54' 18" 35° 54' 20" 381200 381600 382000 382400 382800 383200 383600 384000 384400 384800
0 250 500 1,000 2,000 4,000 6,000
Meters Feet
Map Scale: 1:18,300 if printed on A size (8.5" x 11") sheet.

MAP LEGEND

 Area of Interest (AOI)	 Very Stony Spot
 Soils	 Wet Spot
 Soil Map Units	 Other
Special Point Features	Special Line Features
 Blowout	 Gully
 Borrow Pit	 Short Steep Slope
 Clay Spot	 Other
 Closed Depression	Political Features
 Gravel Pit	 Cities
 Gravelly Spot	Water Features
 Landfill	 Streams and Canals
 Lava Flow	Transportation
 Marsh or swamp	 Rails
 Mine or Quarry	 Interstate Highways
 Miscellaneous Water	 US Routes
 Perennial Water	 Major Roads
 Rock Outcrop	 Local Roads
 Saline Spot	
 Sandy Spot	
 Severely Eroded Spot	
 Sinkhole	
 Slide or Slip	
 Sodic Spot	
 Spoil Area	
 Stony Spot	

MAP INFORMATION

Map Scale: 1:18,300 if printed on A size (8.5" x 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:12,000. Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
 Coordinate System: UTM Zone 17N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Yancey County, North Carolina
 Survey Area Data: Version 9, Jan 31, 2008

Date(s) aerial images were photographed: 10/3/2006

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Custom Soil Resource Report

Map Unit Legend

Yancey County, North Carolina (NC199)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BdA	Bandana sandy loam, 0 to 3 percent slopes, occasionally flooded	26.0	2.5%
BtF	Buladean-Chestnut complex, 50 to 95 percent slopes, stony	0.6	0.1%
CeE	Chandler-Micaville complex, 30 to 50 percent slopes, stony	0.3	0.0%
CeF	Chandler-Micaville complex, 50 to 95 percent slopes, stony	8.8	0.8%
CnC2	Clifton clay loam, 8 to 15 percent slopes, eroded	128.2	12.4%
CnD2	Clifton clay loam, 15 to 30 percent slopes, eroded	118.4	11.5%
CnE2	Clifton clay loam, 30 to 50 percent slopes, eroded	11.2	1.1%
DrB	Dillard clay loam, 2 to 8 percent slopes, rarely flooded	57.0	5.5%
EaC2	Evard-Cowee complex, 8 to 15 percent slopes, eroded	1.7	0.2%
EcD	Evard-Cowee complex, 15 to 30 percent slopes, stony	37.8	3.7%
EcE	Evard-Cowee complex, 30 to 50 percent slopes, stony	64.3	6.2%
FeC2	Fannin sandy clay loam, 8 to 15 percent slopes, eroded	2.4	0.2%
FeD2	Fannin sandy clay loam, 15 to 30 percent slopes, eroded	82.6	8.0%
FeE2	Fannin sandy clay loam, 30 to 50 percent slopes, eroded	165.3	16.0%
HuE	Hunt Dale clay loam, 30 to 50 percent slopes, stony	21.1	2.0%
PwF	Porters-Unaka complex, 50 to 95 percent slopes, rocky	0.0	0.0%
SaB	Saunook sandy loam, 2 to 8 percent slopes	2.5	0.2%
ScC	Saunook sandy loam, 8 to 15 percent slopes, stony	51.4	5.0%
SdD	Saunook-Thunder complex, 15 to 30 percent slopes, stony	18.6	1.8%
TsE	Thunder-Saunook complex, 30 to 50 percent slopes, very bouldery	4.8	0.5%
Ud	Udorthents, loamy, stony	129.8	12.6%
UsB	Unison loam, 2 to 8 percent slopes	54.2	5.2%
UsC	Unison loam, 8 to 15 percent slopes	46.4	4.5%
Totals for Area of Interest		1,033.3	100.0%

Soil Information for All Uses

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

Water Features

This folder contains tabular reports that present soil hydrology information. The reports (tables) include all selected map units and components for each map unit. Water Features include ponding frequency, flooding frequency, and depth to water table.

Water Features (Town of Burnsville)

This table gives estimates of various soil water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas.

Surface runoff refers to the loss of water from an area by flow over the land surface. Surface runoff classes are based on slope, climate, and vegetative cover. The concept indicates relative runoff for very specific conditions. It is assumed that the surface of the soil is bare and that the retention of surface water resulting from irregularities in the ground surface is minimal. The classes are negligible, very low, low, medium, high, and very high.

The *months* in the table indicate the portion of the year in which a water table, ponding, and/or flooding is most likely to be a concern.

Water table refers to a saturated zone in the soil. The water features table indicates, by month, depth to the top (*upper limit*) and base (*lower limit*) of the saturated zone in most years. Estimates of the upper and lower limits are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

Ponding is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. The table indicates *surface water depth* and the *duration* and *frequency* of ponding. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, rare, occasional, and frequent. *None* means that ponding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of ponding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of ponding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of ponding is more than 50 percent in any year).

Flooding is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Duration and *frequency* are estimated. Duration is expressed as *extremely brief* if 0.1 hour to 4 hours, *very brief* if 4 hours to 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent. *None* means that flooding is not probable; *very rare* that it is very unlikely but possible under extremely unusual weather conditions (the chance of flooding is less than 1 percent in any year); *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is 1 to 5 percent in any year); *occasional* that it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year); *frequent* that it is likely to occur often under normal weather conditions (the chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year); and *very frequent* that it is likely to occur very often under normal weather conditions (the chance of flooding is more than 50 percent in all months of any year).

Custom Soil Resource Report

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

Custom Soil Resource Report

Water Features—Yancey County, North Carolina											
Map unit symbol and soil name	Hydrologic group	Surface runoff	Month	Water table		Surface depth	Ponding		Flooding		
				Upper limit	Lower limit		Duration	Frequency	Duration	Frequency	
				Ft	Ft	Ft					
BdA—Bandana sandy loam, 0 to 3 percent slopes, occasionally flooded											
Bandana, drained	B	Very low	January	1.0-2.5	>6.0	—	—	—	None	Very brief	Occasional
	B	Very low	February	1.0-2.5	>6.0	—	—	—	None	Very brief	Occasional
	B	Very low	March	1.0-2.5	>6.0	—	—	—	None	Very brief	Occasional
	B	Very low	April	1.0-2.5	>6.0	—	—	—	None	Very brief	Occasional
	B	Very low	May	1.0-2.5	>6.0	—	—	—	None	Very brief	Occasional
	B	Very low	June	2.0-3.5	>6.0	—	—	—	None	—	—
	B	Very low	July	2.0-3.5	>6.0	—	—	—	None	—	—
	B	Very low	August	2.0-3.5	>6.0	—	—	—	None	—	—
	B	Very low	September	2.0-3.5	>6.0	—	—	—	None	—	—
	B	Very low	October	2.0-3.5	>6.0	—	—	—	None	—	—
	B	Very low	November	2.0-3.5	>6.0	—	—	—	None	—	—
	B	Very low	December	1.0-2.5	>6.0	—	—	—	None	Very brief	Occasional
BtF—Buladean-Chestnut complex, 50 to 95 percent slopes, stony											
Buladean, stony	B	Medium	Jan-Dec	—	—	—	—	—	None	—	—
Chestnut, stony	B	High	Jan-Dec	—	—	—	—	—	None	—	—
CeE—Chandler-Micaville complex, 30 to 50 percent slopes, stony											
Chandler, stony	A	Medium	Jan-Dec	—	—	—	—	—	None	—	—
Micaville, stony	B	Medium	Jan-Dec	—	—	—	—	—	None	—	—

Custom Soil Resource Report

Water Features--Yancey County, North Carolina											
Map unit symbol and soil name	Hydrologic group	Surface runoff	Month	Water table		Surface depth	Ponding		Flooding		
				Upper limit	Lower limit		Duration	Frequency	Duration	Frequency	
CeF—Chandler-Micaville complex, 50 to 95 percent slopes, stony				Ft	Ft	Ft					
Chandler, stony	A	Medium	Jan-Dec	—	—	—	—	—	None	—	—
Micaville, stony	B	Medium	Jan-Dec	—	—	—	—	—	None	—	—
CnC2—Clifton clay loam, 8 to 15 percent slopes, eroded											
Clifton, moderately eroded	B	Medium	Jan-Dec	—	—	—	—	—	None	—	—
CnD2—Clifton clay loam, 15 to 30 percent slopes, eroded											
Clifton, moderately eroded	B	High	Jan-Dec	—	—	—	—	—	None	—	—
CnE2—Clifton clay loam, 30 to 50 percent slopes, eroded											
Clifton, moderately eroded	B	High	Jan-Dec	—	—	—	—	—	None	—	—

Custom Soil Resource Report

Water Features— Yancey County, North Carolina												
Map unit symbol and soil name	Hydrologic group	Surface runoff	Month	Water table		Surface depth	Ponding		Flooding			
				Upper limit	Lower limit		Duration	Frequency	Duration	Frequency		
				Ft	Ft							
DrB—Dillard clay loam, 2 to 8 percent slopes, rarely flooded												
Dillard	C	Medium	January	2.0-3.0	>6.0	—	—	None	—	Rare		
	C	Medium	February	2.0-3.0	>6.0	—	—	None	—	Rare		
	C	Medium	March	2.0-3.0	>6.0	—	—	None	—	Rare		
	C	Medium	April	2.0-3.0	>6.0	—	—	None	—	Rare		
	C	Medium	May	2.0-3.0	>6.0	—	—	None	—	Rare		
	C	Medium	June	2.5-3.5	>6.0	—	—	None	—	Rare		
	C	Medium	July	2.5-3.5	>6.0	—	—	None	—	Rare		
	C	Medium	August	2.5-3.5	>6.0	—	—	None	—	Rare		
	C	Medium	September	2.5-3.5	>6.0	—	—	None	—	Rare		
	C	Medium	October	2.5-3.5	>6.0	—	—	None	—	Rare		
	C	Medium	November	2.5-3.5	>6.0	—	—	None	—	Rare		
	C	Medium	December	2.0-3.0	>6.0	—	—	None	—	Rare		
EaC2—Evard-Cowee complex, 8 to 15 percent slopes, eroded												
Evard, moderately eroded	B	Medium	Jan-Dec	—	—	—	—	None	—	—		
Cowee, moderately eroded	B	Medium	Jan-Dec	—	—	—	—	None	—	—		
EcD—Evard-Cowee complex, 15 to 30 percent slopes, stony												
Evard, stony	B	Medium	Jan-Dec	—	—	—	—	None	—	—		
Cowee, stony	B	High	Jan-Dec	—	—	—	—	None	—	—		

Custom Soil Resource Report

Water Features—Yancey County, North Carolina												
Map unit symbol and soil name	Hydrologic group	Surface runoff	Month	Water table		Surface depth	Ponding		Flooding			
				Upper limit	Lower limit		Duration	Frequency	Duration	Frequency		
EcE—Evard-Cowee complex, 30 to 50 percent slopes, stony				Ft	Ft							
Evard, stony	B	High	Jan-Dec	—	—	—	—	—	None	—	—	—
Cowee, stony	B	High	Jan-Dec	—	—	—	—	—	None	—	—	—
FeC2—Fannin sandy clay loam, 8 to 15 percent slopes, eroded												
Fannin, moderately eroded	B	Medium	Jan-Dec	—	—	—	—	—	None	—	—	—
FeD2—Fannin sandy clay loam, 15 to 30 percent slopes, eroded												
Fannin, moderately eroded	B	High	Jan-Dec	—	—	—	—	—	None	—	—	—
FeE2—Fannin sandy clay loam, 30 to 50 percent slopes, eroded												
Fannin, moderately eroded	B	High	Jan-Dec	—	—	—	—	—	None	—	—	—
HuE—Hunt Dale clay loam, 30 to 50 percent slopes, stony												
Hunt Dale, stony	B	High	Jan-Dec	—	—	—	—	—	None	—	—	—
PwF—Porters-Unaka complex, 50 to 95 percent slopes, rocky												
Porters, rocky	B	Medium	Jan-Dec	—	—	—	—	—	None	—	—	—
Unaka, rocky	B	Very high	Jan-Dec	—	—	—	—	—	None	—	—	—
SaB—Saunook sandy loam, 2 to 8 percent slopes												
Saunook	B	Medium	Jan-Dec	—	—	—	—	—	None	—	—	—

Custom Soil Resource Report

Water Features—Yancey County, North Carolina

Map unit symbol and soil name	Hydrologic group	Surface runoff	Month	Water table		Surface depth	Ponding		Flooding	
				Upper limit	Lower limit		Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
ScC—Saunook sandy loam, 8 to 15 percent slopes, stony										
Saunook	B	Medium	Jan-Dec	—	—	—	—	—	None	—
SdD—Saunook-Thunder complex, 15 to 30 percent slopes, stony										
Saunook, stony	B	High	Jan-Dec	—	—	—	—	—	None	—
Thunder, stony	B	High	Jan-Dec	—	—	—	—	—	None	—
TsE—Thunder-Saunook complex, 30 to 50 percent slopes, very bouldery										
Thunder, very bouldery	B	High	Jan-Dec	—	—	—	—	—	None	—
Saunook, very bouldery	B	High	Jan-Dec	—	—	—	—	—	None	—
Ud—Udorthents, loamy, stony										
Udorthents, stony	B	Medium	Jan-Dec	—	—	—	—	—	None	—
UsB—Unison loam, 2 to 8 percent slopes										
Unison	B	Medium	Jan-Dec	—	—	—	—	—	None	—
UsC—Unison loam, 8 to 15 percent slopes										
Unison	B	Medium	Jan-Dec	—	—	—	—	—	None	—

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APPENDIX 3

WATER SOURCE INFORMATION

RECEIVED
MAY 9 1989

DIVISION OF
WATER RESOURCES

State of North Carolina
Department of Natural Resources and Community Development
512 North Salisbury Street • Raleigh, North Carolina 27611

James G. Martin, Governor

William W. Cobey, Jr., Secretary

May 4, 1989

Mr. Charles Hollis
Corps. of Engineers
P. O. Box 1890
Wilmington, NC 28402

Dear Mr. Hollis:

In keeping with your request, this office has circulated to interested state review agencies U. S. Army Corps of Engineers Public Notice 0098 dated December 15, 1988 and the revision to such notice received by this office on March 17, 1989 which describes a project proposed by the Town of Burnsville. The project, involving a fill placement in waters of the state in the form of a "rock jetty" to facilitate public water supply withdrawal, is located on the Cane River near Burnsville in Yancey County.

