SYSTEM PERFORMANCE ANNUAL REPORT FOR CITY OF KINGS MOUNTAIN PILOT CREEK WWTP NPDES: NC0020737 AND COLLECTION SYSTEM WQCS0036

JULY 01, 2020 – JUNE 30, 2021

Table of Contents

The responsible parties including contact numbers are as follow:

TOWN MAYOR

Mr. Scott Neisler	704.734.4604

CITY MANAGNER

Mrs. Marilyn Sellers	704.734.4606

CITY COUNCIL

Mr. Mike Butler	704.734.0333
Mr. Jimmy West	704.734.0333
Mr. Tommy Hawkins	704.734.0333
Mr. Keith Miller	704.734.0333
Mr. Jay Rhodes	704.734.0333
Mr. David Allen	704.734.0333
Ms. Annie Thombs	704.734.0333

WATER RESOURCE DIRECTOR

Mr. Ricky Duncan 704.734.4525

WATER RESOURCES SUPERINTENDENT

Mr. Don Spencer 704.477.2928

WWTP SUPERVISOR/ORC

Ms. Richelle Meek 704.739-7131

COLLECTION SYSTEM SUPERVISOR/ORC

Mr. Ricky Duncan 704.734.4525

PRETREATMENT COORDINATOR

Mr. Jason Davis 704-739-7131

FACILITY OPERATORS
(Contact Number 704.739.7131)

Mr. Lee Douglass (Back-Up ORC/Operator)
Mr. Gary Beason (Chief Operator)
Mr. Asa Harris (Operator)
Ms. Suzanne Harris (Lab Analyst)

The City of Kings Mountain is pleased to present the Annual Wastewater Treatment System Report for fiscal year 2021. As a requirement of the City's Collection System Permit Number WQCS00036, issued by the State of North Carolina, the City of Kings Mountain is required to report the System Performance to all of its customers on an annual basis. This report provides information about the performance of the City of Kings Mountain Pilot Creek Wastewater Treatment Facility, in addition to the performance of the City's wastewater collection system for the period of July 01, 2020 through June 30, 2021. All of the information contained in this report is accurate and complete to the best of my knowledge.

-Richelle Meek

Wastewater systems have evolved considerably from early systems in the 1800's. Although the purpose has always been to collect human waste and transport it away from urban areas to protect human health, early systems merely transported the wastewater to a nearby stream, where it was discharged. Today, wastewater systems are not only expected to protect human health, but to protect the environment as well.

In 1972, the U.S. Congress passed landmark legislation entitled the "Clean Water Act" which insured environmental protection as a performance benchmark for all wastewater systems. Long before the passage of this act, and every day since, the protection of public health and the environment have been the operating standard of the City of Kings Mountain's wastewater system.

To learn more about the City's wastewater collection system or the wastewater treatment plant, please contact the City of Kings Mountain, Water Resource Department or visit the City's web site at www.cityofkm.com.

WASTEWATER COLLECTION

The City of Kings Mountain owns and operates its Collection System and Wastewater Treatment Facility.

The City of Kings Mountain serves a population of approximately 11,000 people and 5,300 water Customers which consist of an average of 4,800 Residential and 280 Commercial.

The Collection System operates under the permit #WQCS00036 issued by the State of North Carolina.

On average the City collects 1,648,250 gallons of wastewater (55% Domestic/Commercial and 45% Industrial Process) each day and transports it through 117 miles of gravity collection lines, 37 miles of force mains and 35 pumping stations, and approximately 2,310 covered manholes, to the Pilot Creek Wastewater Treatment Plant.

The City's goal is to have zero spills and overflows from its Collection System. Unfortunately, because pumping stations are mechanical devices and sewer collection systems are subject to clogs from grease, roots, construction debris and litter, all systems are subject to spills and overflows.

WASTEWATER COLLECTION

In order to help prevent spills and overflows, the City uses television equipment to visibly inspect lines and routinely flushes lines to help prevent future problems. Since June 2020, the collection department has cleaned 32 miles of sewer lines and 12,874 feet of lines have been videoed. In addition, a Sewer Overflow Response Plan has been prepared that identifies equipment, supplies and on-call employees that are available to help mitigate spills and procedures to follow should an overflow occur.

