



The City of *Durham* North Carolina

Annual Sanitary Sewer System Report
FY 2011 – 2012

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 provides a 12-month summary of the performance of the treatment works and the collection system. This report is available to all customers, and is submitted to the North Carolina Department of Environment and Natural Resources.

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. At the plant, wastewater 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 discharge meets all permit limits and other 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 system operation, the wastewater treatment process and the City's Fats, Oils and Grease (FOG) 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 to inform the public are distributed by the end of the next business day after the 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.

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

Down the Drain! Where does it go?

When wastes exit 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-two pump stations for the collection system are monitored and maintained by Plant 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 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.co.durham.nc.us.

Collection System Performance

City departments continue to use the Geographical Information System (GIS) mapping of the collection system which provides an accurate method of tracking both operations and maintenance activities. Approximately 1100 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 lateral service, flushing, inspection (TV’d), mains replaced, and easements mowed. Maintenance crews repair/replace sewer services and respond to blockages.

Improper disposal of grease continues to be the number one cause 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 Program (see page 4). Funding of infrastructure rehabilitation is a high priority of the department’s Capitol Improvement Projects (CIP).

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. The North Durham WRF completed the reporting time frame without any violations of NPDES permit limits or other regulations. However, in March of this year, the South Durham WRF failed its quarterly Whole Effluent Toxicity (WET) test, resulting in the issuance of a Notice of Violation. Subsequent testing conducted in April and May demonstrated a return to “pass” status for the test. The WET test measures the ability of microscopic water fleas (*Ceriodaphnia dubia*) to both survive and reproduce in the treatment plant's effluent (discharge). For both North and South Durham, the plant effluent makes up 99% of the stream flow at the discharge point. To date, staff has not been able to determine why this “fail” occurred after 20 years of consistent compliance with the WET testing requirements, but remain vigilant to prevent future occurrences.

In late 2011, a sixth aeration tank and new ultraviolet disinfection system were placed online at the North Durham WRF to provide increased reliability for the plant process and enhanced disinfection of the plant's effluent. Other facility improvements nearing completion include the replacement of the existing bar screens and addition of a grit washer. This equipment allows staff to produce a drier, less odorous material that can be disposed of more economically. Nutrient analyzer has been installed at the aeration basins to enhance process optimization opportunities.

This equipment upgrade has created a safer environment and saved considerable operations time. The covers keep sunlight from encouraging the growth of algae on the weirs; no algae growth equals no time-consuming cleaning. Also, reduced algae growth equals reduced energy costs through reduced filter backwash times.

To prepare for nutrient reduction requirements of the Falls and Jordan Lakes rules, Water Management staff completed a master planning process to identify construction and operations needs for both water reclamation facilities. Phased upgrades will provide a higher level of treatment and improve process reliability.



North Durham WRF on E. Club Blvd.



South Durham WRF on Farrington Road

The City's certified Water and Wastewater Laboratory is co-located with the South Durham WRF Operations Division at the Farrington Road site. An expansion and upgrade to the Control Building is scheduled to begin soon. Included in the project are office improvements for the Industrial Waste

Control, Operations and Laboratory staff, in addition to laboratory space upgrades and construction of a training room adequately sized to support the current staffing level while allowing for growth.

Industrial Pretreatment Program/Grease Reduction Initiative

Industrial Pretreatment Program 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 Water Reclamation Facility or the South Durham Water Reclamation Facility – to assimilate, treat and remove substances from the waste. Currently, staff monitors thirteen significant 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 Industrial Pretreatment Program staff coordinates the education and inspection portion of the grease reduction initiative. Grease enters the sewer system from both household drains as well as through poorly maintained grease traps in restaurants and other food service establishments. To meet the 250 mg/L limit for FOG (fats, oils and grease), 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



Grease can be poured directly into a Fat Trapper with a sealable liner.

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 citizens – a collection container for used cooking oil at the Waste Disposal and Recycling Center at 2115 East Club Boulevard.

Residents are strongly encouraged to implement measures designed to insure that FOG is not introduced to the sanitary sewer. To further assist customers with this effort, the Industrial Pretreatment Program distributes small residential grease collection units called Fat Trappers. Customers can call 560-4386 and ask for Pretreatment staff for more information on how to obtain a Fat Trapper.

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.