Based on a coordinated agency review, the state interposes no objection to the revised project with the following recommendations as provided by the Division of Water Resources:

- (1) No more than one MGD should be withdrawn from the river at this site.
- (2) Should a larger withdrawal be sought by the project operator or owner, plans and specifications for the larger withdrawal must be approved by this Division prior to any such larger withdrawal.
- (3) Withdrawals from the project should cease when the flow below the project falls below 7.87 MGD (12.2 cfs).
- (4) A calibrated staff gage or other suitable measuring device will be installed below the project before withdrawals are initiated and drawings and specifications for this device will be submitted to this Division prior to project construction.

- Additionally, the Division of Archives and History finds that "although the project is considered to have minimal impact on the area, care should be taken to avoid archaeological site 31Yc24, situated on the opposite side of the Cane River. If for any reason the site may be disturbed, it should be tested and the adjacent area surveyed to locate and assess any additional sites that may be present".

Mr. Charles Hollis
Page 2
May 4, 1989

Finally, the Division of Environmental Management issued Section 401 Water Quality Certification No. 2308 for this project on January 11, 1989.

Should you require additional input from the state on this matter, do not hesitate to contact this office or the referral agencies.

Very sincerely,



John R. Parker
Inland 404 Coordinator

JRP: jr/aw

cc: David Baker
COE--Asheville

Wildlife Resources Commission
Raleigh

Division of Environmental Management
Raleigh

Division of Water Resources
Raleigh

Archives & History
Raleigh

BASIN 5 FRENCH BROAD

Basin Description

The French Broad Basin is one of six basins in North Carolina that drain the western slope of the Eastern Continental Divide and flow into the Mississippi River System emptying into the Gulf of Mexico. The basin is divided into the French Broad River, the Nolichucky River, and the Pigeon River sub-basins, none of which merge in North Carolina. The French Broad River begins in the mountains of Transylvania County and flows north entering Tennessee north of Hot Springs, NC. The Pigeon River drains Haywood County paralleling Interstate 40 north of Canton, NC, and flows into Tennessee. **The Nolichucky River is formed by the convergence of the North Toe River and Cane River north of Bumsville, NC.** This sub-basin drains the western slope of the Blue Ridge north from Mount Mitchell to the Tennessee state line. The Nolichucky and Pigeon rivers merge with the French Broad in Douglas Lake, east of Knoxville, Tennessee. These three sub-basins drain 2816 square miles in North Carolina and about 1500 square miles in Tennessee upstream of Douglas Lake. Extensive portions of this basin lie within the boundaries of the Pisgah and Cherokee National Forests.

WATER USE

Factors Affecting Water Demand

This basin has about 5% of the state's residents and contains all or part of 25 municipalities in 10 counties. Asheville, one of the state's 12 major metropolitan areas, gets its water supply from this basin. From 1990 to 1997 year-round population in three counties in this basin grew by 10% or more. Over half of the land in the basin is forested.

Total Water Use in Basin

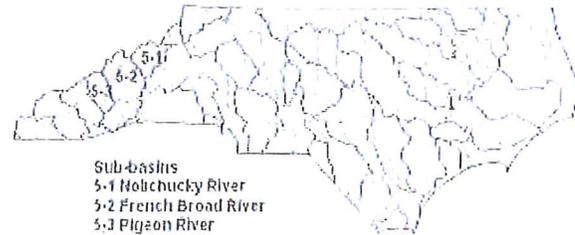
The U.S. Geological Survey's (USGS) 1995 summary of water use estimated total water use in the basin at 169 million gallons per day (mgd), with just over two-thirds coming from surface water sources. USGS estimated total basin population at 385,590. Residential demand was estimated at 24.5 mgd with about two-thirds of this demand being supplied by public water systems. Overall, public water systems supplied 36.6 mgd from surface water and 2.6 mgd from ground water for both residential and non-residential uses. The remaining residential water demand was met by 8.5 mgd of self-supplied ground water. In addition, about 43.3 mgd of self-supplied water was withdrawn for non-residential water uses.

Local Water Supply Plans (LWSPs)

Units of local government that supply or plan to supply water to the public are required to develop a LWSP. The Division of Water Resources (DWR) reviews LWSPs and maintains a database of the LWSP information. This summary is based on data contained in the 1997 LWSPs, unless otherwise noted.

LWSPs were submitted by 23 public water systems using water from this basin. These systems supplied about 41 mgd of water to 223,402 persons.

French Broad Basin



Sub-basin	LWSP Population	Residential Use	Non-residential Use	Total Use*
Nolichucky R.	2,875	0.24	0.27	0.8
French Broad R.	189,871	13.48	11.91	34.5
Pigeon R.	30,656	2.68	1.22	5.8
Total	223,402	16.4	13.4	41

* Total Use also includes unaccounted-for water and system process water

For the local plan systems residential use accounted for 40% of overall water use while non-residential use was 32% of overall use and unaccounted-for water was 25%.

LWSP systems expect to supply water to 341,792 persons by the year 2020, a 53% increase over 1997 levels. By 2020 demand is projected to grow 40% to 57.5 mgd by 2020.

In the 1997 LWSPs, only one of the 23 systems using water from this basin reported that their peak demands will exceed their water treatment capacity by 2010.

Water systems should maintain adequate water supplies and manage water demands to ensure that average daily use does not exceed 80% of their available supply. Data for 1997 indicated that nine of the 23 LWSP systems in this basin had average demand above this threshold. By 2020, eight systems project demand levels that will exceed 80% of their available supply.

Self-supplied Use

The USGS estimated that self-supplied users, excluding power generating facilities, accounted for 52 mgd of the 169 mgd total of water used from this basin, as shown in the table below. Industrial use comprised 60% of the self-supplied uses, followed by irrigation (19%), domestic (16%), livestock (4%), and commercial (1%).

Sub-basin	Domestic	Livestock	Industrial	Commercial	Irrigation	Total
Nolichucky R.	1.65	0.21	0.00	0.18	2.21	4.3
French Broad R.	6.18	1.11	4.85	0.46	6.72	19.3
Pigeon R.	0.62	0.52	26.17	0.08	0.76	28.2
Basin Total	8.5	1.8	31.0	0.7	9.7	51.7

Registered Water Withdrawals

Anyone withdrawing 1.0 mgd or more of surface or ground water for agricultural uses or 100,000 gallons per day for other uses is required to register that withdrawal with DWR. Registered withdrawals in this basin are summarized in

the table below.

Sub-basin	Agricultural		Non-agricultural		Total	
	#	mgd	#	mgd	#	mgd
Nolichucky River	0	0	13	5.7	13	5.7
French Broad River	10	18.5	16	21.3	26	39.8
Pigeon River	0	0	3	2.5	3	2.5
Total	10	18.5	32	52	42	70.5

* Excludes water use for power generation

Nine of the 10 agricultural water users in the French Broad sub-basin are aquaculture operations. Industrial water use accounts for 49 mgd of the nearly 52 mgd of registered non-agricultural water use.

WATER AVAILABILITY

Surface water is the primary source of water for most of the residents of the basin. LWSPs indicate that 12 water systems in these sub-basins withdrew about 40 mgd of surface water in 1997.

LWSPs show that four systems have reservoirs that are used for all or part of their water supply. The combined demand on these reservoirs averaged about 27 mgd in 1997. The estimated available supply from these reservoirs is 42 mgd. Hendersonville's Bradley Creek Reservoir and North Fork Mills River Reservoir both have minimum releases of eight cubic feet per second (cfs). Hendersonville's Mills River intake is always allowed withdrawals of 12 mgd, but when downstream flows are 30 cfs or greater, withdrawals of up to 24 mgd are allowed. Waynesville's Allen Creek Reservoir has a minimum release requirement of 3.5 cfs.

Eight of the surface water systems submitting LWSPs have run-of-river intakes. These intakes supplied about 12 mgd of water in 1997. The available supply from these sources is about 33 mgd. Maggie Valley Sanitary District has a three mgd withdrawal limit from Campbell and Jonathan Creeks set by DVR based on instream flow requirements. Brevard has an instream flow requirement stating the withdrawal will not reduce the streamflow below the 7Q10 flow (7.8 cfs). **Burnsville is allowed to withdrawal 1.0 mgd from the Cane River, but must cease withdrawals when downstream flows drop below 12.2 cfs.** Weaverville's intake can withdraw a maximum of four mgd from the combined Madison County and Buncombe County forks of the Ivy River.

In late 1999, Asheville completed an intake and water treatment plant on the Mills River with an initial capacity of five mgd and a planned capacity of 20 mgd.

There are eight systems in this basin with wells. They have an overall capacity to pump 1.7 mgd of ground water based on the 12-hour yields supplied in their LWSPs. Since 1997, Hot Springs has discontinued surface water use and is now supplied by two wells.

Asheville/Buncombe/Henderson Regional Supply

In 1997, nearly 166,000 people were supplied wholly or in part by Asheville and Hendersonville's intakes. This includes Asheville's sales to Biltmore Forest, Weaverville, and Woodfin and Hendersonville's sales to Laurel Park and Saluda. By 2020 the population served by these intakes is projected to

grow to more than 252,000 or about 74% of the basin LWSP population.

The combined LWSP demand on these intakes averaged over 29 mgd in 1997 or about 71% of the basin's LWSP average daily demand. This demand is projected to grow to nearly 42 mgd by 2020.

INTERBASIN TRANSFERS OF SURFACE WATER

Across the state many water users and systems move water between sub-basins to meet their needs. Regulatory approval is generally needed for transfers of 2.0 mgd or more. The table below summarizes the identified interbasin transfers in 1997 associated with this basin.

Sub-basin	Number	mgd OUT	mgd IN
Nolichucky River	0	0	0
French Broad River	3	0.15	0
Pigeon River	1	0	0

The transfers out of the French Broad River Basin are largely Hendersonville's sale to Saluda in the Broad Basin. Canton transfers a small unquantified amount of water (less than 0.1 mgd) from the Pigeon to the French Broad Basin.

SUMMARY OF INFORMATION FROM 1997 LWSPs

! Total per capita water use for the basin was 184 gallons per day in 1997 and is projected to decrease to 171 gpd in 2010.

! Seven water systems purchased a total of 1.2 mgd of water from this basin in 1997. Five of these systems had no purchase contract.

! Five systems rely on purchase water as their sole supply.

! In 1997, these systems used about 40 mgd of surface water and only about 1.33 mgd of ground water.

! The reported raw water supply was 75 mgd surface water and a 12-hour groundwater supply of 1.7 mgd.

! 16 systems report they are not connected to another water supply system that can supply water in an emergency.

! Asheville, Buncombe County and Henderson County have formed a regional water system.

! 10 systems were planning additional supplies totaling more than 20 mgd in the 1997 LWSPs.

! The systems are projecting significant growth, 53% in population and 40% in demand, through 2020.

