

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: Shelby PWSID: 01-23-010
 Mailing Address: PO Box 207, Shelby, NC 28150 Ownership: Municipality
 Contact Person: Michael Mull Title: WTP Supervisor/ORC
 Phone: 704-484-6885 Fax: 704-484-6853
 Secondary Contact: David Hux Phone: 704-484-6840
 Mailing Address: PO Box 207, Shelby, NC 28151-0207 Fax: 704-484-6808

Complete

Distribution System

Line Type	Size Range (Inches)	Estimated % of lines
Cast Iron	4-16	50.20 %
Ductile Iron	6-16	42.50 %
Galvanized Iron	2	1.00 %
Other	2-10	2.80 %
Polyvinyl Chloride	2-12	3.50 %

What are the estimated total miles of distribution system lines? 221 Miles
 How many feet of distribution lines were replaced during 2016? 2,695 Feet
 How many feet of new water mains were added during 2016? 322 Feet
 How many meters were replaced in 2016? 382
 How old are the oldest meters in this system? 15 Year(s)
 How many meters for outdoor water use, such as irrigation, are not billed for sewer services? 497
 What is this system's finished water storage capacity? 9.750 Million Gallons
 Has water pressure been inadequate in any part of the system since last update? No

The new 0.500 MGD was put in service in February of 2017. This will be reflected in the 2017 report. City is currently designing another 0.750 tank for West Shelby - Farmville Road Tank. It is anticipated that this tank will be in service by 2019.

Programs

Does this system have a program to work or flush hydrants? Yes, 2 Years or More
 Does this system have a valve exercise program? Yes, As Needed
 Does this system have a cross-connection program? Yes
 Does this system have a program to replace meters? Yes
 Does this system have a plumbing retrofit program? No
 Does this system have an active water conservation public education program? Yes
 Does this system have a leak detection program? Yes

Water Conservation

What type of rate structure is used? Flat/Fixed
 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? Yes

2. Water Use Information

Service Area

Sub-Basin(s)	% of Service Population	County(s)	% of Service Population
Broad River (01-1)	100 %	Cleveland	100 %

What was the year-round population served in 2016? 20,323

Has this system acquired another system since last report? No

Water Use by Type

Type of Use	Metered Connections	Metered Average Use (MGD)	Non-Metered Connections	Non-Metered Estimated Use (MGD)
Residential	8,402	1.385	0	0.000
Commercial	1,121	0.223	0	0.000
Industrial	78	1.837	0	0.000
Institutional	294	0.452	0	0.000

How much water was used for system processes (backwash, line cleaning, flushing, etc.)? 0.750 MGD

Water Sales

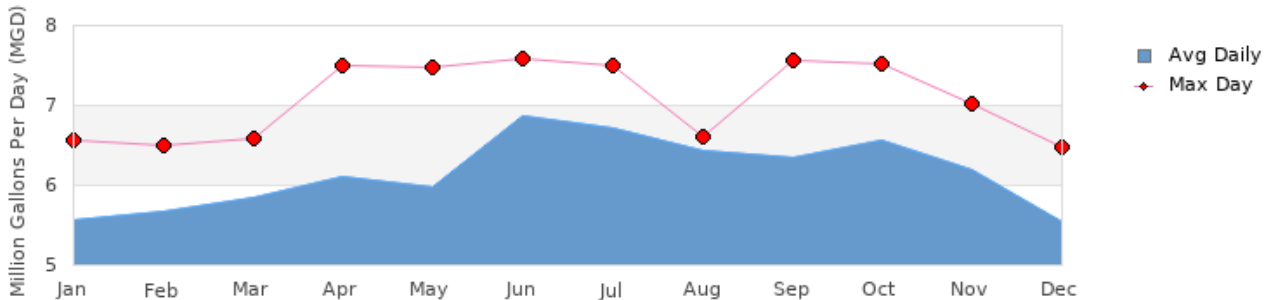
Purchaser	PWSID	Average Daily Sold (MGD)	Days Used	Contract MGD	Contract Expiration	Recurring	Required to comply with water use restrictions?	Pipe Size(s) (Inches)	Use Type
Cleveland County Water	01-23-055	0.000	0	1.000		Yes	No	12	Emergency
Town of Boiling Springs	01-23-025	0.400	365	1.000	2034	Yes	Yes	16	Regular

