

CERTIFICATION

CFPUA's Utility Services Division and Environmental Management Department achieved ISO 14001 certification and we are committed to gaining certification for all wastewater divisions. As members of professional associations, we actively participate with the following organizations:

628 & 633 Groundwater Way

Wilmington, NC 28411

- Lower Cape Fear River Program
- NC Water Quality Association
- Cape Fear River Partnership
- Cape Fear River Assembly
- NC WaterWARN
- Water Environment Federation
- American Water Works Association
- NC Pretreatment Consortium
- AWWA—Water Research Foundation
- Environmental Stewardship Initiative- Environmental Partner
- Urban Water Consortium
- Local Emergency Planning Committee within New Hanover
- AWWA/WEA Risk Management Committee
- Water Information Sharing Analysis Center
- Weather Ready Nation Ambassador

Copies of this report are available at the Cape Fear Public Utility Authority Customer Service Center located at 235 Government Center Drive, our satellite payment center located at 305 Chestnut Street or by logging onto our website at www.cfpua.org. Notification of availability is provided through printed notice on water/sewer bills and the Authority's website. This report was completed by staff of the Cape Fear Public Utility Authority and is accurate to the best of our knowledge and belief.

For more detailed information about this report, contact an Operator in Responsible Charge (ORC) from those listed below.

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/customers of the CFPUA system and that those users have been notified of its availability.

Geoffrey D. Cermak, ORC / (910) 332-6736

James A. Loughlin (Northside) Wastewater Treatment Plant
Permit No. NC0023965

Milton S. Vann, ORC / (910) 332-6735 M'Kean Maffitt (Southside) Wastewater Treatment Plant Permit No. NC0023973

Robert Daughtry, ORC/ (910) 332-6737 CFPUA Utilities Collections System Superintendent



ANNUAL WASTEWATER SYSTEM PERFORMANCE REPORT 2016-2017

Stewardship.



Sustainability.



Service.

235 Government Center Drive Wilmington, NC 28403 910-332-6550 www.cfpua.org



MISSION STATEMENT

COLLECTION SYSTEM



It is our mission to provide high-quality service in an environmentally responsible manner while maintaining the lowest practicable cost.

SYSTEM OVERVIEW

The Cape Fear Public Utility Authority's (CFPUA) sewage collection and wastewater treatment facilities provide service to homes, commercial establishments and industries. CFPUA collects wastewater from much of the City of Wilmington and New Hanover County, treats it, and then discharges into the Cape Fear River. CFPUA also treats wastewater from the Town of Wrightsville Beach and portions of Pender County. CFPUA is responsible for the daily operation of treatment & collection facilities and with ensuring compliance with strict environmental standards. This fiscal year, more than \$28 million was spent to maintain, operate and manage CFPUA's sewer, collection and treatment systems.

- 1. James A. Loughlin (Northside Plant) 2311 N. 23rd Street Permitted to treat up to 16 million gallons of wastewater daily
- 2. **M'Kean Maffitt (Southside Plant) -** 3436 River Road Permitted to treat up to 12 millions gallons of wastewater

CFPUA HIGHLIGHT

The Northside Wastewater Treatment Plant recently realized significant energy savings through participation in an energy incentive program offered by Duke Energy Progress (DEP). The program has allowed us to reclassify one of two auxiliary generators from emergency to non-emergency service by modifying our air emissions permit. This, in turn, has allowed the generator to be used for extended service during non-emergency events.

In July 2016, the plant was diverted from utility power to generator power for six hours which resulted in a savings of \$668. In January, the plant was again diverted for 11 hours which achieved a net energy savings of \$6,552. Plans are now underway to modify the air permit for the second generator at Northside in a similar fashion.



COLLECTION SYSTEM ACCOMPLISHMENTS

- CFPUA maintained ISO 3rd Party Certification throughout the Utility Services and Environmental Management Department and achieved the same within the Engineering Department.
- Began the operation of four new pump stations and removed the Laurel Ridge Station from operation and increased sewer capacity within the basin.
- Completed the telemetry upgrade of all older City SCADA units to the new ACE units.
- All flow meters were calibrated and generators were serviced.
- Fabricated systems to improve the efficiency of the pumps to keep FOG and debris in suspension to minimize buildup and blockages at and downstream of these stations.