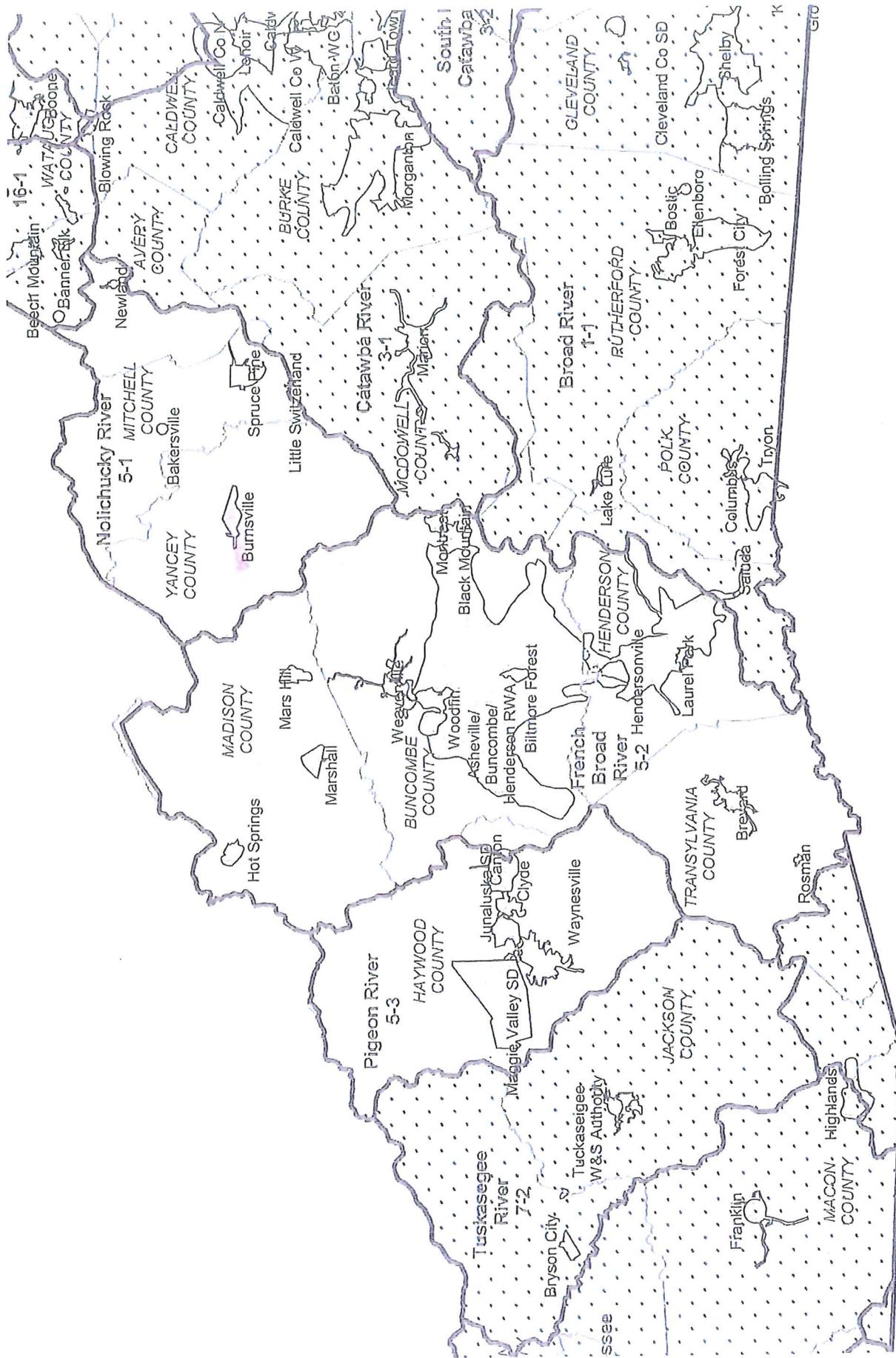
! About 1.5 mgd of additional water supply will be needed by water systems in the basin to ensure that water demands in 2010 do not exceed 80% of available supply.

! Systems reporting high Demand-to-Supply Ratios:

	1997	2010
Demand exceeds available supply	3	5
Demand exceeds 80% of available supply	9	6

January 2001

State Water Supply Plan
Division of Water Resources, DENR



Basin 5 French Broad
(unshaded basin)

- LWSP service area
- County Boundary
- Basin Boundary

APPENDIX 4

2011 LOCAL WATER SUPPLY PLAN

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

1. System Information

Contact Information

Water System Name: Burnsville PWSID: 01-00-010
 Mailing Address: PO BOX 97 Ownership: Municipality
 Burnsville, NC 28714

Contact Person: Anthony Hensley Title: Director of Public Works
 Phone: 828-682-2420 Fax: 828-682-7757

Secondary Contact: Randall Wilson Phone: 828-682-6868
 Mailing Address: PO Box 97 Fax: 828-682-4651
 Burnsville, NC 28714

PROVISIONAL

Distribution System

Line Type	Size Range (Inches)	Estimated % of lines
Asbestos Cement	4-12	10.00 %
Cast Iron	4-12	30.00 %
Ductile Iron	4-12	30.00 %
Polyvinyl Chloride	2-10	30.00 %

What are the estimated total miles of distribution system lines? 18 Miles
 How many feet of distribution lines were replaced during 2011? 0 Feet
 How many feet of new water mains were added during 2011? 0 Feet
 How many meters were replaced in 2011? 50
 How old are the oldest meters in this system? 16 Year(s)
 How many meters for outdoor water use, such as irrigation, are not billed for sewer services? 3
 What is this system's finished water storage capacity? 2.575 Million Gallons
 Has water pressure been inadequate in any part of the system since last update? Yes

Programs

Does this system have a program to work or flush hydrants? Yes, Semi-Annually
 Does this system have a valve exercise program? Yes, Semi-Annually
 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? Yes

The North Carolina Rural Water Association does our leak detection once per year.

Water Conservation

What type of rate structure is used? Increasing Block
 How much reclaimed water does this system use? 0.000 MGD For how many connections? 0
 Does this system have an interconnection with another system capable of providing water in an emergency? No

At the present time we have no plans because of the Terrain, Distance, and Cost.

2. Water Use Information

Service Area

Sub-Basin(s)	% of Service Population	County(s)	% of Service Population
Nolichucky River (05-1)	100 %	Yancey	100 %

What was the year-round population served in 2011? 3,950

Has this system's 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	1,308	0.170	0	0.000
Commercial	258	0.102	0	0.000
Industrial	4	0.088	0	0.000
Institutional	17	0.035	0	0.000

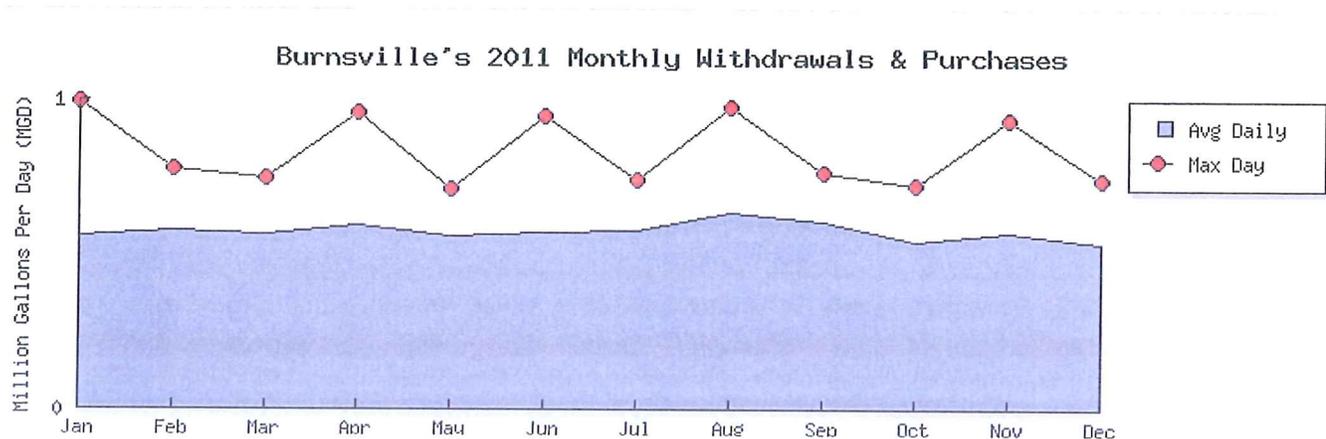
How much water was used for system processes (backwash, line cleaning, flushing, etc.)? 0.045 MGD

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	0.556 .535	0.996 .805	May	0.558	0.709	Sep	0.603	0.763
Feb	0.579	0.776	Jun	0.573	0.946	Oct	0.543	0.726
Mar	0.567	0.746	Jul	0.578	0.740	Nov	0.572	0.938
Apr	0.593	0.956	Aug	0.634	0.979	Dec	0.538	0.742

* Note: Average daily calculation only accounts for days the plant is running, i.e. June: total withdrawal = 14.8995 MG / 30 days = 0.497 avg daily



Surface Water Sources

Stream	Reservoir	Average Daily Withdrawal		Maximum Day Withdrawal (MGD)	Available Raw Water Supply		Usable On-Stream Raw Water Supply Storage (MG)
		MGD	Days Used		MGD	* Qualifier	
BOWLENS CREEK (NF)		0.000	0	0.000	0.250	F	0.000
BOWLENS CREEK (SF)		0.000	0	0.000	0.250	F	0.000
CANE RIVER		0.546	316	0.996	1.480	F	0.000

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

Surface Water Sources (continued)

Stream	Reservoir	Drainage Area (sq mi)	Metered?	Sub-Basin	County	Year Offline	Use Type
BOWLENS CREEK (NF)		2	Yes	Nolichucky River (05-1)	Yancey		Emergency
BOWLENS CREEK (SF)		1	Yes	Nolichucky River (05-1)	Yancey		Emergency
CANE RIVER		47	Yes	Nolichucky River (05-1)	Yancey		Regular

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

Are surface water sources monitored? Yes, Daily

Are you required to maintain minimum flows downstream of its intake or dam? Yes

Does this system have the ability to transfer surface water between river basins? No

Does this system rely on the transfer of surface water between river basins for any of its existing water supply? No

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

7Q10 Requirement for minimum flows downstream.

Water Treatment Plants

Plant Name	Permitted Capacity (MGD)	Is Raw Water Metered?	Is Finished Water Output Metered?	Source
Town of Burnsville	1.000	Yes	Yes	Cane River / Bow lens Creek

Did average daily water production exceed 80% of approved plant capacity for five consecutive days during 2011? No

If yes, was any water conservation implemented?

Did average daily water production exceed 90% of approved plant capacity for five consecutive days during 2011? No

If yes, was any water conservation implemented?

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

4. Wastewater Information

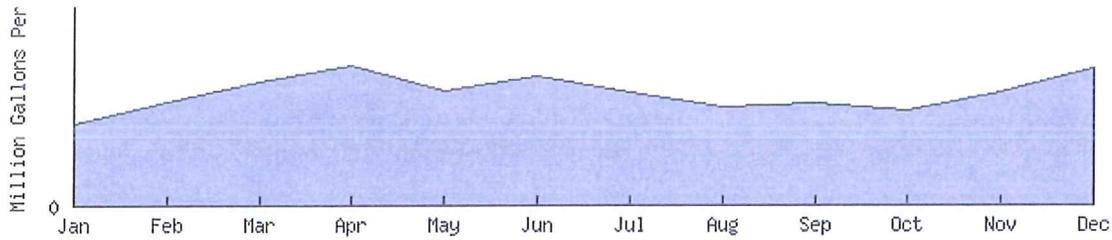
Monthly Discharges

	Average Daily Discharge (MGD)		Average Daily Discharge (MGD)		Average Daily Discharge (MGD)
Jan	0.267	May	0.373	Sep	0.328
Feb	0.338	Jun	0.416	Oct	0.303
Mar	0.400	Jul	0.364	Nov	0.366
Apr	0.453	Aug	0.319	Dec	0.443

Burnsville's 2011 Monthly Discharges

Day (MGD) 1

Avg Daily



How many sewer connections does this system have? 1,098

How many water service connections with septic systems does this system have? 468

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

Wastewater Permits

Permit Number	Permitted Capacity (MGD)	Design Capacity (MGD)	Average Annual Daily Discharge (MGD)	Maximum Day Discharge (MGD)	Receiving Stream	Receiving Basin
NC0020290	0.800	0.800	0.365		CANE RIVER	Nolichucky River (05-1)
NC0075965	0.000	0.000	0.038		LITTLE CRABTREE CREEK	Nolichucky River (05-1)

5. Planning

Projections

	2011	2020	2030	2040	2050	2060
Year-Round Population	3,950	3,989	4,054	4,069	4,150	4,200
Seasonal Population	0	0	0	0	0	0
Residential	0.170	0.173	0.175	0.177	0.179	0.181
Commercial	0.102	0.108	0.112	0.116	0.120	0.122
Industrial	0.088	0.090	0.092	0.094	0.096	0.098
Institutional	0.035	0.036	0.037	0.038	0.039	0.040
System Process	0.045	0.045	0.045	0.045	0.045	0.045
Unaccounted-for	0.033	0.136	0.139	0.142	0.144	0.146

Demand w/s Percent of Supply

	2011	2020	2030	2040	2050	2060
Surface Water Supply	1.480	1.480	1.480	1.480	1.480	1.480
Ground Water Supply	0.000	0.000	0.000	0.000	0.000	0.000
Purchases	0.000	0.000	0.000	0.000	0.000	0.000
Future Supplies		0.000	0.000	0.000	0.000	0.000
Total Available Supply (MGD)	1.480	1.480	1.480	1.480	1.480	1.480
Service Area Demand	0.473	0.588	0.600	0.612	0.623	0.632
Sales	0.000	0.000	0.000	0.000	0.000	0.000
Future Sales		0.000	0.000	0.000	0.000	0.000
Total Demand (MGD)	0.473	0.588	0.600	0.612	0.623	0.632
Demand as Percent of Supply	32%	40%	41%	41%	42%	43%

What demand management practices do you plan to implement to reduce your future supply needs?

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

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

Additional Information

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

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

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

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.

