



# **City of Mebane Wastewater Collection and Treatment Facility**

**For the Fiscal Year July 1, 2020 – June 30, 2021**



# **City of Mebane**

## **Wastewater Collection and Treatment Facility**

### **For the Fiscal Year July 1, 2020 – June 30, 2021**

#### **Introduction**

This report is produced in compliance with House Bill 1160 passed by the General Assembly of the State of North Carolina requiring that all entities that own or operate wastewater collection and treatment systems make an Annual Report available to their customers. This report must include information regarding how well the system operated, what violations occurred, and other pertinent information. This report complies with these requirements.

The City of Mebane operates a water resource recovery facility and a sewage collection system that collects and transports the sewage to the facility.

Following are the professionals designated by the state as the “Operator in Responsible Charge” (ORC) of the respective systems and permits for the systems:

City of Mebane Water Resource Recovery Facility  
635 Corregidor Road  
Phone (919) 563-6141  
NPDES Permit No. NC0021474  
Operator in Responsible Charge (ORC) – Dennis J. Hodge

Mebane Public Works  
Sewage Collection System  
636 Corregidor Road  
Phone (919) 563-3401  
Collection System Permit No. WQCS00081  
Operator in Responsible Charge (ORC) – Greg Barts

We certify under penalty of law that this report is complete and accurate to the best of our knowledge. Copies will be available at the Water Resource Recovery Facility, the Public Works Building, the Glendel Stephenson Municipal Building, and on the City of Mebane website at <https://cityofmebanenc.gov/departments/water-resource-recovery-facility/>.

## **System Overview**

Every day an average of over 1.7 million gallons of sewage is generated in our homes, commercial establishments, and industries that must be collected, transported, and treated to very stringent standards before it is released back into our environment through our waterways. This service is provided by the City and is funded almost entirely from the user charges that are paid monthly by our customers.

The sewage collection and water resource recovery facility of the City of Mebane begins with over 5,700 connections that serve homes, commercial establishments, and industries. Nearly all of the sewage or wastewater that is generated by customers flows by gravity through sewers that range from 6 to 16 inches in diameter. Mebane operates 119.38 miles of these gravity sewer lines. During this reporting period, approximately 12.62 miles of these lines were cleaned.

As the lines leave neighborhoods, they increase in size to accommodate the flows that are collected from the many areas that are served. These sewers generally follow terrain to take advantage of gravity flow but at certain points pumping stations are used to transfer the flow to different basins. The City currently operates 21 pumping stations that range in capacity from 50 to 1,750 gallons per minute.

The purpose of the collection system is to transport the wastewater to the water resource recovery facility (WRRF) so it can be processed and returned to our waterways with minimal environmental impact. The water resource recovery facility is permitted to process up to 2.5 million gallons of wastewater per day.

The water resource recovery facility is complex, using physical, chemical, and biological processes to treat the wastewater. The wastewater is screened to remove large suspended materials, but the heart of the plant is a biological process that uses bacterial cultures to remove most of the suspended and dissolved wastes that are produced within the City. This biological, activated sludge process is sensitive to temperature, high flows produced by rainfall leaking into sewers, and toxic discharges that can be produced by industries or even homes. This sensitivity makes the wastewater facility susceptible to process upsets that can result in exceeding limitations permitted by regulatory authorities.

The permitting of treated wastewater discharges is based on a "7Q10" stream flow, or the lowest seven-day stream flow expected every ten years. However, permit limits that are issued to protect the stream at low flow (less assimilation), apply 24 hours per day and 365 days per year. Since Mebane's limits are calculated for discharging to a small stream, our limitations are extremely stringent. North Carolina has some of the most stringent stream standards in the country. Mebane's WRRF discharge constitutes over 90% of the stream at the lowest stream-flows. However, when periods of rain create high stream flows and make treatment plant operations difficult, the treatment facility must continue to be compliant with dry weather limitations.

The City of Mebane's WRRF operates under a National Pollutant Discharge Elimination System (NPDES) permit. The NPDES permit includes monitoring requirements and discharge limitations, some of which vary with seasons and have different maximums for daily values, weekly averages, monthly averages, and quarterly averages. Some limitations protect streams from oxygen depletion, such as biochemical oxygen demand (BOD) and ammonia-nitrogen (which exerts oxygen demand over a delayed yet prolonged basis). Some standards/limitations are to protect aquatic life in the receiving stream, such as metals like cadmium or mercury or other pollutants like fluoride or chlorine. Since aquatic life is more sensitive than humans to some pollutants, some standards are as low as 12 parts per trillion\* and, in many cases, are lower than drinking water standards.

*\* To help comprehend how small one part per trillion is: One part per trillion corresponds to one minute in 2,000,000 years, or a single penny in \$10,000,000,000.*

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Compliance with the permit requires that our laboratory conduct over 4,000 tests per year all of which must meet the NPDES permit requirements. To accidentally drop a sample or not analyze it within a specified period can result in a violation. There are some pollutants such as fluoride, mercury, and cadmium that the operators of the WRRF have no control over and can only be regulated through controlling the discharges of industries and households. There are also times that maintenance on major equipment needs to be performed and that can cause exceedances as well.

During the 2020-2021 fiscal year, the Water Resources Department treated over 643 million gallons and returned it to our streams. We are proud of the outstanding performance of the facility that was made possible by the dedicated efforts of the professionals who operate, maintain, and conduct tests for the facility. Wastewater flow amounts are summarized in Table 1.

