WASTEWATER PERFORMANCE REPORT

JULY 1, 2021 - JUNE 30, 2022

Monroe
North Carolina

Our Commitment

Protecting the environment is a top priority for the City of Monroe Water Resources Department. We are pleased to present our annual Wastewater Performance Report. This report provides an overview of our wastewater system performance. We are committed to providing quality wastewater services to our customers in an environmentally conscious and cost-effective way.

State Law Requires Wastewater Report

The North Carolina Clean Water Act requires wastewater service providers to publish annual reports for availability to customers. Reports such as this one, highlighting the performance of the City's wastewater system, will be published each year on the City of Monroe's website. Hard copies can also be requested from Water Resources by calling (704) 282-4601.

Wastewater Treatment Overview

Homes, businesses, and industries throughout the City of Monroe discharge their wastewater (sewer) into the sanitary sewer system. These wastes contain pollutants, which if not treated properly, can injure fish and aquatic life, impair recreational uses, and threaten public health of downstream water users.

The Types of Pollutants Found in Wastewater Include:

Bacteria	*Nutrients*	*Oil & Grease*	*Trace Metals*
They occur naturally in most wastes. Some can be disease causing.	***Two examples are nitrogen and phosphorous. They can cause discoloration and algae blooms in downstream waters.***	***When improperly handled in homes and restaurants, oil and grease cause severe blockages in the underground piping system. This can lead to possible sewer overflows and property damage.***	***These pollutants originate primarily from industrial activity. They can be toxic to the treatment process and downstream aquatic life.***

The City's wastewater treatment plant operates efficiently 24 hours per day, 365 days per year, to ensure that these pollutants do not harm our environment.

The Cost of Clean

Protecting the environment is not without cost. The City is proud of the value we provide to our wastewater system customers. Here are how our rates compared to surrounding systems.

Union Co.	**$69.20**		**Salisbury**	**$49.43**
Wingate	**$68.99**		**Gastonia**	**$44.56**
Charlotte	**$56.47**		**Monroe**	**$41.79**
Statesville	**$54.66**		**Concord**	**$37.11**

Residential Customers using 6,000 gallons per month.

Rate comparison for FY21-22 found on https://dashboards.efc.sog.unc.edu/nc

What Happens When You Flush?

A modern wastewater system is an engineering marvel. When you flush, our work has only begun. Wastewater discharged by our customers travels through a complicated network of pipes, pumps, manholes and valves called the "collection system" as it makes its way to the City's Wastewater Treatment Plant for processing.

The City of Monroe's wastewater collection system contains approximately 1.7 million feet of piping, ranging in diameter from 4 inches to 54 inches, enough to stretch all the way to Raleigh and back!

Treatment Process Overview

The City's Wastewater Treatment Plant is located at Walkup Avenue and Treeway Drive and is capable of treating up to 10.4 million gallons of wastewater per day.

The wastewater undergoes a rigorous sequence of mechanical, biological, and filtration treatment processes to ensure that it can be safely re-used as reclaimed water or released into Richardson Creek. Very strict treatment standards must be met to comply with North Carolina regulations.

Questions & Answers About "Sewer Blockages"

Where do the customers sewer pipes end, and the City's sanitary sewer system begin?

The City's sewer system (mainlines and manholes) are typically located in the public right of ways (ROW), streets, or in public utility easements. The "service connection" or sewer lateral for each customer is the pipe that extends from the City main or manhole to the edge of the ROW or easement. This service connection pipe is installed and maintained by the City at the customer's expense. The customers "building connection" pipe is installed by the homebuilder and extends from the service connection at the property line to the building or home being served. The diagram below illustrates these items.

What are the typical causes of sewer blockages?

The most common causes of sewer blockages are structural damage to pipes, grease accumulation, or roots that have penetrated through cracks or joints in the sewer lines. Heavy rainfall can also be a cause of sewer blockages.

Who is responsible when a sewer blockage occurs?