APPENDIX 5

WATER AND SEWER BILLING INFORMATION

TOWN OF BURNSVILLE, NORTH CAROLINA
WATER AND SEWER BILLING SUMMARY
2011 CALENDAR YEAR

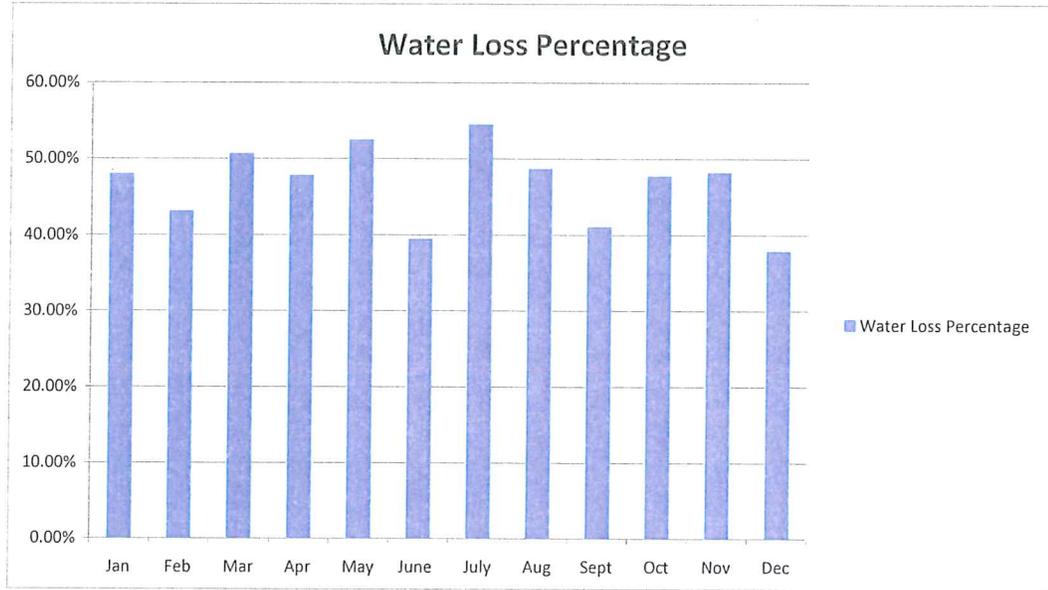
	No. Customers	Billed Flow (gal)					AVG GPD/Customer	GPD per...	Unaccounted
		1/1/2011 - 6/30/2011	7/1/2011 - 12/31/2011	Total	AVG GPD				
Water Inside	856	23,352,000	23,545,000	46,897,000					
Water Outside	659	23,570,000	24,262,000	47,832,000			MORs		
TOTAL WATER	1,515	46,922,000	47,807,000	94,729,000	259,532	171	497,500	47.8%	
Sewer Inside	834	23,012,000	23,122,000	46,134,000					
Sewer Outside	232	12,266,470	13,325,210	25,591,680			DMRs		
TOTAL SEWER	1,066	35,278,470	36,447,210	71,725,680	196,509	184	364,200	46.0%	

APPENDIX 6

**NC RURAL WATER ASSOCIATION
2011 WATER AUDIT REPORT**



Town of Burnsville



INSTRUCTIONS FOR WATER AUDIT WORKSHEET FOR TREATED WATER

Line 1- Total Water Supply to System

This is the total volume of water all supplied to the system as measured by the master meter(s) and interconnects with other sources of supply.

Line 2- Adjustments to Water Delivered

This measures the increase or decrease in storage capacity, broken master meters or calibrations or adjustments to the master meters.

Line 3- Net Water Produced

This is the net adjusted water produced and/or measured through the master meters after adjustments.

Line 4- Total Gallons of Water Sold

This lists the total amount of water that is sold through meters in the system. This includes residential, commercial, industrial, institutional, and other sales such as standpipes for water haulers. It is important to evaluate when the meters are read so that the readings can be adjusted to reflect the time it takes to actually read the meters. To assure that the production/purchase records are comparable to the customers meter readings, consumption during the meter reading period must be adjusted to match the production/purchase period.

Line 5- Unmetered Water Uses

This is a general listing of potential uses that sometimes not metered. In many instances, these uses are metered and would be included in the totals in line 4. In most cases, the unmetered uses are directly controlled by the community and can be measured by requiring the reporting of the usage.

Line 6- Other Estimated Water Losses

These losses are generally those that cannot be metered. They include known leaks, adjustments to meter readings, equipment failure, which can cause a tank overflow, theft of service, or a malfunction of the measuring equipment.

Line 7 Total Authorized Loss

This is the total of all accounted for losses. Meter installation recommended

Line 8- Net Unaccounted for Water

The unaccounted for water can be tracked by estimating losses

Line 9- Percentage of Unaccounted for Water

This is the total percentage of system loss

Line 10 Financial Loss

The financial loss is generated by your actual cost to produce or purchase.
This will give a financial target to reduce for cost saving measures

Water Audit Worksheet for Treated Water

City of

Year of 2011

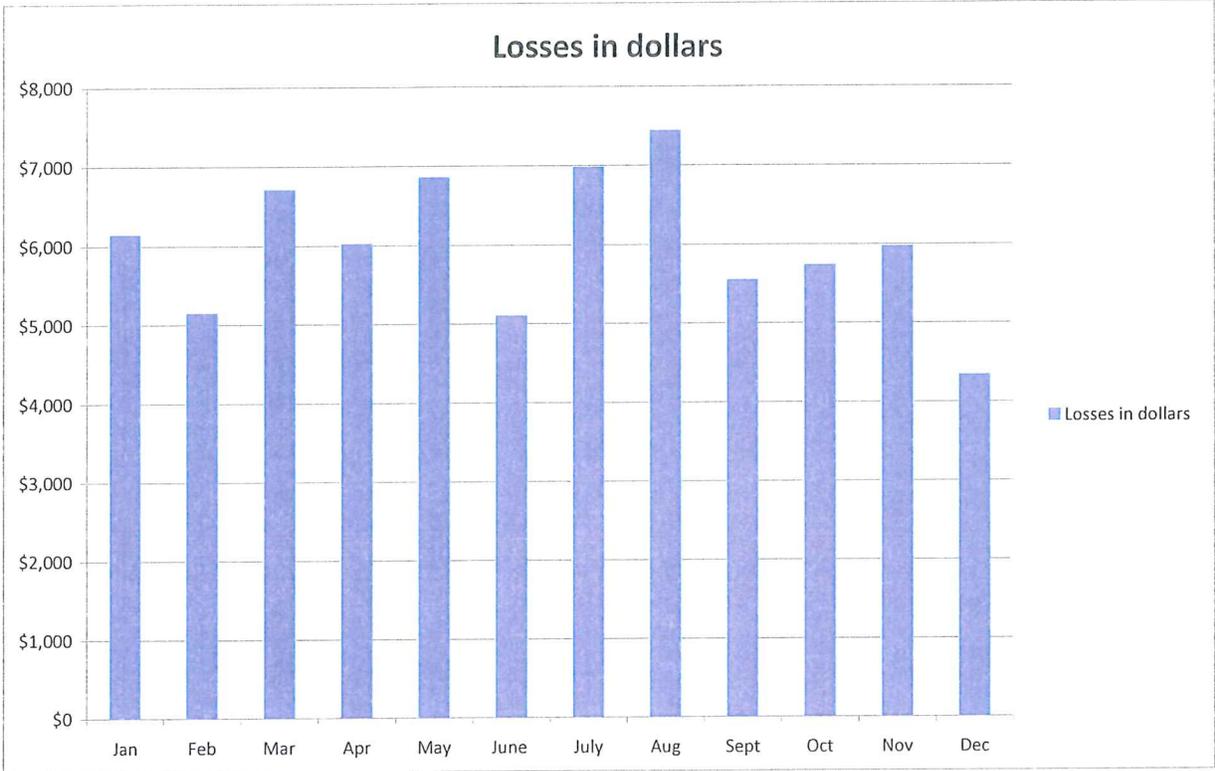
Burnsville		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	TOTAL
<u>Water Delivered</u>														
Total Water Supply to Distribution System		14,915,300	13,764,700	14,895,700	16,208,300	16,506,800	15,028,100	15,306,800	16,717,000	14,899,400	14,747,600	14,456,700	14,038,900	181,575,300
Adjustments to Water Delivery(Filler Wash)add														0
Net Water Produced		15,047,200	14,032,900	15,660,700	14,826,000	15,382,500	15,224,200	15,073,100	17,991,600	15,899,000	14,126,900	14,562,600	13,466,600	181,193,300
<u>Water Used</u>														
Gallons of Metered Water Sold		7,818,000	7,979,000	7,470,000	7,221,000	7,299,000	9,167,000	6,797,000	8,835,000	9,165,000	7,305,000	7,469,000	8,307,000	94,832,000
Residential														0
Commercial (fire service included)														0
Industrial														0
Outside Sales														0
Other (irrigation)														0
Total		7,818,000	7,979,000	7,470,000	7,221,000	7,299,000	9,167,000	6,797,000	8,835,000	9,165,000	7,305,000	7,469,000	8,307,000	94,832,000
<u>Authorized Losses</u>														
Water Main Flushing				200,000	70,000	10,000	48,000	20,000				20,000	50,000	418,000
Sewer/Storm Drain Flushing														0
Parks/Playgrounds/Swimming Pools														0
Cemeteries														0
Road Medians														0
Training/Fire Fighting														0
Construction														0
Storage Tank Drainage								40,000			25,000	50,000		115,000
Sewer Plant Uses														0
Total		0	0	200,000	70,000	10,000	48,000	60,000	48,000	0	25,000	70,000	50,000	533,000
<u>Other Water Losses</u>														
Administrative Adjustments														0
Leaks					450,000				400,000	200,000	50,000			1,100,000
Storage Overflow														0
Theft														0
Other (EXPLAIN)														0
Total other losses		0	0	0	450,000	0	0	0	400,000	200,000	50,000	0	0	1,100,000
Total water accounted for:		7,818,000	7,979,000	7,670,000	7,741,000	7,309,000	9,215,000	6,857,000	9,235,000	9,365,000	7,380,000	7,539,000	8,357,000	96,465,000
Net Lost or Unmeasured Water		7,229,200	6,053,900	7,890,700	7,085,000	8,073,500	6,009,200	8,216,100	8,756,600	6,534,000	6,746,900	7,023,600	5,109,600	84,728,300
Percentage of Lost or unmeasured Water		48.04%	43.14%	50.71%	47.79%	52.48%	39.47%	54.51%	48.67%	41.10%	47.76%	48.23%	37.94%	46.65%
Financial Losses		\$6,145	\$5,146	\$6,707	\$6,022	\$6,862	\$5,108	\$6,984	\$7,443	\$5,554	\$5,735	\$5,970	\$4,343	\$72,019

Water Loss Graph



Financial Losses

\$ 0.85 Price per Thousand of water produced or purchased



APPENDIX 7

**WATER AND WASTEWATER
TREATMENT PLANT FLOW SUMMARIES**

TOWN OF BURNSVILLE, NORTH CAROLINA
WATER DISTRIBUTION AND SEWER COLLECTION DAILY FLOW MEASUREMENT
2011 CALENDAR YEAR

DATE	To Water Distribution System		Sewer Collected	Water minus Sewer
	WTP (gpd)	WTP (mgd)	WWTP (mgd)	(mgd)
01/01/11	454,400	0.454	0.268	0.186
01/02/11	477,300	0.477	0.330	0.147
01/03/11	572,500	0.573	0.261	0.312
01/04/11	545,600	0.546	0.296	0.250
01/05/11	457,600	0.458	0.316	0.142
01/06/11	475,300	0.475	0.290	0.185
01/07/11	444,600	0.445	0.284	0.161
01/08/11	412,000	0.412	0.250	0.162
01/09/11	403,800	0.404	0.216	0.188
01/10/11	423,600	0.424	0.183	0.241
01/11/11	451,000	0.451	0.207	0.244
01/12/11	469,500	0.470	0.198	0.272
01/13/11	450,000	0.450	0.213	0.237
01/14/11	505,900	0.506	0.229	0.277
01/15/11	510,400	0.510	0.288	0.222
01/16/11	446,300	0.446	0.264	0.182
01/17/11	475,600	0.476	0.233	0.243
01/18/11	516,300	0.516	0.257	0.259
01/19/11	532,000	0.532	0.308	0.224
01/20/11	542,300	0.542	0.305	0.237
01/21/11	538,700	0.539	0.303	0.236
01/22/11	482,900	0.483	0.279	0.204
01/23/11	441,500	0.442	0.275	0.167
01/24/11	469,300	0.469	0.218	0.251
01/25/11	502,800	0.503	0.240	0.263
01/26/11	460,600	0.461	0.264	0.197
01/27/11	513,700	0.514	0.324	0.190
01/28/11	496,400	0.496	0.278	0.218
01/29/11	495,500	0.496	0.308	0.188
01/30/11	440,800	0.441	0.307	0.134
01/31/11	507,100	0.507	0.280	0.227
02/01/11	511,400	0.511	0.339	0.172
02/02/11	558,300	0.558	0.479	0.079
02/03/11	505,600	0.506	0.400	0.106
02/04/11	473,900	0.474	0.366	0.108
02/05/11	491,400	0.491	0.402	0.089
02/06/11	459,000	0.459	0.433	0.026
02/07/11	504,300	0.504	0.300	0.204
02/08/11	475,200	0.475	0.353	0.122
02/09/11	491,800	0.492	0.322	0.170
02/10/11	477,300	0.477	0.291	0.186
02/11/11	531,600	0.532	0.256	0.276
02/12/11	498,200	0.498	0.310	0.188
02/13/11	447,600	0.448	0.265	0.183
02/14/11	523,300	0.523	0.235	0.288
02/15/11	502,500	0.503	0.277	0.226
02/16/11	500,300	0.500	0.245	0.255
02/17/11	519,300	0.519	0.298	0.221
02/18/11	496,300	0.496	0.337	0.159
02/19/11	513,100	0.513	0.341	0.172
02/20/11	414,200	0.414	0.342	0.072
02/21/11	499,700	0.500	0.237	0.263
02/22/11	491,800	0.492	0.314	0.178
02/23/11	538,700	0.539	0.342	0.197
02/24/11	470,900	0.471	0.345	0.126
02/25/11	494,400	0.494	0.448	0.046
02/26/11	478,600	0.479	0.478	0.001
02/27/11	412,600	0.413	0.375	0.038
02/28/11	483,400	0.483	0.342	0.141
03/01/11	493,500	0.494	0.513	-0.019
03/02/11	490,700	0.491	0.329	0.162
03/03/11	496,100	0.496	0.271	0.225

