



CITY OF DURHAM, NORTH CAROLINA ANNUAL SANITARY SEWER SYSTEM REPORT FY 2015-2016

Welcome to the City's annual summary of the performance of Durham's sewer system. In addition to informing our customers about the sewer system, this report also meets the requirements of House Bill 1160 passed by the North Carolina General Assembly in 1999. The bill requires owners and/or operators of wastewater collection and treatment systems to provide an annual report to users or customers.

Each year's report summarizes the treatment works' and collection system's performance over a 12-month period. This report is available to all customers and is submitted to the North Carolina Department of Environmental Quality.

About the Department

All water and sewer operational units are a part of the Department of Water Management. The Water and Sewer Maintenance Division is responsible for the operations and maintenance of the collection system. Sometimes referred to as the sanitary sewer system, this is the series of pipes that transport wastewater to the treatment facilities operated by the Wastewater divisions. Wastewater includes all used domestic and process water from any drain leaving a residence, business, industry or other facility and entering the collection system.

Wastewater travels through underground sewer pipes to the treatment plant, where it is treated by physical, biological, and chemical processes before it is returned to the environment via receiving streams.

The City is committed to protecting the environment and the health of downstream users by ensuring that Durham's wastewater discharges meet all applicable standards. Because of this high level of treatment, water downstream of a water reclamation facility may be cleaner than the water upstream of the facility.

This report describes the collection



North Durham Water Reclamation Facility. The City operates two WRFs.

system operation, the wastewater treatment process, and the City's grease reduction initiative. As with any large municipal system, occasional blockages cause backups and overflows. Included in this report is a table listing the spills and overflows that occurred this year and the steps taken to mitigate the impact and prevent recurrences. ALL incidents were reported to the state within 24 hours of their occurrence. By policy, news releases are distributed to the public by the end of the next business day after an occurrence.

The Annual Sanitary Sewer System Report is available at City Hall, Water Management and Public Works facilities and on the City's website: www.durhamnc.gov. Additional copies of the report may be requested by calling Water Management at 919-560-4381.

Down the Drain! Where Does It Go?

When waste exits a home, business or industry via piping, the wastewater enters the collection system. These pipes carry wastewater away from

homes, businesses, schools, hospitals, and industries.

The waste flows by gravity or may flow to lift stations located in strategic areas throughout the service area. Pumps in the lift stations do just that — they "lift" the wastewater to a higher elevation where it again flows by gravity, ultimately to one of the City's two water reclamation facilities. Sixty-five pump stations for the collection system are monitored and maintained by Plant Engineering and Maintenance division staff.

Durham sits on a ridgeline that generally runs along Pettigrew Street and the railroad tracks. Wastewater on the north side of the ridgeline flows to the North Durham Water Reclamation Facility and after treatment is ultimately discharged into the Neuse River Basin. The South Durham Water Reclamation Facility receives wastewater that flows south of the ridgeline. After processing, the discharge flows into the Cape Fear Basin.

Durham's Sewer System Facilities			
	Collection System	Water Reclamation Facility	
Name of Facility	Water and Sewer Operations Center	North Durham Water Reclamation Facility	South Durham Water Reclamation Facility
Permit Number	WQCS00005	NCOO23841	NCOO47597
Address	1110 Martin Luther King Jr. Pkwy.	1900 East Club Blvd.	6605 Farrington Rd.
Operator in Responsible Charge (ORC)	Andy Brogden	John Dodson	Charles Cocker
Phone Number	919-560-4344	919-560-4384	919-560-4386

Durham County owns and operates a third wastewater treatment plant that serves most of Research Triangle Park, Parkwood, and a few other southern Durham neighborhoods. The Durham County sewer system report is posted at www.dconc.gov.