The City is responsible for maintaining the sewer system mainlines and manholes located in the public right of ways, streets, or in public utility easements. If a sewer blockage occurs in these lines, the City will respond to correct it. Property owners and customers are responsible for maintaining "an open flow path from the building sewer connection, through the sewer service connection, to the sewer main line or terminal manhole" as defined in the City's Sewer Use Ordinance.

Who can I call if I have a sewer blockage?

If you suspect the blockage is on the city's system, call 704-282-4601 to report it, 24 hours a day. If you suspect the blockage is on the customer building connection piping or sewer service connection, you will need to call a plumber to open this flow path and clear the blockage. Consult the yellow pages for a qualified plumber in your area.

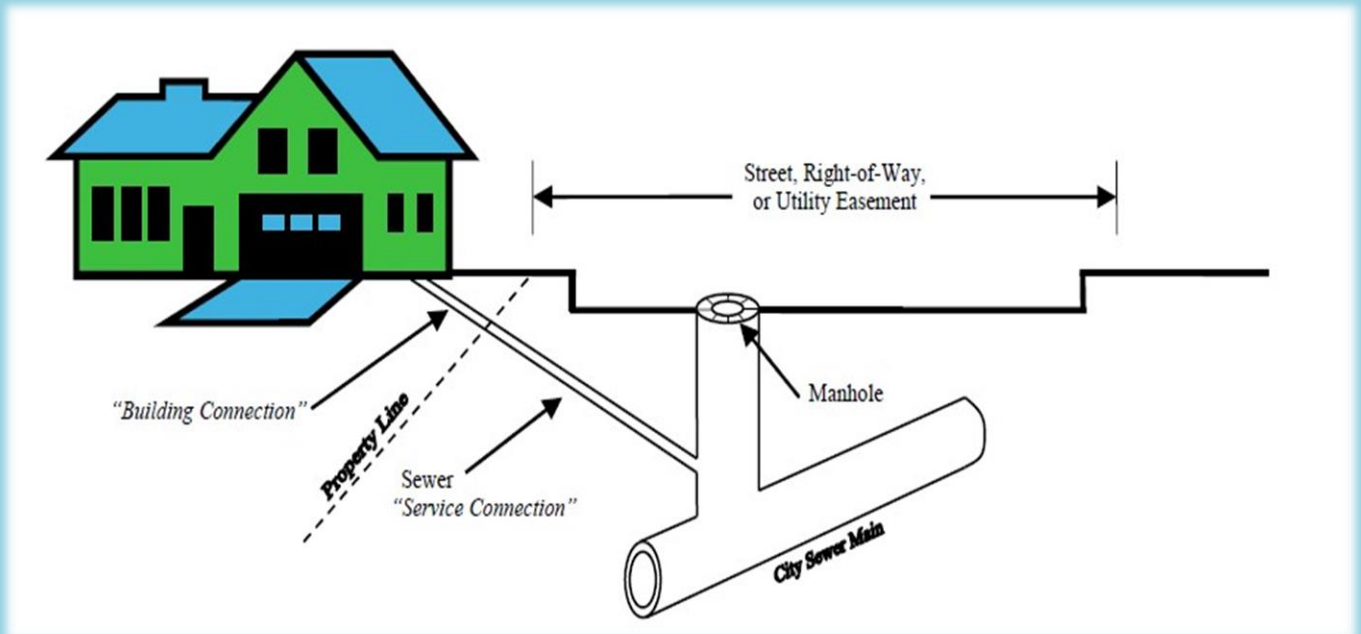
Will sewer back up into my house if there is a blockage on the City's System?

No, not if the building sewer connection meets all building code requirements and is properly maintained. Every home or business that has plumbing fixtures below the elevation of the closest city manhole must have a "backwater" control valve on their building connection pipe. This is required by both North Carolina Building Code and City's Sewer Use Ordinance.

A backwater control valve is a flapper or check valve that will allow sewer to pass from the building to the City sewer system, but not in reverse. If a backwater valve is properly installed and maintained, it will prevent sewer from backing up in a home or business if a blockage occurs on the City system.