TOWN OF BURNSVILLE, NORTH CAROLINA
WATER DISTRIBUTION AND SEWER COLLECTION DAILY FLOW MEASUREMENT
2011 CALENDAR YEAR

DATE	To Water Distribution System		Sewer Collected	Water minus Sewer
	WTP (gpd)	WTP (mgd)	WWTP (mgd)	(mgd)
03/04/11	509,300	0.509	0.265	0.244
03/05/11	432,300	0.432	0.231	0.201
03/06/11	409,800	0.410	0.318	0.092
03/07/11	498,400	0.498	0.466	0.032
03/08/11	537,100	0.537	0.305	0.232
03/09/11	488,500	0.489	0.389	0.100
03/10/11	472,600	0.473	0.595	-0.122
03/11/11	464,300	0.464	0.651	-0.187
03/12/11	456,900	0.457	0.479	-0.022
03/13/11	424,100	0.424	0.458	-0.034
03/14/11	479,900	0.480	0.354	0.126
03/15/11	454,600	0.455	0.370	0.085
03/16/11	503,600	0.504	0.559	-0.055
03/17/11	522,700	0.523	0.478	0.045
03/18/11	492,200	0.492	0.431	0.061
03/19/11	427,200	0.427	0.423	0.004
03/20/11	394,300	0.394	0.344	0.050
03/21/11	491,000	0.491	0.303	0.188
03/22/11	506,000	0.506	0.375	0.131
03/23/11	499,400	0.499	0.391	0.108
03/24/11	523,700	0.524	0.413	0.111
03/25/11	503,700	0.504	0.385	0.119
03/26/11	479,500	0.480	0.344	0.136
03/27/11	459,100	0.459	0.370	0.089
03/28/11	512,800	0.513	0.306	0.207
03/29/11	540,200	0.540	0.372	0.168
03/30/11	513,400	0.513	0.376	0.137
03/31/11	508,800	0.509	0.522	-0.013
04/01/11	533,700	0.534	0.401	0.133
04/02/11	484,600	0.485	0.385	0.100
04/03/11	473,400	0.473	0.361	0.112
04/04/11	545,700	0.546	0.362	0.184
04/05/11	512,800	0.513	0.619	-0.106
04/06/11	565,300	0.565	0.658	-0.093
04/07/11	561,500	0.562	0.450	0.112
04/08/11	524,200	0.524	0.460	0.064
04/09/11	502,600	0.503	0.387	0.116
04/10/11	786,700	0.787	0.675	0.112
04/11/11	619,200	0.619	0.482	0.137
04/12/11	529,100	0.529	0.530	-0.001
04/13/11	561,800	0.562	0.552	0.010
04/14/11	562,300	0.562	0.446	0.116
04/15/11	521,300	0.521	0.437	0.084
04/16/11	495,300	0.495	0.511	-0.016
04/17/11	474,800	0.475	0.782	-0.307
04/18/11	555,700	0.556	0.446	0.110
04/19/11	636,700	0.637	0.451	0.186
04/20/11	538,900	0.539	0.407	0.132
04/21/11	513,000	0.513	0.384	0.129
04/22/11	486,400	0.486	0.363	0.123
04/23/11	501,800	0.502	0.366	0.136
04/24/11	459,900	0.460	0.383	0.077
04/25/11	519,200	0.519	0.302	0.217
04/26/11	572,500	0.573	0.355	0.218
04/27/11	613,900	0.614	0.395	0.219
04/28/11	513,800	0.514	0.450	0.064
04/29/11	516,600	0.517	0.422	0.095
04/30/11	525,600	0.526	0.377	0.149
05/01/11	446,100	0.446	0.361	0.085
05/02/11	527,500	0.528	0.291	0.237
05/03/11	527,700	0.528	0.352	0.176
05/04/11	534,800	0.535	0.535	0.000

TOWN OF BURNSVILLE, NORTH CAROLINA
WATER DISTRIBUTION AND SEWER COLLECTION DAILY FLOW MEASUREMENT
2011 CALENDAR YEAR

DATE	To Water Distribution System		Sewer Collected	Water minus Sewer
	WTP (gpd)	WTP (mgd)	WWTP (mgd)	(mgd)
05/05/11	525,400	0.525	0.416	0.109
05/06/11	535,000	0.535	0.363	0.172
05/07/11	499,300	0.499	0.329	0.170
05/08/11	450,900	0.451	0.348	0.103
05/09/11	549,300	0.549	0.289	0.260
05/10/11	561,000	0.561	0.362	0.199
05/11/11	518,000	0.518	0.411	0.107
05/12/11	584,800	0.585	0.388	0.197
05/13/11	551,900	0.552	0.355	0.197
05/14/11	463,700	0.464	0.446	0.018
05/15/11	455,600	0.456	0.419	0.037
05/16/11	564,600	0.565	0.311	0.254
05/17/11	581,200	0.581	0.391	0.190
05/18/11	560,700	0.561	0.380	0.181
05/19/11	583,100	0.583	0.335	0.248
05/20/11	577,100	0.577	0.408	0.169
05/21/11	549,100	0.549	0.336	0.213
05/22/11	550,000	0.550	0.381	0.169
05/23/11	550,000	0.550	0.437	0.113
05/24/11	550,000	0.550	0.405	0.145
05/25/11	550,000	0.550	0.363	0.187
05/26/11	550,000	0.550	0.346	0.204
05/27/11	550,000	0.550	0.365	0.185
05/28/11	480,000	0.480	0.420	0.060
05/29/11	480,000	0.480	0.373	0.107
05/30/11	550,000	0.550	0.334	0.216
05/31/11	550,000	0.550	0.318	0.232
06/01/11	531,400	0.531	0.374	0.157
06/02/11	590,100	0.590	0.338	0.252
06/03/11	547,500	0.548	0.350	0.198
06/04/11	514,000	0.514	0.323	0.191
06/05/11	465,900	0.466	0.339	0.127
06/06/11	556,000	0.556	0.395	0.161
06/07/11	572,000	0.572	0.361	0.211
06/08/11	528,000	0.528	0.341	0.187
06/09/11	555,200	0.555	0.399	0.156
06/10/11	516,700	0.517	0.398	0.119
06/11/11	498,300	0.498	0.387	0.111
06/12/11	419,600	0.420	0.328	0.092
06/13/11	534,700	0.535	0.498	0.037
06/14/11	492,900	0.493	0.390	0.103
06/15/11	492,500	0.493	0.328	0.165
06/16/11	546,200	0.546	0.498	0.048
06/17/11	494,000	0.494	0.390	0.104
06/18/11	479,100	0.479	0.325	0.154
06/19/11	414,200	0.414	0.462	-0.048
06/20/11	459,300	0.459	0.711	-0.252
06/21/11	472,200	0.472	0.787	-0.315
06/22/11	498,000	0.498	0.467	0.031
06/23/11	439,900	0.440	0.501	-0.061
06/24/11	476,100	0.476	0.525	-0.049
06/25/11	460,400	0.460	0.425	0.035
06/26/11	436,000	0.436	0.402	0.034
06/27/11	500,700	0.501	0.333	0.168
06/28/11	487,200	0.487	0.365	0.122
06/29/11	505,400	0.505	0.380	0.125
06/30/11	544,600	0.545	0.347	0.198
07/01/11	520,500	0.521	0.346	0.175
07/02/11	483,100	0.483	0.361	0.122
07/03/11	405,900	0.406	0.329	0.077
07/04/11	480,100	0.480	0.300	0.180
07/05/11	463,400	0.463	0.325	0.138

TOWN OF BURNSVILLE, NORTH CAROLINA
WATER DISTRIBUTION AND SEWER COLLECTION DAILY FLOW MEASUREMENT
2011 CALENDAR YEAR

DATE	To Water Distribution System		Sewer Collected	Water minus Sewer
	WTP (gpd)	WTP (mgd)	WWTP (mgd)	(mgd)
07/06/11	531,300	0.531	0.327	0.204
07/07/11	501,300	0.501	0.449	0.052
07/08/11	447,300	0.447	0.392	0.055
07/09/11	487,900	0.488	0.392	0.096
07/10/11	476,000	0.476	0.358	0.118
07/11/11	567,700	0.568	0.313	0.255
07/12/11	483,900	0.484	0.341	0.143
07/13/11	502,800	0.503	0.328	0.175
07/14/11	514,300	0.514	0.366	0.148
07/15/11	479,200	0.479	0.350	0.129
07/16/11	441,500	0.442	0.440	0.002
07/17/11	413,000	0.413	0.242	0.171
07/18/11	496,900	0.497	0.310	0.187
07/19/11	543,200	0.543	0.360	0.183
07/20/11	537,000	0.537	0.359	0.178
07/21/11	522,200	0.522	0.367	0.155
07/22/11	531,900	0.532	0.481	0.051
07/23/11	500,300	0.500	0.517	-0.017
07/24/11	431,700	0.432	0.260	0.172
07/25/11	470,400	0.470	0.298	0.172
07/26/11	503,500	0.504	0.617	-0.113
07/27/11	523,200	0.523	0.377	0.146
07/28/11	509,400	0.509	0.371	0.138
07/29/11	579,200	0.579	0.350	0.229
07/30/11	523,600	0.524	0.344	0.180
07/31/11	435,100	0.435	0.326	0.109
08/01/11	550,400	0.550	0.368	0.182
08/02/11	540,200	0.540	0.353	0.187
08/03/11	529,400	0.529	0.335	0.194
08/04/11	516,600	0.517	0.361	0.156
08/05/11	527,000	0.527	0.310	0.217
08/06/11	513,700	0.514	0.330	0.184
08/07/11	461,900	0.462	0.272	0.190
08/08/11	560,700	0.561	0.244	0.317
08/09/11	558,900	0.559	0.267	0.292
08/10/11	561,700	0.562	0.335	0.227
08/11/11	677,600	0.678	0.389	0.289
08/12/11	654,600	0.655	0.306	0.349
08/13/11	472,000	0.472	0.363	0.109
08/14/11	450,500	0.451	0.322	0.129
08/15/11	553,400	0.553	0.358	0.195
08/16/11	570,800	0.571	0.326	0.245
08/17/11	577,900	0.578	0.314	0.264
08/18/11	523,600	0.524	0.334	0.190
08/19/11	552,600	0.553	0.428	0.125
08/20/11	515,700	0.516	0.338	0.178
08/21/11	481,300	0.481	0.315	0.166
08/22/11	538,200	0.538	0.286	0.252
08/23/11	535,700	0.536	0.318	0.218
08/24/11	560,200	0.560	0.306	0.254
08/25/11	553,500	0.554	0.312	0.242
08/26/11	538,800	0.539	0.305	0.234
08/27/11	496,400	0.496	0.412	0.084
08/28/11	498,000	0.498	0.262	0.236
08/29/11	544,500	0.545	0.211	0.334
08/30/11	571,400	0.571	0.228	0.343
08/31/11	529,800	0.530	0.275	0.255
09/01/11	584,800	0.585	0.314	0.271
09/02/11	557,000	0.557	0.310	0.247
09/03/11	470,600	0.471	0.392	0.079
09/04/11	440,900	0.441	0.210	0.231
09/05/11	451,000	0.451	0.282	0.169