COLLECTION SYSTEM PERFORMANCE

- Staff completed over 12,000 work orders for preventative and/ or corrective maintenance which are captured within the CMMS /Maximo work order system.
- Our permit requires 10% of the collection system to be cleaned annually. During fiscal year 2016-2017, CFPUA crews cleaned approximately 109 miles of sewer lines which is equal to 12.8% of the system.
- Approximately 65 miles of the gravity system were videoed by closed circuit television to evaluate its condition and to identify the need for further maintenance.
- Emergency repairs in FY 17 exceeded \$900,000 in replacing / rehabilitating approximately 700 linear feet of sewer mains along with associated appurtenances.
- Successfully operated and maintained 145 pump stations, more than 22,000 manholes, and over 1,000 miles of sewer lines.
- CFPUA crews are available 24-hours a day, 365 days per year to prevent and respond to sewer service blockages, overflows, and other emergencies. During the reporting period our crews handled 45 main stops and over 400 sewer service calls.
- Of the Sanitary Sewer Overflows that occurred during fiscal year, 71% were a hundred gallons or less and the largest was 3,000 gallons.

The wastewater treatment facilities and sanitary sewer systems are regularly inspected and evaluated as part of our daily operations. System deficiencies and needs are prioritized based on protecting public health and safety, preserving the environment and managing expenses. With our guiding principles of Stewardship, Sustainability and Service as a back drop, we remain committed to providing reliable wastewater services to our community.

Frank Styers, PE Chief Operations Officer



HOW DO SPILLS HAPPEN

TREATMENT PLANTS





DON'T FLUSH IT!

Wipes, paper towels, and similar items are one cause of sewer spills in Wilmington and New Hanover County. Products labeled as "flushable" might go down the toilet, but they don't break down as they should. Toilet paper and human waste are the only things that should be put in

the toilet. A wipe, for example, won't break down for days or even weeks and can get clogged in household plumbing. When wipes and other flushed materials make it to the neighborhood's sewer collection system, they can back up lines and

pump stations and can cause financially and environmentally costly sewer spills. Customers can help reduce sanitary sewer overflows by putting wipes, cotton balls, Q tips, dental floss, and paper products in the trash rather than the toilet.





CEASE THE GREASE!

Do not pour your cooking grease down the drain! Fats, oils and grease harden and stick when they cool in the pipes. This can cause costly sewer system clogs and overflows into the environment. Dispose of grease by pouring it into a can; when it's full throw it into a

ROOT INVASION

Tree roots can cause sewer overflows. Roots grow through cracks or loose joints in sewer pipe. Once inside, the roots continue to grow, creating a mass. The mass can become matted with grease, paper, wipes, and other solid materials causing a blockage or perhaps an overflow. As roots expand in the sewer pipe, pressure is exerted at their point of entry. If the pipe is not cleared, it may eventually rupture which is costly to fix or replace.

CFPUA's root control program uses both non-toxic chemical control methods and mechanical equipment to remove tree roots that infiltrate the wastewater collection system. During fiscal year 2016-2017, CFPUA treated 11.2 miles of sewer lines for roots.

Sewer spills are messy and can often be avoided. Sewer spills, overflows, and other water/wastewater emergencies can be reported anytime by calling (910) 332-6565.

TREATMENT PLANT ACCOMPLISHMENTS

- Northside Wastewater Treatment Plant was issued a permit to operate a bulk reclaimed water distribution program.
- Northside Wastewater Treatment Plant replaced two odor control system chemical storage tanks.
- Southside Wastewater Treatment Plant completed replacement of its No. 4 digester heat exchanger and sludge recirculation pump.
- Staff at the two treatment plants are investigating the possible uses of excess digester gas.
- Northside Wastewater Treatment Plant completed the annual retention basin cleaning, and repaired the concrete on secondary clarifiers numbers three and four.
- Northside Wastewater Treatment Plant participated in several of Duke Energy Progress' energy incentive programs.
 Southside Wastewater Treatment Plant is also investigating potential participation (see page 2).