3. Water Supply Sources

Monthly Withdrawals & Purchases

	Average Daily Use (MGD)	Max Day Use (MGD)		Average Daily Use (MGD)	Max Day Use (MGD)		Average Daily Use (MGD)	Max Day Use (MGD)
Jan	5.566	6.565	May	5.972	7.468	Sep	6.348	7.559
Feb	5.658	6.500	Jun	6.872	7.587	Oct	6.565	7.523
Mar	5.845	6.575	Jul	6.716	7.504	Nov	6.198	7.017
Apr	6.102	7.491	Aug	6.436	6.611	Dec	5.540	6.482

Shelby's 2016 Monthly Withdrawals & Purchases



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	
1st Broad River	Broad River 01-5-510	6.146	365	0.000	18.000	F	0.000
Broad River		0.000	0	0.000	9.000	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	Metered?	Sub-Basin	County	Year	Use
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		(sq mi)				Offline	Type
1st Broad River	Broad River 01-5-510	226	Yes	Broad River (01-1)	Cleveland		Regular
Broad River		884	No	Broad River (01-1)	Cleveland		Regular

What is this system's off-stream raw water supply storage capacity? 19 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 anticipate transferring surface water between river basins? No

Water Treatment Plants

Plant Name	Permitted Capacity (MGD)	Is Raw Water Metered?	Is Finished Water Output Metered?	Source
City of Shelby	12.000	Yes	Yes	First Broad River; Broad River

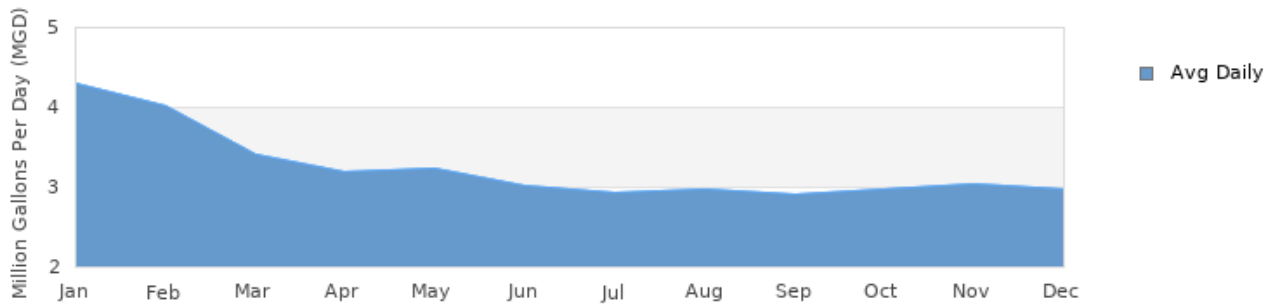
Did average daily water production exceed 80% of approved plant capacity for five consecutive days during 2016? No
 If yes, was any water conservation implemented?
 Did average daily water production exceed 90% of approved plant capacity for five consecutive days during 2016? No
 If yes, was any water conservation implemented?
 Are peak day demands expected to exceed the water treatment plant capacity in the next 10 years? No

4. Wastewater Information

Monthly Discharges

	Average Daily Discharge (MGD)		Average Daily Discharge (MGD)		Average Daily Discharge (MGD)
Jan	4.300	May	3.230	Sep	2.910
Feb	4.010	Jun	3.020	Oct	2.970
Mar	3.410	Jul	2.930	Nov	3.040
Apr	3.200	Aug	2.970	Dec	2.970

Shelby's 2016 Monthly Discharges



How many sewer connections does this system have? 8,169
 How many water service connections with septic systems does this system have? 1,725
 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
NC0024538	6.000	6.000	3.110		First Broad River	Broad River (01-1)
NC0027197	0.000	0.000	0.143		Unnamed tributary 1st Broad Riv	Broad River (01-1)

Wastewater Interconnections

Water System	PWSID	Type	Average Daily Amount		Contract Maximum (MGD)
			MGD	Days Used	
Kingstown	01-20-055	Receiving	0.027	365	0.000