TOWN OF BURNSVILLE, NORTH CAROLINA
WATER DISTRIBUTION AND SEWER COLLECTION DAILY FLOW MEASUREMENT
2011 CALENDAR YEAR

DATE	To Water Distribution System		Sewer Collected	Water minus Sewer
	WTP (gpd)	WTP (mgd)	WWTP (mgd)	(mgd)
09/06/11	493,500	0.494	0.607	-0.113
09/07/11	521,500	0.522	0.435	0.087
09/08/11	512,100	0.512	0.344	0.168
09/09/11	491,300	0.491	0.335	0.156
09/10/11	439,000	0.439	0.271	0.168
09/11/11	435,900	0.436	0.315	0.121
09/12/11	530,400	0.530	0.261	0.269
09/13/11	564,300	0.564	0.314	0.250
09/14/11	551,900	0.552	0.325	0.227
09/15/11	520,100	0.520	0.315	0.205
09/16/11	474,600	0.475	0.305	0.170
09/17/11	457,300	0.457	0.294	0.163
09/18/11	450,000	0.450	0.319	0.131
09/19/11	489,000	0.489	0.262	0.227
09/20/11	491,900	0.492	0.295	0.197
09/21/11	510,400	0.510	0.318	0.192
09/22/11	540,600	0.541	0.441	0.100
09/23/11	482,600	0.483	0.383	0.100
09/24/11	414,300	0.414	0.393	0.021
09/25/11	432,100	0.432	0.319	0.113
09/26/11	541,000	0.541	0.257	0.284
09/27/11	507,900	0.508	0.310	0.198
09/28/11	562,900	0.563	0.306	0.257
09/29/11	507,700	0.508	0.302	0.206
09/30/11	472,800	0.473	0.308	0.165
10/01/11	402,400	0.402	0.279	0.123
10/02/11	393,200	0.393	0.270	0.123
10/03/11	464,900	0.465	0.222	0.243
10/04/11	524,400	0.524	0.286	0.238
10/05/11	501,300	0.501	0.314	0.187
10/06/11	524,900	0.525	0.303	0.222
10/07/11	483,900	0.484	0.305	0.179
10/08/11	424,600	0.425	0.268	0.157
10/09/11	396,800	0.397	0.290	0.107
10/10/11	511,000	0.511	0.252	0.259
10/11/11	518,300	0.518	0.322	0.196
10/12/11	499,300	0.499	0.469	0.030
10/13/11	492,300	0.492	0.360	0.132
10/14/11	469,600	0.470	0.405	0.065
10/15/11	416,400	0.416	0.318	0.098
10/16/11	401,900	0.402	0.218	0.184
10/17/11	487,600	0.488	0.320	0.168
10/18/11	492,000	0.492	0.305	0.187
10/19/11	470,900	0.471	0.300	0.171
10/20/11	508,000	0.508	0.351	0.157
10/21/11	514,900	0.515	0.295	0.220
10/22/11	481,000	0.481	0.325	0.156
10/23/11	417,700	0.418	0.219	0.199
10/24/11	570,500	0.571	0.251	0.320
10/25/11	507,500	0.508	0.316	0.192
10/26/11	504,500	0.505	0.286	0.219
10/27/11	518,700	0.519	0.331	0.188
10/28/11	469,600	0.470	0.329	0.141
10/29/11	462,800	0.463	0.308	0.155
10/30/11	432,600	0.433	0.309	0.124
10/31/11	484,100	0.484	0.259	0.225
11/01/11	534,300	0.534	0.314	0.220
11/02/11	531,400	0.531	0.344	0.187
11/03/11	508,800	0.509	0.308	0.201
11/04/11	455,600	0.456	0.564	-0.108
11/05/11	434,700	0.435	0.498	-0.063
11/06/11	437,400	0.437	0.333	0.104

TOWN OF BURNSVILLE, NORTH CAROLINA
WATER DISTRIBUTION AND SEWER COLLECTION DAILY FLOW MEASUREMENT
2011 CALENDAR YEAR

DATE	To Water Distribution System		Sewer Collected	Water minus Sewer
	WTP (gpd)	WTP (mgd)	WWTP (mgd)	(mgd)
11/07/11	516,500	0.517	0.265	0.252
11/08/11	530,200	0.530	0.315	0.215
11/09/11	480,700	0.481	0.339	0.142
11/10/11	497,500	0.498	0.318	0.180
11/11/11	472,600	0.473	0.311	0.162
11/12/11	475,800	0.476	0.254	0.222
11/13/11	419,700	0.420	0.311	0.109
11/14/11	510,800	0.511	0.217	0.294
11/15/11	512,700	0.513	0.331	0.182
11/16/11	504,900	0.505	0.350	0.155
11/17/11	557,500	0.558	0.551	0.007
11/18/11	510,000	0.510	0.339	0.171
11/19/11	473,500	0.474	0.341	0.133
11/20/11	426,900	0.427	0.310	0.117
11/21/11	475,200	0.475	0.268	0.207
11/22/11	484,700	0.485	0.398	0.087
11/23/11	468,100	0.468	0.559	-0.091
11/24/11	414,400	0.414	0.403	0.011
11/25/11	427,100	0.427	0.354	0.073
11/26/11	429,000	0.429	0.248	0.181
11/27/11	449,300	0.449	0.318	0.131
11/28/11	500,500	0.501	0.255	0.246
11/29/11	495,100	0.495	0.771	-0.276
11/30/11	521,800	0.522	0.500	0.022
12/01/11	501,900	0.502	0.417	0.085
12/02/11	495,500	0.496	0.346	0.150
12/03/11	510,000	0.510	0.323	0.187
12/04/11	463,600	0.464	0.393	0.071
12/05/11	494,900	0.495	0.321	0.174
12/06/11	437,400	0.437	0.335	0.102
12/07/11	440,400	0.440	0.971	-0.531
12/08/11	461,200	0.461	1.098	-0.637
12/09/11	535,100	0.535	0.602	-0.067
12/10/11	423,200	0.423	0.467	-0.044
12/11/11	409,300	0.409	0.327	0.082
12/12/11	531,300	0.531	0.328	0.203
12/13/11	516,100	0.516	0.232	0.284
12/14/11	522,300	0.522	0.256	0.266
12/15/11	504,300	0.504	0.401	0.103
12/16/11	441,600	0.442	0.461	-0.019
12/17/11	477,600	0.478	0.460	0.018
12/18/11	412,900	0.413	0.341	0.072
12/19/11	469,700	0.470	0.262	0.208
12/20/11	485,500	0.486	0.311	0.175
12/21/11	387,600	0.388	0.297	0.091
12/22/11	415,100	0.415	0.429	-0.014
12/23/11	415,200	0.415	0.815	-0.400
12/24/11	388,500	0.389	0.642	-0.253
12/25/11	352,700	0.353	0.521	-0.168
12/26/11	383,500	0.384	0.348	0.036
12/27/11	379,100	0.379	0.435	-0.056
12/28/11	473,000	0.473	0.462	0.011
12/29/11	439,800	0.440	0.401	0.039
12/30/11	462,500	0.463	0.325	0.138
12/31/11	408,100	0.408	0.415	-0.007
avg daily	497,467	0.497	0.364	0.133
max daily	786,700	0.787	1.098	

TOWN OF BURNSVILLE, NORTH CAROLINA
WATER TREATMENT PLANT SUMMARY
2011 CALENDAR YEAR

	TOTALS (mg)			
	Raw Withdrawal	Finished	Backwash	To Distribution Metered
January	14.9667	15.0472	0.120	14.9153
February	13.8923	14.0329	0.119	13.7647
March	15.3087	15.5607	0.127	14.9857
April	14.8352	14.8260	0.107	16.2083
May	15.0622	15.3825	0.078	16.5068
June	14.8995	15.2242	0.078	15.0281
July	15.0254	15.0731	0.088	15.3068
August	17.7516	17.9916	0.082	16.7170
September	15.6605	15.8990	0.072	14.8994
October	14.1287	14.1269	0.079	14.7476
November	14.8828	14.5626	0.100	14.4567
December	13.4381	13.4666	0.085	14.0389
TOTAL	179.8717	181.1933	1.135	181.5753

	DAILY AVERAGES (mgd)				From 2011 LWSP (mgd) (plant did not run every day)	
	Per MORs = days the WTP ran		(Spread out over all the days of the year)			
	Raw Withdrawal	Finished	Raw Withdrawal	Finished	Avg Withdrawal	Max Daily
	0.535	0.537	0.483	0.485	0.535	0.805
	0.579	0.565	0.496	0.501	0.579	0.776
	0.567	0.576	0.494	0.502	0.567	0.746
	0.593	0.593	0.495	0.494	0.593	0.956
	0.558	0.570	0.486	0.496	0.558	0.709
	0.573	0.586	0.497	0.507	0.573	0.946
	0.578	0.580	0.485	0.486	0.578	0.740
	0.634	0.643	0.573	0.580	0.634	0.979
	0.603	0.612	0.523	0.530	0.603	0.763
	0.543	0.543	0.456	0.456	0.543	0.726
	0.572	0.560	0.496	0.485	0.572	0.938
	0.538	0.539	0.433	0.434	0.538	0.742
TOTAL	0.573	0.577	0.493	0.497	0.573	0.979

PEAK DAILY	0.979	1.010	0.787
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APPENDIX 8

WATER SHORTAGE RESPONSE PLAN

**Water Shortage Response Plan
Burnsville, North Carolina
March 2011**

The procedures herein are written to reduce potable water demand and supplement existing drinking water supplies whenever they are in danger of being inadequate to meet customer needs.

I. Authorization

The Burnsville Public Works Director shall enact water shortage response provisions whenever the trigger conditions outlined in Section IV are met. In his or her absence, the Water Treatment ORC will assume this role.

Anthony F. Hensley
Public Works Director
Phone: (828) 682-2420
E-mail: pwd@townofburnsville.org

Randall Wilson
Water Treatment ORC
Phone: (828) 682-2420
E-mail: wtp@townofburnsville.org

II. Notification

The following notification methods will be used to inform water system employees and customers of a water shortage declaration: employee e-mail announcements, notices at municipal buildings, notices in water bills. Required water shortage response measures will be communicated through PSA announcements on local radio and cable stations, and on the Town's website (<http://www.townofburnsville.org>). Declaration of emergency water restrictions or water rationing will be communicated to all customers by telephone.

III. Levels of Response

Five levels of water shortage response are outlined in the table below. The five levels of water shortage response are: voluntary reductions, mandatory reductions I and II, emergency reductions and water rationing. A detailed description of each response level and corresponding water reduction measures follow below.

Stage	Response	Description
1	Voluntary Reductions	Water users are encouraged to reduce their water use and improve water use efficiency; however, no penalties apply for noncompliance. Water supply conditions indicate a potential for shortage.
2	Mandatory Reductions I	Water users must abide required water use reduction and efficiency measures; penalties apply for noncompliance. Water supply conditions are significantly lower than the seasonal norm and water shortage conditions are expected to persist.
3	Mandatory Reductions II	Same as in Stage 2
4	Emergency Reductions	Water supply conditions are substantially diminished and pose an imminent threat to human health or environmental integrity.
5	Water Rationing	Water supply conditions are substantially diminished and remaining supplies must be allocated to preserve human health and environmental integrity.

In Stage 1, Voluntary Reductions, all water users will be asked to reduce their normal water use by 5%. Customer education and outreach programs will encourage water conservation and efficiency measures including: irrigating landscapes a maximum of one inch per week; preventing water waste, runoff and watering impervious surfaces; watering plants deeply to encourage root growth; washing only full loads in clothes and dishwashers; using spring-loaded nozzles on garden hoses; and identifying and repairing all water leaks.

In Stage 2, Mandatory Reductions I, all customers are expected to reduce their water use by 10% in comparison to their previous month's water bill. In addition to continuing to encourage all voluntary reduction actions, the following restrictions apply: irrigation is limited to a half inch per week between 8PM and 8AM; outdoor use of drinking water for washing impervious surfaces is prohibited; and all testing and training purposes requiring drinking water (e.g. fire protection) will be limited.

In Stage 3, Mandatory Reductions II, customers must continue actions from all previous stages and further reduce water use by 20% compared to their previous month's water bill. All non-essential uses of drinking water are banned and garden and landscape irrigation must be reduced to the minimum amount necessary for survival. Additionally, in Stage 3, a drought surcharge of 1.5 times the normal water rate applies.

In Stage 4, Emergency Reductions, customers must continue all actions from previous stages and further reduce their water use by 25% compared to their previous month's water bill. A ban on all use of drinking water except to protect public health and safety is implemented and drought surcharges increase to 2 times the normal water rate.

The goal of Stage 5, Water Rationing, is to provide drinking water to protect public health (i.e. residences, residential health care facilities and correctional facilities). In Stage 5, all customers are only permitted to use water at the minimum required for public health protection. Firefighting is the only allowable outdoor water use and pickup locations for distributing potable water will be announced according to the Town of Burnsville Emergency Response Plan. Drought surcharges increase to 5 times the normal water rate.

IV. Triggers

The Town of Burnsville’s water source is the Cane River. The following stream flow measurements, intake levels and production capacities trigger entry into corresponding water restriction stages. (There is a staff gauge at the intake required by the 4040 permit)

Stage	River Operating Conditions
1	44 inches
2	38 inches
3	32 inches
4	27 inches
5	24 inches

Additional triggers include severe mechanical failures, main line breaks, source contamination, or exceeding 80% of the water plants capacity for more than three days consecutively (7Q10).

V. Enforcement

The provisions of the water shortage response plan will be enforced by Town of Burnsville public works department and police personnel. Violators may be reported to the Town’s phone line. Citations are assessed according to the following schedule depending on the number of prior violations and current level of water shortage.

Water Shortage Level	First Violation	Second Violation	Third Violation
None	Warning	\$100	\$250
Voluntary Reductions	Warning	\$250	\$500
Mandatory Reductions (Stages 2 and 3)	Warning	\$250	Discontinuation of Service
Emergency Reductions	\$250	Discontinuation of Service	Discontinuation of Service
Water Rationing	\$500	Discontinuation of Service	Discontinuation of Service

Drought surcharge rates are effective in Stages 3, 4 and 5.

VI. Public Comment

Customers will have multiple opportunities to comment on the provisions of the water shortage response plan. First, a draft plan will be available at Town Hall for customers to view. Also a draft plan will be published on the town's website. All subsequent revisions to the draft plan will be published at least 30 days prior to an adoption vote by Burnsville's Town Council.

VII. Variance Protocols

Applications for water use variance requests are available from the Town Hall. All applications must be submitted to the Town Hall for review by the Public Works Director or his designee. A decision to approve or deny individual variance requests will be determined within two weeks of submittal after careful consideration of the following criteria: impact on water demand, expected duration, alternative source options, social and economic importance, purpose (i.e. necessary use of drinking water) and the prevention of structural damage.

VIII. Effectiveness

The effectiveness of the Burnsville's water shortage response plan will be determined by comparing the stated water conservation goals with observed water use reduction data. Other factors to be considered include frequency of plan activation, any problem periods without activation, total number of violation citations, desired reductions attained and evaluation of demand reductions compared to the previous year's seasonal data.