Collection System Performance

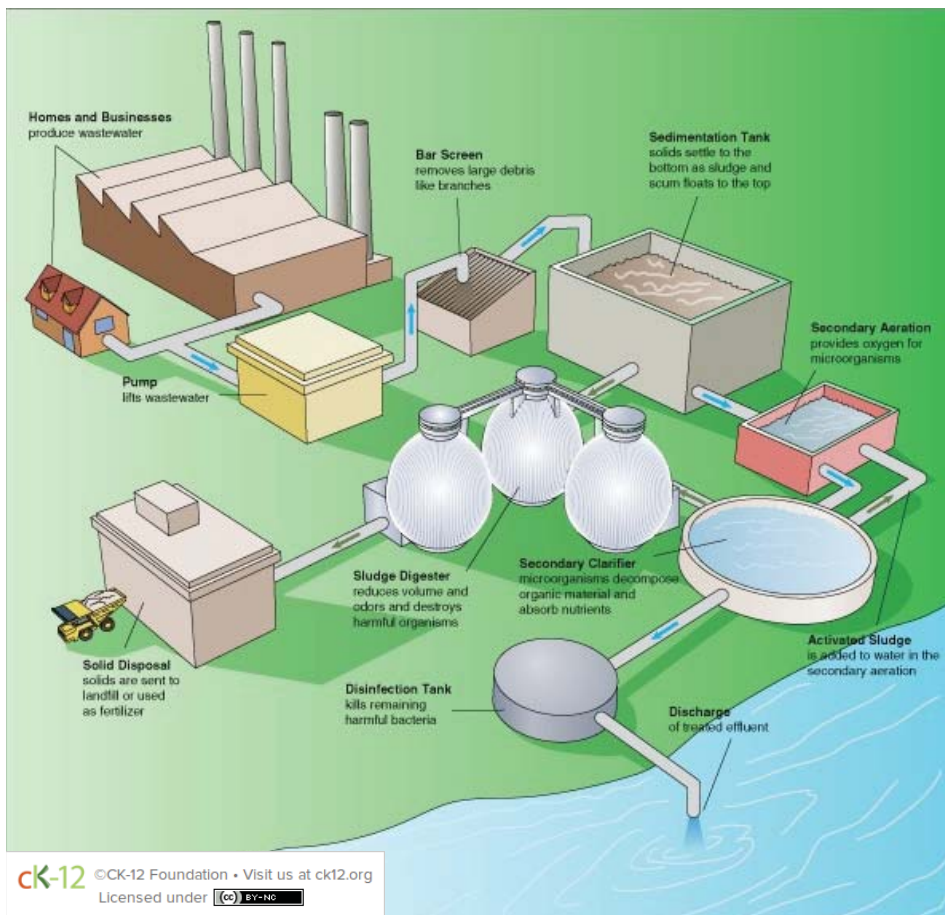
City departments use Geographical Information System (GIS) mapping of the collection system which provides an accurate method of tracking both operations and maintenance activities. Approximately

1,076 miles of the collection system are represented by GIS mapping.

During this reporting period, Water and Sewer Maintenance crews and City contractors conducted numerous maintenance activities to clean and rehabilitate the collection system. These maintenance activities include cleaning lateral services, flushing, inspection (CCTV), mains replaced, and easements mowed. Maintenance crews repaired/replaced 66 sewer services and responded to 742 blockages. Improper disposal of

grease continues to be a major contributor of blockages in the sewer system.

City staff will continue to focus resources on repeat blockages and promote a maintenance campaign to alleviate the environmental and financial impacts of this problem. One major element of the program has been an extensive cleaning of problem areas of the system. The second major element of the program is the education, prevention and enforcement effort coordinated by the Department's Industrial Pretreatment/FOG Program. Funding of infrastructure rehabilitation is a high priority of the department's Capital Improvement Program (CIP).



Maintenance Activities	
Activity	Linear Feet
Lateral Service	27,840
Flushing	571,663
Inspections (CCTV)	295,655
Mains Replaced	1,450
Easements Mowed	615,120
Cured in Place Pipe	620

Water Reclamation Facility Plant Performance

The City's two wastewater treatment facilities — North Durham and South Durham Water Reclamation facilities (WRFs) — have the combined capacity to treat (or reclaim) 40 million gallons per day (MGD) of wastewater. During this reporting period, the average daily flow treated by the two plants was 17.65 MGD.