How can I protect my property from sewer backups?

Have your backwater valve checked by a licensed plumber on a regular basis. Install a backwater valve if you do not have one and any of your plumbing fixtures are below the elevation of the City manholes near your property. A good rule of thumb is if your home or business floor level is lower than the street, you may need a backwater valve to comply with Building Code. Also, never dispose of improper items or material down sinks, tubs and toilets. Always dispose of cooking grease in your regular solid waste trash container.



What the City is Doing to Prevent Sewer Blockages

The City of Monroe operates its sanitary sewer collection system in compliance with North Carolina Department of Environmental Quality (NCDEQ) requirements. The City is proactive in meeting the requirements of the NCDEQ Collection System Permit and exhibits reasonable care in preventing sanitary sewer blockages in the City's System.

This includes a comprehensive maintenance program of sewer cleaning, inspection, and rehabilitation. In order to keep our wastewater system functioning properly, our Water Resources Department utilizes the following preventative maintenance procedures:

Visual Inspection

Maintenance crews periodically check manholes, frames and covers to look out for cracks, breaks or missing parts, which may prevent them from maintaining airtight integrity. Replacement and maintenance is scheduled as necessary.

TV of Lines

Sewer lines are inspected internally with a special closed circuit TV camera that is lowered into a manhole and pulled through the line. The camera images will determine if there are areas of weakness in the joints and pipes and look for leakage. These points will be repaired by sliplining or pipebursting.

Smoke Testing

By blowing smoke into a sewer line, crews can determine areas of breaks, improper connections and other system problems which then can be scheduled for repair or replacement. This procedure sometimes identifies problems on the property owner's side of the system. In these cases, the property owners are notified and advised to make the appropriate repairs.

Jet Washing and Root Cutting

Sewer lines are often cleaned by rotating root cutting devices to remove roots or other material, then cleaned with high-pressure water by using a combination jet vacuum system.

Sewer Main Replacement Program

Some sewer lines can be rehabilitated by sliplining or pipe bursting. The lining extends structural life of the pipes, inhibits root growth and reduces ground water leakage into the sewer pipes. These trenchless methods replace portions of the sewer mains without having to dig the whole main up.

Help Keep Rainwater Out of the Sanitary Sewer System

One of the biggest problems facing the City's sewer system is inflow and infiltration (I & I) of rainwater during storm events. This can cause overloading of the sewer piping system and wastewater treatment plant. The City conducts audits of the sewer system to detect and eliminate defects where rainwater can enter and many times finds broken sewer cleanouts on customer property.

The sewer cleanout is a white piece of plastic pipe with a threaded cap that sticks up from the ground. It provides an access point for plumbers to remove a sewer blockage that occurs in the building connection pipe. If the cap or pipe is cracked or broken, you should immediately buy replacement parts at your local hardware store and repair the pipe. Broken cleanout caps or pipe allow debris and/or rainwater to enter the sewer system, which can cause problems for the homeowner and for the City of Monroe.

Broken Cleanout

Fixed Cleanout

City I & I Control Efforts for FY 2022

SEWER LINE MAINTENANCE		
	LF	MILES
Sewer Lines Cleaned	150,284	28.46
Camera Main Line	44,760	8.48
Smoke Testing	0	0
Main Lines Replaced	14,622	2.77

INFLOW/INFILTRATION (I&I)		
	POINT REPAIRS	REHAB
Manholes	-	112
Sewer Mains	10	-

Expanding for Future Growth

The City began an upgrade to our current Waste Water Treatment Plant in December 2021. The WWTP Equalization Basin (EQ) project is to enhance the plants resiliency and reliability of treatment processes, especially during significant rainfall events, and is imperative to the future economic growth and development of the City. The EQ Basin will have a storage capacity of an additional 15-million gallons. This project is scheduled for completion in mid-December 2022.