5. Planning

Projections

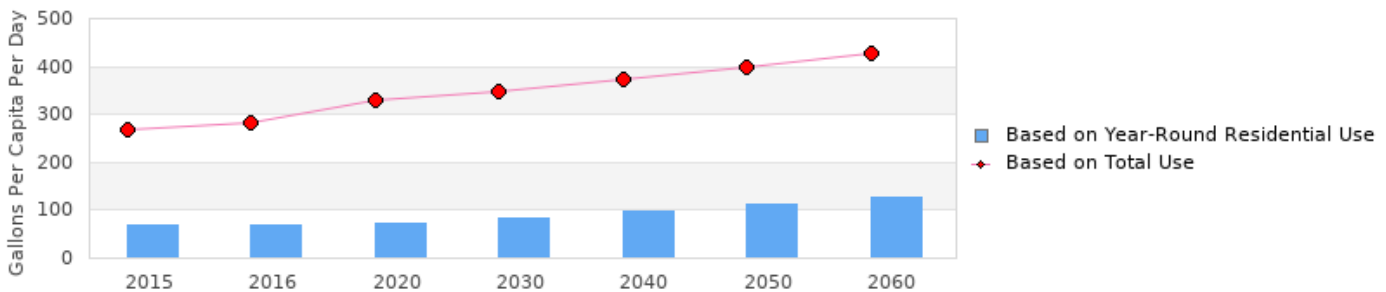
	2016	2020	2030	2040	2050	2060
Year-Round Population	20,323	20,562	20,651	20,740	20,828	20,920
Seasonal Population	0	0	0	0	0	0
Residential	1.385	1.470	1.706	1.980	2.298	2.666
Commercial	0.223	0.227	0.239	0.251	0.264	0.278
Industrial	1.837	2.574	2.670	2.771	2.876	2.988
Institutional	0.452	0.461	0.485	0.509	0.536	0.563
System Process	0.750	0.750	0.750	0.750	0.750	0.750
Unaccounted-for	1.083	1.278	1.363	1.459	1.567	1.688

Unaccounted for water: City has leaking 16" main water line that is currently being replaced (2017). City has also submitted loan application for improvements to sedimentation basin (repairs), filter influent valve replacement, and Clearwell (replacement). Project scheduled for 2019. These are major sources of unaccounted for water loss.

Demand v/s Percent of Supply

	2016	2020	2030	2040	2050	2060
Surface Water Supply	27.000	27.000	27.000	27.000	27.000	27.000
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)	27.000	27.000	27.000	27.000	27.000	27.000
Service Area Demand	5.730	6.760	7.213	7.720	8.291	8.933
Sales	0.399	1.000	1.000	1.000	1.000	1.000
Future Sales		0.000	0.000	0.000	0.000	0.000
Total Demand (MGD)	6.129	7.760	8.213	8.720	9.291	9.933
Demand as Percent of Supply	23%	29%	30%	32%	34%	37%

Shelby's Projected Gallons Per Capita Per Day (GPCD) Over Time



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

Your long-term water demand is 68 gallons per capita per day. What demand management practices do you plan to implement to reduce the per capita water demand (i.e. conduct regular water audits, implement a plumbing retrofit program, employ practices such as rainwater harvesting or reclaimed water)? If these practices are covered elsewhere in your plan, indicate where the practices are discussed here.

Are there other demand management practices you will implement to reduce your future supply needs? The City maintains rates that encourage conservation and are full cost recovery structures. City operates an active leak detection program.

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

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

Additional Information

Has this system participated in regional water supply or water use planning? Yes, Cleveland County Interconnections/Future Water Supply 1999; Broad River Basin Modeling

What major water supply reports or studies were used for planning? City of Shelby Water and Sewer Asset Management Plan, Water Treatment Plant Evaluation 2016, Programs to Address State Drought Requirements 2011;

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: Performed Water Plant Assessment in 2016. City will break out improvement projects into phases. City submitted 10.2 Million loan application to NCDEQ and is currently developing Preliminary Engineering Report to be submitted in May of 2017. Project will include Sedimentation basin improvements, filter valve repairs, new clearwells and high service pumps. Other improvements may include structural repairs and chemical feed improvements.

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