North Durham WRF had no permit violations during the reporting

This illustration shows the typical wastewater treatment process. The City's treatment facilities at North and South Durham have similar layouts.



North Durham Water Reclamation Facility Superintendent John Dodson collects a sample from a secondary clarification tank.

period. The supplemental carbon and alum feed system is online. The addition of this chemical feed facility will assure ongoing compliance with Stage 1 of the Falls Lake Rules for nutrient reduction, which went into effect January 1, 2016.

Currently, the plant is on track to discharge between 10,000-15,000 fewer pounds of nitrogen than last year. Additionally, North Durham WRF now has full standby power. This ensures that the plant will remain 100% operational during interruptions in utility service. Current construction projects at North Durham include upgrades of obsolete equipment and

equipment control panels. Also, construction of additional clarifiers and new screening facilities will begin in the spring of 2017.

South Durham WRF treated a total of 3.41 billion gallons, or 9.32 MGD. The plant met all permit requirements during this period.

The two-year Chemical Systems and Nutrient Related Improvement construction project was completed in the spring of 2016. Improvements to the aeration basins, a new side stream treatment process, and a carbon feed facility were highlights

of the project. These additions and improvements will enhance the plant's ability to remove nitrogen, while also enhancing quality of the plant effluent for compliance with Jordan Lake nutrient reduction goals.

City and Hazen & Sawyer staffs have been working on the next upgrades for the plant. The process is at 90% completion.

Industrial Waste Control/FOG Program

Industrial Waste Control (IWC) staff survey facilities discharging into the sewer system and issue permits to facilities in certain categories, determined either by the type of business activity they conduct or the type(s) of wastewater discharged from their facility. Permit limits are established based on the ability of the receiving treatment plant — either the North Durham WRF or South Durham WRF — to assimilate, treat and remove substances from the waste. Currently, staff monitors 20 industrial users and hundreds of commercial establishments with high-strength discharges.

To help in the effort to reduce grease blockages in the sewer system, the IWC staff coordinates the education and inspection portion of the grease reduction initiative.

FOG (fats, oils and grease) may enter the sewer system from either household drains or through poorly maintained grease traps in restaurants and other food service establishments.

To meet the 250 mg/L limit for FOG,



One of the City's 65 pump stations. WRFs treat approximately 18 million gallons of wastewater every day at our plants in North & South Durham.



Safely dispose of grease by pouring it directly into a Fat Trapper and taking it to the Waste Disposal and Recycling Center on 2115 E. Club Blvd. Fat Trappers are available to residents at no cost.

food preparation and/or processing facilities must clean their removal systems (grease traps) on a monthly basis. More frequent cleaning will be required if a facility discharges more than 250 mg/L of FOG. Less frequent cleaning may be permitted if the facility can demonstrate that the 250 mg/L limit can be met with an alternate cleaning schedule. Cleaning and removal records must be maintained for three years and available for inspection on request.

While restaurants and other food service establishments typically use commercial processors to collect and remove grease from their grease traps, it is not practical for homeowners and residential customers to contract such services. For this reason, the City has provided — at no extra cost to residents — a collection container for used cooking oil at the Waste Disposal and Recycling Center at 2115 East Club Boulevard.

Residents are encouraged to implement measures designed to ensure that FOG is not introduced into the sanitary sewer. To assist

DO	DON'T
<ul style="list-style-type: none"> • Collect FOG in containers and dispose of it properly. • Remove FOG from kitchen utensils, equipment, and food prep areas with scraper/towels/broom. • Keep FOG out of wash water. • Place food scraps in a waste container for solid wastes. 	<ul style="list-style-type: none"> • Pour FOG down the drain. • Wash fryers/griddles, pots/pans, and plates/utensils until FOG is removed. • Use hot water to rinse FOG off of surfaces. • Use the drain as a means to dispose of food scraps.