Wastewater Treatment Plant Results

The City of Monroe Wastewater Treatment Plant operates under a National Pollutant Discharge Elimination System (NPDES) permit issued by the United States Environmental Protection Agency. The North Carolina Department of Environmental and Natural Resources enforces this permit. The City of Monroe conducts thousands of water quality control tests per year to comply with our permit. The table below summarizes our permit compliance results (Based on FY 2022).

Parameter	Units	Permit Limits	Average Influent	Average Effluent	Removal Efficiency %	Violations
Flow	mgd	10.4	N/A	5.77	N/A	0
Chlorine	ppb	17	N/A	0.042	N/A	0
Biochemical Oxygen Demand	ppm	7.3	268.28	1.65	99.35	0
Ammonia – NH3	ppm	1	28.37	0	100	0
Suspended Solids	ppm	30	194.41	1.07	99.39	0
Fecal	cfu	200	N/A	2.25	N/A	0
Dissolved Oxygen	ppm	5	N/A	7.36	N/A	0
Conductivity	umhos		N/A	905.5	N/A	0
Chronic Toxicity	p/f		N/A	4 pass	N/A	0
Copper	ppb		25.75	5.81	76.65	0
Zinc	ppb		150.0	58.68	59.34	0
Silver	ppb		0	0	N/A	0
Cyanide**	ppb	5.1	1.23	1.71	N/A	1
Oil and Grease	ppm		9.65	0.34	N/A	0
Total Nitrogen	ppm		N/A	27.95	N/A	0
Total Phosphorus	ppm		4.60	3.17	18.49	0

Abbreviations: ppm = parts per million; ppb = parts per billion; cfu = colony forming units

Effluent values for Cyanide are possibly due to laboratory test interference, since influent valves were detected as zero for 10 months, with only two months with an influent detection.

Wastewater Collection System

Our collection system must comply with detailed design, inspection and monitoring regulations. Certain problems or spills must be reported to the State within 24 hours. Public notification through news releases are also required. The table below summarizes reportable collection system problems for FY2022. The City of Monroe has implemented a preventative maintenance program to reduce problems similar to these.

Date	Location	Spill Volume	Cause
October 30, 2021	E. Myers St	750	FOG Blockage
December 30, 2021	W. Roosevelt Blvd	700	Roots
February 19, 2022	Foxmoor Dr	300	Rags
March 13, 2022	Wesley Hills Trail	400	Pipe Failure
April 6, 2022	Aubrey St	450	Plug in Line

Pretreatment Program Monitors Business and Industry

The City of Monroe has a Pretreatment Program that monitors the discharge from industries and businesses in the City. The National Pretreatment Program is a cooperative effort of federal, state, and local regulatory environmental agencies established to protect water quality.

The program is designed to reduce the level of pollutants discharged by industry and other non-domestic wastewater sources into municipal sewer systems and thereby reduce the amount of pollutants released into the environment through wastewater.

The objectives of the program are:

- To protect the Publicly Owned Treatment Works (POTW) from pollutants that may interfere with plant operation.
- To prevent industrial facilities' pollutant discharges from passing through municipal wastewater treatment plants untreated.
- To protect treatment plants from the threat posed by untreated industrial wastewater, including explosion, fire, and interference with the treatment process.
- To improve the quality of effluents and sludges so that they can be used for beneficial purposes.
- Inspect Food Service Establishments discharging wastewater that contains grease to the City of Monroe sanitary sewer system to ensure they are compliant.

What You Can Do to Help

Never pour or flush grease, food scraps, cleaning supplies, paper, medicines, etc. down the drain or in the toilet.

Report Sanitary Sewer Overflows: Call us at 704-282-4601 immediately if you see water flowing from a manhole or underground pipe.

Dispose of household hazardous chemicals at the Foxhole landfill:
17131 Lancaster Highway
Charlotte, NC
704-752-5827

Recycle used motor oil at the City of Monroe Operation Center Garage
2401 Walkup Ave
Monroe, NC
704-282-4625

If you have any questions about any of the material in this report, please contact our Water Resources Department at the Operations Center office at (704) 282-4601, Monday through Friday 8 am to 5 pm.

You can find important information on our website at:

www.monroenc.org