TREATMENT PLANT PERFORMANCE

CFPUA's treatment plants operate under National Pollutant Discharge Elimination System permits, more commonly known as NPDES permits. These are complex permits that include monitoring requirements and effluent discharge limits, some of which vary from season to season. Limits are set by the NC Department of Environmental Quality in an effort to protect the receiving streams. Permits are available at our treatment plants and can be reviewed upon request. In compliance with these permits and to assist with operational needs, our laboratory conducted over

27,000 lab analyses during the fiscal year.



During this report period, CFPUA treated about 6.27 billion gallons of wastewater and returned it to the Cape Fear River. In addition, 29,214 cubic yards of treatment plant residuals were Class-B processed and successfully land applied. We are proud of the facilities' outstanding performance, made possible by the dedicated efforts of the professionals who operate, maintain, and conduct tests

daily. Comparing all numerical limits within the NPDES permits with all corresponding measurements, CFPUA achieved **99.8% compliance** overall.

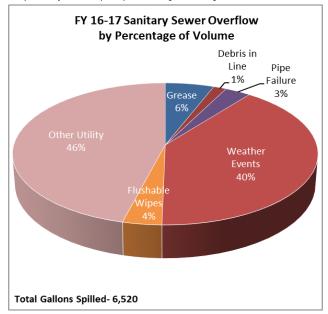
Annual Performance Summary Report July 1, 2016 through June 30, 2017

LOCATION/NPDES PERMIT	TYPE OF VIOLATIONS OR DEFICIENCY	DATE	PARAMETER	CORRECTIVE ACTION
James A. Loughlin (Northside) WWTP / NC0023965	Monthly	07/31/2016	BOD	N/A
	Weekly	08/20/2016	BOD	
	Monthly	08/31/2016	BOD	
M'Kean Maffitt (Southside) WWTP / NC0023973	None	N/A	N/A	N/A
Collection System / WQCS00012	None	N/A	N/A	N/A

System Overflows July 1, 2016 through June 30, 2017

MONTH OF OVERFLOW	INCIDENT START DATE	VOLUME (GALLONS)	WATERSHED	LOCATION	PROBABLE CAUSE
July 2016	7/11/17	50	Barnards Creek	Manhole near 325 Long Meadows Dr. in Rivers Edge	Grease
September 2016	9/3/16	800	Burnt Mill Creek	Burnt Bill Creek Outfall between Pender Ave and Crecy Ave	Weather (Tropical Storm Hermine)
October 2016	10/9/16	50	Cape Fear River	Sewer Clean out at Pump Station # 148 at Bridge Water Bluff	Pump Station Equipment Failure (Hurricane Matthew)
	10/9/16	1,750	Barnards Creek	Pump Station 36 Independence Blvd	Pump Station Equipment Failure (Hurricane Matthew)
December 2016	12/11/16	50	Cape Fear River	Wellington Ave and Wonder	Grease
	12/28/16	80	Burnt Mill Creek	29th Street and Princess Place Drive	Grease
February 2017	2/9/17	50	Greenfield Lake	Manhole at 11th and Greenfield St	Grease
	2/14/17	3,000	Prince George Creek	12" FM at Hickory and Blossom Streets in Castle Hayne	Other Utility
	2/16/17	100	Greenfield Lake	Damaged Service at 2023 Savannah Crt	Pipe Failure
April 2017	4/1/17	100	Unknown	Intersection of Market and Kenwood	Debris
	4/6/17	50	Unknown	Clean-out at 1311 Grace Street due to blockage on main	Grease
May 2017	5/8/17	25	Silver Stream Branch	Medical Center Drive and Yaupon Street	Flushable Wipes
	5/10/17	215	Silver Stream Branch	1099 Medical Center Drive	Flushable Wipes
June 2017	6/1/17	100	Greenfield Lake	1600 Blk of South 11th Street	Grease
	6/6/17	100	Cape Fear River	Blockage at 4th and Dock Street	Pipe Failure

The above system overflows were reported per NC DEQ regulations and guidance.



HELP PREVENT SPILLS

You can prevent sewer spills!

NO grease or oil in your sink! Grease will build up and clog pipes.

Do not flush wipes!
"Flushable" wipes
are NOT actually
flushable. Wipes
clog pipes!

Keep trees and plants away from sewer lines! Roots grow quickly and cause blockages.