**Table 1: Wastewater Flows**

<b>Summary of Wastewater Flows</b>		
<b>MG (Million Gallons)</b>		
July 1, 2020 – June 30, 2021		
	<b>Average MG per day</b>	<b>Total MG</b>
July 2020	1.462	45.321
August 2020	1.484	46.000
September 2020	1.576	47.274
October 2020	1.551	48.067
November 2020	1.747	52.404
December 2020	2.139	66.314
January 2021	1.895	58.742
February 2021	2.750	77.013
March 2021	1.880	58.284
April 2021	1.760	52.793
May 2021	1.489	46.164
June 2021	1.501	45.033
<b>Total Year (MG)</b>		<b>643.41</b>
<b>Average Day (MG)</b>	<b>1.770</b>	

During this reporting period, the WRRF experienced the effects of record rainfalls that either directly or incidentally resulted in 2 exceedances of the NPDES permit. These exceedances were reported to the State of North Carolina in compliance with reporting regulations and are summarized in Table 2. All exceedances were addressed as expeditiously as possible and there were no apparent environmental impacts associated with these exceedances. In an effort to reduce the impacts of rainfall on the City's collection system and wastewater treatment facility, the Public Utilities Department will be rehabilitating manholes and slip-lining pipes in the Fifth Street outfall portion of the collection system over the next year.

**Table 2: Wastewater Treatment Facility**

<b>Date</b>	<b>Parameter</b>	<b>Number of Exceedances</b>	<b>Exceedance Type</b>
November 2020	Dissolved Oxygen	1	Daily Average (heavy rainfall & elevated plant flow)
February 2021	Flow	1	Monthly Average (heavy, prolonged rainfall)

### Collection System Performance

The City of Mebane operates a sewage collection system comprised of 119.38 miles of gravity line, 2,814 manholes, 21 pump stations, and 27.78 miles of pressurized sewage force main. If sewage escapes from the collection system, for whatever reason, and reaches a surface water body in an amount exceeding 1,000 gallons, it must be reported to the news media. In addition, all spills of any volume reaching a water body must be reported to the State. There were no sewage spills to report for the 2020-2021 Annual Report timeframe.

**Table 3: Collection System Sewage Spills**

Date	Location	Approximate Gallons	Probable Cause
N/A	N/A	N/A	N/A

Collection system sewage spills, known as sanitary sewer overflows (SSO) can occur for many reasons. Tree roots can enter sewer lines or foreign objects can be dropped into manholes or sewers causing obstructions. Rainwater can also find its way into sewers, overloading lines and pump stations. In addition, pump stations can fail for mechanical or electrical reasons.

**Disposable Does Not Mean Flushable** – Flushing garbage down the toilet can result in messy and costly back-ups for property owners and can also lead to sewer blockages that result in SSOs. Even items labeled “flushable” are best disposed of in the trash rather than flushing them down the toilet.

Garbage such as paper towels, baby wipes and diapers, cotton swabs, syringes, cleaning sponges and disposable toilet brushes, candy wrappers and other food wrappers, sanitary napkins, toys, plastic items of any kind, rubber items such as condoms and latex gloves, cigarette butts, hair, and kitty litter should not be flushed down the toilet. These items should be placed in the trash.



**Fats, Oils, and Grease (FOG)** from households, restaurants, and commercial establishments can also cause obstructions in the sewer system resulting in SSOs.



A byproduct of cooking, FOG comes from meat, fats, lard, oil, shortening, butter, margarine, food scraps, sauces, and dairy products. When washed down the drain, FOG sticks to the insides of sewer pipes. Over time, FOG can build-up, block entire pipes, and lead to serious problems. To prevent any undue introduction of FOG into the wastewater collection system, the City of Mebane implements a FOG Policy designed to

educate and enforce the proper disposal of FOG within the City. The FOG policy is intended for all customers

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(residents, restaurants, and commercial establishments) that discharge wastewater into the City's sanitary sewer with the aim of preventing grease related SSOs. Within the FOG Policy, food service establishments are required to install and properly maintain an appropriately sized grease trap or interceptor.

While food service establishments typically deal with larger volumes of FOG than residents, everyone must do their part to prevent the introduction of FOG into the sewer system. To learn more about FOG, its impacts on the sewer system, and its proper disposal, please visit the City's website at <https://cityofmebanenc.gov/fats-oils-greases-fog/>.

### **Summary**

The City of Mebane is proud that, given the age of our treatment facility and collection system, our permit exceedances have been minimal. Circumstances, such as weather and vandalism, are beyond the control of collection system and WRRF staff. Therefore, despite the dedicated efforts of these individuals, it can often be difficult to avoid spills and exceedances of the NPDES permit. The City's ultimate goal is to have no permit exceedances or sewage spills. We want to provide the best possible service to our customers while being fiscally responsible and good stewards of our environment. If more information is desired, please contact our staff at 919-304-9215.



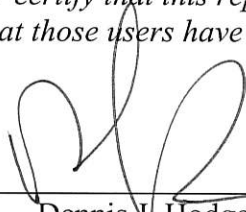
## **City of Mebane Wastewater Collection and Treatment Facility**

**For the Fiscal Year July 1, 2020 – June 30, 2021**

City of Mebane Water Resource Recovery Facility  
635 Corregidor Road, Mebane, NC 27302  
Phone (919) 304-9215  
NPDES Permit No. NC0021474  
Operator in Responsible Charge (ORC) – Dennis Hodge

Mebane Wastewater Collection System  
636 Corregidor Road, Mebane, NC 27302  
Phone (919) 563-3401  
Collection System Permit No. WQCS00081  
Operator in Responsible Charge (ORC) – Greg Barts

*I certify, under penalty of law, that this report is complete and accurate to the best of my knowledge. I further certify that this report has been made available to the users or customers of the named systems and that those users have been notified of its availability.*

  
Dennis J. Hodge  
Water Resources Director  
City of Mebane

8.26.2021  
Date