IX. Revision

The water shortage response plan will be reviewed and revised as needed to adapt to new circumstances affecting water supply and demand, following implementation of emergency restrictions, and at a minimum of every five years, as required by the provisions of G.S. 143-355 (I). Further, a water shortage response planning work group will review procedures following each emergency or rationing stage to recommend any necessary improvements to the plan to Burnsville's Town Council. The Town of Burnsville Public Works Director is responsible for initiating all subsequent revisions.

APPENDIX 9

WATER AND SEWER FINANCIAL ANALYSIS

**WATER AND SEWER
FINANCIAL ANALYSIS**

TOWN OF BURNSVILLE, NORTH CAROLINA

Martin ■ McGill

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1. Introduction
2. Revenue Requirement
3. Financial Analysis
 - a. Capital Improvements Plan
 - b. Debt Service Requirements
 - c. Financial Model
4. Recommendations
5. Conclusions

INTRODUCTION

The study represents a joint effort between the Town of Burnsville, McGill Associates, and Martin-McGill to address the Town's water and sewer capital improvements plan (CIP) and financial status. In conducting this study, we examined historical financial reports of the water and sewer fund, reviewed capital needs as identified by the Town and McGill Associates, and projected their impact on the fund and its users utilizing a rate model and financial analysis developed for the Burnsville program. The following study objectives were identified:

- Categorize the Town's costs of providing water and sewer service.
- Determine the adequacy of existing rates and charges to fund current operating and capital costs.
- Develop a financial model for the proposed improvements to identify the impact on current and futures rates.
- Develop a proposed financing plan for the water and sewer CIP.

Certain assumptions were made with respect to conditions that may occur in the future. While these assumptions are reasonable for the purposes of this study, they are dependent upon future events and actual conditions may differ from those assumed. In addition, information has been used and relied upon which has been provided by the Town and McGill Associates. This information includes, among other things, audited financial statements, annual operating budgets, capital projects and projected costs, and customer billing information. While this information is deemed reliable, the information has not been independently verified and no assurances are offered with respect thereto. To the extent that actual future conditions differ from those assumed herein or provided by others, the actual results may differ from those anticipated.

REVENUE REQUIREMENT

The revenue requirements of the Town's water and sewer system consist of the expenses required to assure the adequacy and continuity of safe and reliable water and sewer services and includes costs associated with operations, maintenance, financing of capital improvements and replacement of facilities. The determination of the water and sewer system's revenue requirement for the Town was made in a manner consistent with standard American Water Works Association (AWWA) utility rate-making principles. The revenue requirement for the Town's water and sewer systems consist of Administration, Water Department, Sewer Department, Capital Outlay and Debt Service. The total of all the above items is the required revenue for the Town's water and sewer fund and are projected in the following table for the last audited fiscal year, FY 2011:

TABLE 1
TOWN OF BURNSVILLE
WATER AND SEWER REVENUE REQUIREMENT

CATEGORY	FY 2011 COST
ADMINISTRATION	\$15,219
WATER DEPARTMENT	\$653,424
SEWER DEPARTMENT	\$716,819
CAPITAL OUTLAY	\$389,248
DEBT	\$147,054
<hr/> TOTAL	<hr/> \$1,921,764

The total water and sewer costs represent the system's water and sewer revenue requirement in order to break even. The water revenue requirement includes the operation and maintenance costs associated with water treatment, transmission, and capital outlays only paid for improvements to the water system. The sewer revenue requirement includes the operation and maintenance costs associated with sewer collection and treatment, and capital outlays only paid for improvements to the sewer system, as shown in Table 2.

TABLE 2
TOWN OF BURNSVILLE
FY 2011 COST ALLOCATION OF WATER AND SEWER

WATER REVENUES	DOLLAR TOTAL	PERCENT TOTAL	WATER EXPENDITURES	DOLLAR TOTAL	PERCENT TOTAL
WATER SALES	\$1,082,113				
TAPS	\$1,325				
RECONNECTS	\$30,212		ADMINISTRATION	\$7,610	
CAPACITY DEPLETION IMPACT FEE	\$13,916		WATER DEPARTMENT	\$653,424	
OTHER	\$4,887		CAPITAL OUTLAY	\$194,624	
INTEREST	\$123		DEBT	\$147,054	
WATER SUBTOTAL	\$1,132,575	58%	WATER SUBTOTAL	\$1,002,712	52%
SEWER REVENUES			SEWER EXPENDITURES		
SEWER SALES	\$762,200				
TAPS	\$1,325				
RECONNECTS	\$30,212		ADMINISTRATION	\$7,610	
CAPACITY DEPLETION IMPACT FEE	\$13,916		SEWER DEPARTMENT	\$716,819	
OTHER	\$4,887		CAPITAL OUTLAY	\$194,624	
INTEREST	\$123		DEBT	\$0	
SEWER SUBTOTAL	\$812,662	42%	SEWER SUBTOTAL	\$919,053	48%
TOTAL REVENUES	\$1,945,236	100%	TOTAL EXPENDITURES	\$1,921,764	100%

The revenues generated from water and sewer users should meet or exceed the respective revenue requirements in order to avoid subsidies from other funds or users. FY 2011 water revenues exceed water expenditures by a 1.13:1 ratio. In contrast, the sewer revenues are 88% of sewer expenditures. Though user rates generated positive net income in FY 2011, there was service funding between the water and sewer funds. The FY 2011 revenues from sewer users make up \$812,662 or 42% of overall fund revenues. However, the expenditures for sewer collection and treatment make up \$919,053 or 48% of total expenditures, excluding \$358,731 in Capital Impact Fee reserves. Since the fund generated positive cash flow before and after accrual adjustments, water users paid for this \$106,391 revenue shortfall in sewer revenue. Promisingly, the FY 2012 Year-end report shows an increase in sewer revenues that eliminated most of the water user subsidy.

During FY 2008 – 2010, combined water and sewer revenues were less than expenditures, which resulted in annual operating losses prior to accrual adjustments. Consequently, the Unrestricted Net Assets of the fund declined to a negative \$969,680. This balance should be positive and total at least 20-25% of total expenses to avoid the need for subsidies from other funds. Since revenues have exceeded expenditures during the last two fiscal years, the Town is starting to rebuild the water and sewer fund's Unrestricted Net Assets. By continuing this progress, the Town will be in a healthier financial position for years to come.

FINANCIAL ANALYSIS

The Town's audited financial statements from FY 2008 through FY 2011 were compiled along with the Year-End and budget data for FY 2012 and FY 2013 respectively. Non-recurring capital outlays were separated from other expenditures to ensure the costs used for projections were consistent with prior years. Historical trends for line items were analyzed to anticipate how each revenue and expenditure would change over the next 10 years. After calculating growth trends and considering economic conditions, we projected that revenues from user charges would increase at an average annual rate of 1/2% for the first five years and then increase by an average annual rate of 1% thereafter. In addition, we assumed that Taps, Reconnection, and Capacity Depletion Impact Fees would not increase significantly. A water line extension into Micaville, funded exclusively by a Golden LEAF grant, is expected to connect Micaville Elementary school in FY 2015 and several residential customers according to McGill Associates. Revenues from these users are projected to be \$12,000 in the first year of service, FY 2015 and increase to \$29,000 by FY 2023 as new residential users connect. Regarding expenditures, it is projected that salaries and benefits would increase by an annual average rate of 4% and other operating costs increase by an average annual rate of 3%. Lastly, capital costs are assumed to be incurred as described below.

Capital Improvements Plan

The CIP reflects the Town's planned water and sewer capital improvements for the next ten years. As is shown in Table 3, there are eight improvement projects proposed for the water system and six improvement projects proposed for the sewer system through FY 2023. In addition, 14 water and sewer projects totaling \$6.89 million are listed but are planned beyond the ten-year period and therefore do not influence the analysis. Due to the financial hardships that the projects planned for the next ten years may place upon the fund, the analysis assumes that the improvements are paid either by a cash outlay in a specific fiscal year or by issuing new debt.

The funding plan is comprised of \$4.68 million of water and \$2.62 million of sewer projects respectively in the proposed CIP during the next ten years. The annual costs exceed \$1 million during some years, which may place pressure upon the fund's budget. The largest specific projects include:

- \$1,973,600 for Main Street Water
- \$1,307,550 for Main Sewer Interceptor (West)
- \$952,000 for Automated Meter Reading

Debt Service Requirements

The water and sewer fund had outstanding water bonds and has one planned Clean Water State Revolving Fund (CWSRF) loan in FY 2011. Annual payments currently total \$147,000 for the bonds but they will increase to over \$202,000 when the planned CWSRF loan payments begin. Total payments will decline to \$51,000 in FY 2019 when the water bonds mature. Each of the two debt obligations and their total yearly payments between FY 2013 and FY 2023 are shown in Table 4.

In order to maintain a positive net income with large capital projects, the analysis assumes that funds will be acquired by using Capacity Impact Fee reserves and borrowing capital. Debt issuance is packaged and spaced in time to avoid debt service stacking that is unnecessarily burdensome on the fund. The remaining yearly capital requirements will be paid by annual capital outlays that range from \$10,000 in several years to \$125,000 in FY 2021, totaling \$383,000 in cash and \$637,731 in Capacity Impact Fee reserves over 10 years. The proposed method to finance the additional improvements in the CIP with debt is shown in the following table:

TABLE 5
TOWN OF BURNSVILLE
PROPOSED FUTURE DEBT PACKAGES

YEAR	TYPE	PRINCIPAL	YEARLY PAYMENT	RATE	TERM (YEARS)
2017	160A-20 INSTALLMENT	\$ 1,089,600	\$ 104,117	5%	15
2020	160A-20 INSTALLMENT	\$ 3,020,200	\$ 298,302	5.5%	15
2022	160A-20 INSTALLMENT	\$ 2,173,919	\$ 214,715	5.5%	15

Financial Model

When including the debt packages in the combined financial analysis, we determined that the net income would remain positive during at least nine of the next 10 years. The impact on the fund is shown in Table 6. The proposed revenue increases over the next ten years are high enough to yield feasible operations for the entire enterprise fund yet not so high as to create excessive cumulative balances. An Unrestricted Net Assets to Total Expenditures ratio of 20-25% is deemed minimal for a water and sewer enterprise fund and a higher level is desirable to meet future contingencies. Therefore, the proposed revenue increases build up the fund balance so it becomes positive by FY 2016 and the general fund is reimbursed for its funding assistance during past years.

Each of the columns in Table 6 represents the fund's revenues and expenditures for a specific fiscal year. Revenues and expenditures from past audited years appear in columns on the left side of the table followed by adjacent columns on the right showing projections for ten fiscal years. Each row in the table shows a revenue or expense line item from the audit and/or projections. Revenues are listed at the top of the table, followed by operating expenses, capital outlays, and debt payments. Obligated debt payments from existing debt and new debt payments from proposed debt are highlighted in yellow. Also highlighted in yellow is each fiscal year's net income or loss, followed by projected Unrestricted Net Assets balances.

RECOMMENDATIONS

As a result of this analysis, water and sewer revenue increases have been modeled for financing system growth, inflation, and capital needs. These increases would affect only fixed and volume charges, not Capacity Depletion Impact, Tap or other miscellaneous charges. These revenue increases are arranged in time to minimize the impact to most users yet yield a positive Unrestricted Net Assets balance within two years, as shown below.

- 10% water and sewer revenue increases during FY 2014.
- 5% water and sewer revenue increases during FY 2015.
- 4.5% annual water and sewer revenue increases from FY 2020 – FY 2023.

We have developed a rate schedule for the next two years shown in Table 7 that generates the first two proposed revenue increases and creates irrigation rates that match water rates. In doing so, the Town complies with State Drought legislation yet does not complicate its rate structure.

CONCLUSIONS

Based upon the financial analysis, we have concluded that the Town recovers its water and sewer system costs through its current rates. However, the water and sewer fund's Unrestricted Net Assets balance is negative due to past losses and needs to be funded with new revenue. Furthermore, current rates do not comply with recent State drought legislation. The proposed increases would allow the Town to be eligible for State grant funds, maintain positive net income and consequently a positive unrestricted fund balance. In order to minimize the impact on users and their demand, the proposed revenue increases to water and sewer rates occur gradually over multiple years. It should be noted that rate changes of any magnitude might affect demand in unpredictable ways.

The estimated annual revenue increases would prepare the Town for the additional debt service payments, operating and capital costs associated with the CIP. The Town should consider the issuance of debt for the long-term financing of the water and sewer system's capital improvements. This would allow debt service payments to be spread over a longer period to avoid rate shock for current customers and have future customers who will benefit from the improvements pay a fair share of the costs. The increases are estimated from the current fiscal year's data and projections of future events. It is recommended that these calculations be reviewed annually using updated information to determine if adjustments are required at that time to meet established financial objectives.