The City of Kings Mountain Wastewater Collection System have had 1 spill between July 2020 and June 2021.

PUBLIC NOTICES

Residents can help minimize future overflow events by reporting unauthorized uncovering of sewer manholes, improper disposal of materials into manholes, vandalism of manhole structures, any observed overflow or spills, and strong sewage odor in or around sewer lines to the City of Kings Mountain at 704-734-0333.

The City of Kings Mountain's website contains a flyer for the public stating the harm of pouring oil and grease into drains which lead to the collection system.

Publication:

A copy of this Annual Report may be obtained by contacting the City's Water Resource Department or visiting the Cities website.

WASTEWATER COLLECTIONS DEPARTMENTS IMPROVEMENTS

Slip-lined:

- Battleground Ave. 3,000 feet (est.)
- Groves Street- 1,500 feet (est.)

Coated 8 manholes.

WASTEWATER COLLECTIONS DEPARTMENTS FUTURE IMPROVEMENTS

The goal for this upcoming year is to slip line an additional 5,000 feet of main.

Collection System Monthly Violations

July 2020 – June 2021

July 2020	Total SSO's: None	Total Gallons Spilled: 0
August 2020	Total SSO's: None	Total Gallons Spilled: 0
Sept. 2020	Total SSO's: None	Total Gallons Spilled: 0
Oct. 2020	Total SSO's: None	Total Gallons Spilled: 0
Nov. 2020	Total SSO's: 1	Total Gallons Spilled: 300
Dec. 2020	Total SSO's: None	Total Gallons Spilled: 0
Jan. 2021	Total SSO's: None	Total Gallons Spilled: 0
Feb. 2021	Total SSO's: None	Total Gallons Spilled: 0
March 2021	Total SSO's: None	Total Gallons Spilled: 0
April 2021	Total SSO's: None	Total Gallons Spilled: 0
May 2021	Total SSO's: None	Total Gallons Spilled: 0
June 2021	Total SSO's: None	Total Gallons Spilled: 0

The State of North Carolina regulates the treated wastewater which is discharged into the Buffalo Creek. The (NPDES) Permit Number for this facility is NC0020737. This facility is located off U.S. Highway 74 Bypass, West of Kings Mountain (Cleveland County).

PROCESS DESCRIPTION

On a typical day, approximately 1.8 – million gallons of wastewater are transported to the wastewater treatment plant through the city's sewer lines. The pump stations independently convey wastewater through separate force mains to an elevation where the wastewater flows by gravity to the Wastewater Treatment Plant. These stations are automated with controls for continuous operation if needed.

When the wastewater reaches the plant it is lifted up by (1 of 2) Spiral Screw Pumps, and travels through a Mechanical Bar Screen where inorganic solids are removed. The inorganic material is removed in this early stage in the treatment process so they need not to be re-handled in later processes. Water is drained from the debris and hauled to the landfill.

Following the screening process, the wastewater travels trough a 24 inch Parshall Flume, where a 24 hour

composite sample is collected, flow is recorded and pH is monitored. From here it travels to a diversion/splitter box, where it is conveyed into three (3) oxidation ditches, (aeration basins). Caustic Soda (NaOH) is added to the Influent of the aeration basins, for alkalinity and pH control.

The three (3) aerobic aeration basins are of different volumes based on the sizes. The basins are equipped with floating diffusers. The fine air diffusers provide oxygen, and light mixing for aerobic conditions. Each tank is equipped with a return activated sludge line(s), where sludge is pumped off the bottom of each clarifier, back to the influent of the aeration basin. These aerobic tanks provide an environment for the one-cell organisms to metabolize the organics in the wastewater.