Remember: the drain is not a trash can!

customers with this effort, Water Management provides small residential grease collection units called Fat Trappers. Customers can call 560-4386 and ask for IWC staff for more information on obtaining a complementary Fat Trapper.

The Toilet is NOT a Trash Can! Sanitary sewers are designed to handle human waste, toilet tissue, and approved industrial commercial wastes. In addition to oil and grease, nonwoven materials such as disinfectant wipes and diapers can cause problems. Although products may be labeled flushable, that does

not mean they will easily biodegrade within the sewer system. These items can not only cause sewer overflows but can also damage the pumps and other infrastructure.

Flushing inappropriate items down the toilet invites clogs and blockages. *Do your part: throw trash items in the garbage, not down the toilet.*

Visit www.DurhamSavesWater.org for more information.

Notice Under the Americans With Disabilities Act

The City of Durham will not discriminate against qualified individuals with disabilities on the basis of disability. Anyone who requires an auxiliary aid or service for effective communications, or assistance to participate in a City program, service, or activity, should contact the office of Stacey Poston, Acting ADA Coordinator, Voice: 919-560-4197 x21254, TTY: 919-560-4809; Stacey.Poston@durhamnc.gov, as soon as possible but no later than 48 hours before the scheduled event.

Spills and Overflows From July 2015 to June 2016

Location	Date	Volume Discharged (gallons)	Cause	Remedy
Case St. & Hull St.	7/20/2015	180	Roots	Cleaned, jetted, installed pump
Hull St. Easements	9/3/2015	14,400	Rags	Cleaned, jetted, seeded, installed pumps, flushed creek
205 Weaver St.	9/19/2015	90	Roots	Cleaned, jetted, cut roots, installed pumps, CCTV
Sedwick Rd. @ New Hall Rd.	10/4/2015	36,000	Pipe failure	Cleaned, repaired pipe, seeded, installed pumps, flushed creek
1606 University Ln.	12/14/2015	700	Roots	Cleaned, jetted, seeded, installed pumps, CCTV
112 Old Maple Ln.	12/27/2015	1,800	Roots	Cleaned, jetted, dammed creek, installed pumps
Maplewood Cemetery @ Duke University Rd.	1/14/2016	1,800	Grease	Cleaned, jetted, seeded, dammed/flushed creek, CCTV
1400 Morreene Rd.	1/28/2016	4,500	Roots/Debris in line	Cleaned, jetted, installed pump
1411 North Hyde Park	2/4/2016	4,320	Grease	Cleaned, jetted, installed pump, flushed creek
800 Westgate Dr.	2/26/2016	540	Debris in line	Cleaned, jetted, installed pump, flushed creek, CCTV
2503 Ashe St.	3/7/2016	1,800	Roots	Cleaned, jetted, installed pump, flushed creek
Sherwood Park @ Fiske St.	3/9/2016	10,080	Grease	Cleaned, jetted, installed pump, flushed creek, seeded
Burton Rd. @ Dinsmore Ln.	3/14/2016	14,400	Debris in line	Cleaned, jetted, dammed creek, installed pump, flushed creek
117 Southerland St.	3/24/2016	450	Debris in line	Cleaned, jetted, flushed creek, installed pump
1918 East Main St.	4/21/2016	7,200	Pipe failure	Replaced pipe, CCTV
300 Morgan St.	5/4/2016	2,400	Grease	Cleaned, jetted, installed pump, flushed creek
1113 Anderson St.	5/24/2016	2,880	Debris in line	Cleaned, jetted, installed pump, flushed creek

Spills and Overflows From July 2015 to June 2016 (continued)

Location	Date	Volume Discharged (gallons)	Cause	Remedy
Keystone Place	6/14/2016	21,600	Vandalism	Cleaned, jetted, installed pump, flushed creek
223 Crestview Dr.	6/25/2016	720	Vandalism	Cleaned, secured manhole, seeded, installed pump, flushed creek, CCTV
Total Number of Spills = 19 Total Volume = 125,860 gallons				