PROJECT LOCATION	YEAR 10 2023	YEAR 11 + 2024 +
WATER IMPROVEMENTS		
VEHICLES		
EQUIPMENT	5,000	
CANE RIVER INTAKE PUMF		
AUTOMATED METER REAC		
WATER TREATMENT PLAN		
GREEN MOUNTAIN DRIVE		
MEADOW ROAD		
MAIN STREET		
WEST BURNSVILLE CHUR		343,600
LOVE FOX ROAD TRAILER		207,000
1 MILLION GALLON RESEF		1,341,500
WEST GLENDALE AVENUE		786,350
BURNSVILLE SCHOOL RO		334,800
BILL YOUNG ROAD		279,600
COMET LANE TRAILER PA		155,180
WATER IMPROVEMENTS S	5,000	3,448,030
WASTEWATER IMPROVEM		
VEHICLES	30,000	
EQUIPMENT	5,000	
MAIN SEWER INTERCEPT		
MAIN SEWER INTERCEPT		
MAIN SEWER INTERCEPT		
LOVE FOX ROAD TRAILER		
OMC PUMP STATION REPL		481,500
HICKORY LANE AND WEST		633,100
ORCHARD DRIVE		607,880
RAMSEY STREET		128,125
MEADOW ROAD AND INDIA		779,450
PENSACOLA ROAD		411,850
WESTOVER DRIVE AND PR		398,900
WASTEWATER IMPROVEM	35,000	3,440,805
TOTAL	40,000	6,888,835

DEBT PACKAGES		
ANNUAL DEBT	0	0
ANNUAL CAPITAL OUTLAY	40,000	6,888,835

TYPE	NAME	YEAR 7 2020	YEAR 8 2021	YEAR 9 2022	YEAR 10 2023
WATER	1991 A&B WATER E				
SEWER	CWSRF / I&I	50,722	49,929	49,137	48,344
TOTAL		50,722	49,929	49,137	48,344
WATER SUBTOTAL		0	0	0	0
SEWER SUBTOTAL		50,722	49,929	49,137	48,344
WATER %		0.00%	0.00%	0.00%	0.00%
SEWER %		0.00%	100.00%	100.00%	100.00%

LINE ITEM	AUDIT 2008	6	YEAR 7 2020	YEAR 8 2021	YEAR 9 2022	YEAR 10 2023
REVENUES:						
WATER SALES	555,302	0,001	1,060,501	1,071,106	1,081,817	1,092,635
MICAVILLE PHASE 1 WATER *		3,000	25,000	26,000	28,000	29,000
SEWER SALES	584,205	2,575	871,200	879,912	888,712	897,599
TAPS	67,716	2,700	2,700	2,700	2,700	2,700
RECONNECT FEES	6,440	7,000	7,000	7,000	7,000	7,000
CAPACITY DEPLETION IMPACT FEES	48,784	5,000	25,000	25,000	25,000	25,000
OTHER	349	1,000	21,000	21,000	21,000	21,000
NONOPERATING INCOME:						
INVESTMENT INCOME	11,279	5,000	5,000	6,000	6,000	6,000
GRANTS	35,897					
DOT REIMBURSEMENT						
MISCELLANEOUS	7,623	0,000	10,000	10,000	10,000	10,000
TOTAL REVENUES	1,317,595	6,275	2,027,401	2,048,718	2,070,228	2,090,934
NEW SOURCES OF REVENUE:						
REVENUE FROM WATER RATE INCREASE		3,427	221,348	282,999	348,653	418,470
PERCENTAGE INCREASE			4.5%	4.5%	4.5%	4.5%
REVENUE FROM SEWER RATE INCREASE		3,699	180,317	229,911	282,652	338,717
PERCENTAGE INCREASE			4.5%	4.5%	4.5%	4.5%
TOTAL REVENUES	1,317,595	3,401	2,429,066	2,561,628	2,701,533	2,848,120
EXPENDITURES:						
ADMINISTRATION						
SALARIES AND BENEFITS	20,973					
WATER DEPARTMENT						
SALARIES AND BENEFITS	398,955	8,128	590,853	614,488	639,067	664,630
OPERATIONS	255,690	7,022	367,732	378,764	390,127	401,831
SEWER DEPARTMENT						
SALARIES AND BENEFITS	228,319	7,393	527,689	548,796	570,748	593,578
OPERATIONS	237,744	2,396	414,467	426,902	439,709	452,900
TOTAL OPERATING EXPENDITURES	1,141,681	4,938	1,900,742	1,968,949	2,039,651	2,112,938
CAPACITY IMPACT FEE RESERVE		5,000	25,000	25,000	25,000	25,000
CAPITAL OUTLAY	67,885	3,000	10,000	125,000	10,000	40,000
DOT PROJECT						
DEBT:						
EXISTING DEBT	145,459	1,514	50,722	49,929	49,137	48,344
NEW DEBT		4,117	253,268	402,419	509,776	617,134
TOTAL EXPENDITURES	1,355,025	8,570	2,239,732	2,571,298	2,633,564	2,843,417
REVENUES OVER EXPENDITURES	-37,430	4,831	189,335	-9,669	67,969	4,703
ACCRUAL ADJUSTMENTS	143,275					
NET INCOME	105,845	4,831	189,335	-9,669	67,969	4,703
UNRESTRICTED NET ASSETS	168,056	3,638	1,020,973	986,304	1,029,273	1,008,976
UNRESTRICTED NET ASSETS / TOTAL EXPENDITURES	12%	40%	46%	38%	39%	35%
CAPACITY IMPACT FEE RESERVE	374,432	2,731	72,531	97,531	0	25,000
NEW DEBT:						
PROJECT COST			3,535,400		2,296,450	
CAPACITY IMPACT FEE RESERVE			515,200		122,531	
LOAN AMOUNT			3,020,200		2,173,919	
RATE			5.50%		5.50%	
TERM			15		15	
PAYMENT			149,151		107,358	
ANNUAL PAYMENTS			298,302		214,715	

* DENOTES THAT MICAVILLE PHASE 1 WATER CONNECTION REVENUE PRO

TABLE 7
TOWN OF BURNSVILLE
CURRENT AND PROPOSED WATER AND SEWER RATES

	CURRENT 2013	YEAR 1 2014	YEAR 2 2015
WATER INSIDE			
Minimum	\$18.00	\$20.00	\$21.20
3,001 +	\$6.00	\$6.70	\$7.15 per 1000 gal
IRRIGATION INSIDE			
Minimum		\$20.00	\$21.20
3,001 +		\$6.70	\$7.15 per 1000 gal
WATER OUTSIDE			
Minimum	\$36.00	\$40.00	\$42.40
3,001 +	\$12.00	\$13.40	\$14.30 per 1000 gal
IRRIGATION OUTSIDE			
Minimum		\$40.00	\$42.40
3,001 +		\$13.40	\$14.30 per 1000 gal
SEWER INSIDE			
Minimum	\$18.00	\$20.00	\$21.20
3,001 +	\$6.00	\$6.70	\$7.15 per 1000 gal
SEWER OUTSIDE			
Minimum	\$36.00	\$40.00	\$42.40
3,001 +	\$12.00	\$13.40	\$14.30 per 1000 gal
WATER CAPACITY DEPLETION			
9,999 -10,000	\$3.00	\$3.00	\$3.00
10,001 +	\$1.50	\$1.50	\$1.50 per 5000 gal
SEWER CAPACITY DEPLETION			
9,999 -10,000	\$3.00	\$3.00	\$3.00
10,001 +	\$1.50	\$1.50	\$1.50 per 5000 gal
<u>SAMPLE MONTHLY WATER & SEWER CHARGES</u>			
INSIDE 4,000 GAL	\$48.00	\$53.40	\$56.70
INSIDE 10,000 GAL	\$126.00	\$139.80	\$148.50
INSIDE 50,000 GAL	\$630.00	\$699.80	\$744.50
INSIDE 100,000 GAL	\$1,260.00	\$1,399.80	\$1,489.50
OUTSIDE 4,000 GAL	\$96.00	\$106.80	\$113.40
OUTSIDE 10,000 GAL	\$246.00	\$273.60	\$291.00
OUTSIDE 50,000 GAL	\$1,230.00	\$1,369.60	\$1,459.00
OUTSIDE 100,000 GAL	\$2,460.00	\$2,739.60	\$2,919.00

Burnsville

Rates Comparison

Financial Benchmarks

Characteristics

Links

Edit Data or Add Utility

Select residential bill and monthly consumption amount

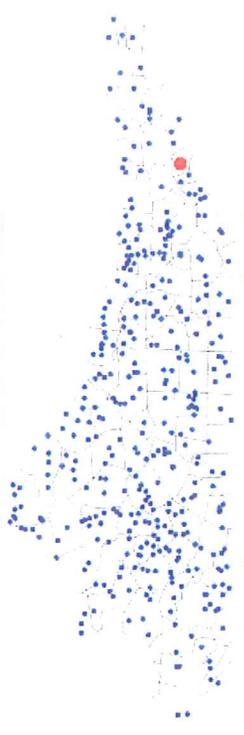
- Water Bill
- Sewer Bill
- Water + Sewer Bill

3,000 gallons
401 cubic feet

Monthly Water & Sewer Bill: \$38.46

Select comparison group: All Utilities

Comparing to all utilities in survey



Effects of raising rates by: 0%

Bill Comparison

Water & Sewer Bill at
3,000 gallons
Median: \$48.77



Min \$12.49 Max \$126.12

Conservation Signal

Water & Sewer Price/1,000
Gallons, after 10,000 Gallons
Median: \$10.00



Min \$0.00 Max \$41.25

Cost Recovery

Operating
Ratio Incl. Deprec. 2014



Affordability

Water & Sewer Bills as % MHI



Burnsville

Rates Comparison

Financial Benchmarks

Characteristics

Links

Edit Data or Add Utility

Select residential bill and monthly consumption amount

- Water Bill
- Sewer Bill
- Water + Sewer Bill



Monthly Water & Sewer Bill After Rate Increase: \$38.84

Select comparison group: All Utilities

*****Caution*****
 Revenue impacts are highly speculative and should not be used in place of an in-depth rate study
*****Caution*****
 Assumes across-the-board rate increases for all customer classes. Projected revenue impacts assume a 3 percent drop in demand for every 10 percent increase in price. Accuracy of projections decreases as the proposed rate increase gets larger.

Effects of raising rates by: 1%

Bill Comparison

Water & Sewer Bill at 3,000 gallons
 Median: \$48.77



Conservation Signal

Water & Sewer Price/1,000 Gallons, after 10,000 Gallons
 Median: \$10.00



Cost Recovery

Operating Ratio Incl. Deprec. 2014



Affordability

Water & Sewer Bills as % MHI



Rates Comparison

Financial Benchmarks

Characteristics

Links

Edit Data or Add Utility

Burnsville

Select residential bill and monthly consumption amount

- Water Bill
- Sewer Bill
- Water + Sewer Bill

3,000 gallons
401 cubic feet

Monthly Water & Sewer Bill After Rate Increase: \$39.23

Select comparison group: All Utilities

*****Caution*****
Revenue impacts are highly speculative and should not be used in place of an in-depth rate study

*****Caution*****
Assumes across-the-board rate increases for all customer classes. Projected revenue impacts assume a 3 percent drop in demand for every 10 percent increase in price. Accuracy of projections decreases as the proposed rate increase gets larger.

Effects of raising rates by: 2%

Bill Comparison

Water & Sewer Bill at 3,000 gallons
Median: \$48.77



Conservation Signal

Water & Sewer Price/1,000 Gallons, after 10,000 Gallons
Median: \$10.00



Cost Recovery

Operating Ratio Incl. Deprec. 2014



Affordability

Water & Sewer Bills as % MHI



Burnsville

Rates Comparison

Financial Benchmarks

Characteristics

Links

Edit Data or Add Utility

Select residential bill and monthly consumption amount

- Water Bill
- Sewer Bill
- Water + Sewer Bill

3,000 gallons
401 cubic feet

Monthly Water & Sewer Bill After Rate Increase: \$42.31

Select comparison group: All Utilities

Caution

Revenue impacts are highly speculative and should not be used in place of an in-depth rate study

Caution

Assumes across-the-board rate increases for all customer classes. Projected revenue impacts assume a 3 percent drop in demand for every 10 percent increase in price. Accuracy of projections decreases as the proposed rate increase gets larger.

Effects of raising rates by: 10%

Bill Comparison

Water & Sewer Bill at 3,000 gallons
Median: \$48.77



Conservation Signal

Water & Sewer Price/1,000 Gallons, after 10,000 Gallons
Median: \$10.00



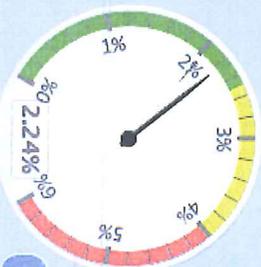
Cost Recovery

Operating Ratio Incl. Deprec. 2014



Affordability

Water & Sewer Bills as % MHI



[Rates Comparison](#) |
 [Financial Benchmarks](#) |
 [Characteristics](#) |
 [Links](#)

Select residential bill and monthly consumption amount

- Water Bill
- Sewer Bill
- Water + Sewer Bill

Monthly Water & Sewer Bill After Rate Increase: \$44.23
 3,000 gallons
 401 cubic feet

Select comparison group: All Utilities

*****Caution*****
 Revenue impacts are highly speculative and should not be used in place of an in-depth rate study
*****Caution*****
 Assumes across-the-board rate increases for all customer classes. Projected revenue impacts assume a 3 percent drop in demand for every 10 percent increase in price. Accuracy of projections decreases as the proposed rate increase gets larger.

Effects of raising rates by:

Bill Comparison

Water & Sewer Bill at
 3,000 gallons
 Median: \$48.77



Conservation Signal

Water & Sewer Price/1,000
 Gallons, after 10,000 Gallons
 Median: \$10.00



Cost Recovery

Operating
 Ratio Incl. Deprec. 2014



Affordability

Water & Sewer Bills as % MHI