Following the aeration process the wastewater flows into three (3) Secondary Clarifier(s), one (1) clarifier for each aeration basin. In the clarifiers, the microorganisms in the wastewater are allowed to settle out of suspension to the bottom of the tank, where they are pumped back to the head of the aeration basins to mix with the incoming wastewater, so that more organic material can be removed. Periodically, a small portion of this return flow is pumped to the aerobic

holding tank. The supernatant (clear water) is discharged over uniformly positioned V-notch weirs around the circumference of the clarifiers. The wastewater flows continuously to the next treatment process.

The North Carolina Pollutant Discharge Elimination System (NPDES) Permit for the Pollution Control Facility requires that fecal coliform bacteria be limited to a maximum monthly average of 200 colony-forming units per 100 ML of sample and a weekly average of 400 colony-forming units per 100 ML. To meet this limit we inject liquid chlorine gas into (3) Chlorine Contact Chambers. The liquid chlorine gas is mixed with water as it is injected into the chambers. Baffles are installed in the chambers to reduce the velocity of the flow so that there is enough time for the chlorine to kill the disease causing bacteria. This is based on the flow coming into the chamber and is normally around 30 to 45 minutes. The fecal bacteria are reduced significantly through the secondary process by physically removing bacteria such as solids from the wastewater (wasting). Although the fecal coliform bacteria will be reduced, this process is not designed to kill bacteria, and it is known that bacteria are still present in the secondary clarifier effluent. Therefore,

disinfection with chlorine is used to meet the required bacteria kill. The clean effluent flows continuously to the next process.

The North Carolina Pollutant Discharge Elimination System (NPDES) Permit for the Pollution Control Facility requires that the chlorine concentration be limited to a daily maximum of 28 ug/l. To achieve this, we add Sulfur Dioxide to the clean effluent water to remove the chlorine. The Sulfur Dioxide Gas is injected into our combined effluent manhole and provides instinct removal with very little mixing. The Sulfur Dioxide is also used as a gas form that has a dosage rate of 1:1. The effluent continuously flows out into the Buffalo Creek.

Thickened sludge is pumped the bottom of a clarifier into (1 of 2) Aerobic Holding Tanks for disposal. The sludge is pumped to a Belt Filter Press for dewatering. Sludge that is fed to the belt press is conditioned with polymer to facilitate dewatering. From the belt filter press, the dewatered sludge cake is conveyed, via belt conveyor to a sludge hopper, which falls into a dump truck and hauled to the Cleveland County Landfill for final disposal.

VIOLATIONS OR DEFICIENCIES

FOR PILOT CREEK WWTP

JULY 01, 2020 – JUNE 30, 2021

MONTH/YEAR	RESULTS
JULY 2020	NONE
AUGUST 2020	NONE
SEPTEMBER 2020	NONE
OCTOBER 2020	NONE
NOVEMBER 2020	NONE
DECEMBER 2020	NONE
JANUARY 2021	NONE.
FEBRUARY 2021	NONE
MARCH 2021	NONE
APRIL 2021	NONE
MAY 2021	NONE
JUNE 2021	NONE

VIOLATIONS/DEFICIENCIES

FOR

JULY 01, 2020 – JUNE 30, 2021

During this period from July 2020 to June 2021, there were **no violations** reported for Toxicity.

All Notice of violations have been issued to industries exceeding SIU permit limits.

WASTEWATER TREATEMENT PLANT IMPROVEMENTS

The City of Kings Mountain's WWTP has completed or in the process of improvements to its system to include:

- SCADA system at the facility updated
- pH and D.O. monitoring equipment has been installed in all aeration basins.
- New sludge pumps installed for more efficient dewatering.
- #4 clarifier rehab; catwalk, arms, weirs, etc.
- #3 clarifier weirs replaced

NOTIFICATION

This Annual Report is available upon request. If there are any questions concerning this report, please feel free to contact the Supervisor/ORC at the WWTP (Pilot Creek).

CERTIFICATION STATEMENT

We certify that this report is accurate to the best of our knowledge.

Water Resource Director/ Collections ORC

Ricky Duncan

Water Resource Director/Collections ORC

July 20, 2021

WWTP Supervisor/ORC

Richelle Meek

WWTP ORC/Supervisor

July 20, 2021