DURHAM COUNTY

Triangle Wastewater Treatment Plant

PERFORMANCE ANNUAL REPORT

JULY 2024—JUNE 2025

Triangle Wastewater Treatment Plant
5926 NC Hwy. 55 E.
Durham, NC 27713
(919) 560-9033

Permits:

Wastewater Treatment Plant: NC0026051

Collection System: WQCS00038

Stormwater: NCG110054

Reclaimed Water: WQ0032821

Owned and Operated by:

Durham County Engineering & Environmental Services Utilities Division

Contact:
Stephanie Brixey
Deputy Director

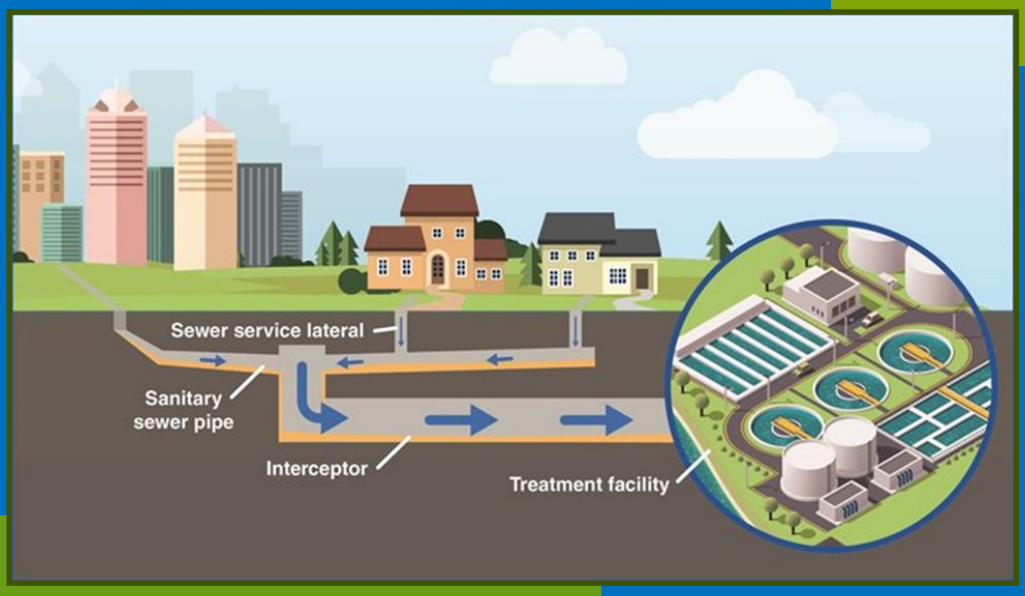
WHAT IS PUBLICLY OWNED TREATMENT WORKS?

Publicly owned treatment works collect wastewater from residential homes, commercial and industrial facilities, and transport the waste through a series of pipes known as the collection system to the wastewater treatment plant. POTWs are owned and operated by a government agency.

Durham County Government owns and operates the Triangle Wastewater Treatment Plant (TWWTP). Through the treatment system and processes the TWWTP removes harmful organisms and other contaminants from the sewage where it is safely discharged into Northeast Creek. Additionally, the TWWTP also recycles treated wastewater, known as reclaimed water, that contributes to water conservation efforts.

Collection systems safely transport wastewater away from homes and businesses to treatment facilities, which helps prevent the spread of waterborne diseases caused from contact with untreated wastewater.

POTWs and maintained collection systems are critical infrastructure, protecting public health and the environment. They aid in the prevention of diseases, environmental pollution, protect water quality, water sources and aquatic ecosystems, as well as aid in preventing harm to other wildlife. They can increase property values and are essential for the growth and development of urban areas.



Collection System

Durham County owns and maintains a wastewater collection system which includes 112 miles of gravity sewer, 10 miles of pressurized force mains, and 13 lift stations.

In the past 12 months Durham County had one reportable sewer spill.

- On June 15, 2025, a spill estimated at 20,447 gallons of wastewater occurred because of a blockage in the line from grease and flushable wipes.

Durham County Utilities prides itself on providing a high level of customer service. All commercial, industrial, and residential customers' questions and concerns are responded to in a timely manner. If you have a question or concern regarding the collection system, services, or any item covered in this report, please call (919) 560-9033 or send an e-mail to utilities@dconc.gov.

Reclaimed Water

Triangle Wastewater Treatment Plant (TWWTP) operates a reclaimed water system and is permitted to generate 5.6 million gallons per day (MGD). Some of the uses of this water include: landscape irrigation, industrial cooling, industrial process water, and sewer cleaning. Approximately 260 million gallons of reclaimed water was distributed to customers during the fiscal year.

The reclaimed water annual average data is reflected in the effluent annual average data except for the following:

- Fecal Coliform: <1 cfu/100 ml
- Turbidity: 0.61 NTU
- Total Residual Chlorine: 3.2 mg/l

On January 16, 2025, a spill estimated at 10,000 gallons of reclaimed water occurred due to a 2" valve failure.

Projects & Rehabilitation

Throughout the last year, the County has continued its efforts to rehabilitate aging collection system infrastructure and increase sanitary sewer capacity to facilitate economic growth in our service area.

⇒ Fairfield Lift Station rehabilitated.
⇒ Scott King Lift Station rehabilitated.
⇒ One manhole was rehabilitated.
⇒ Replaced pressure relief valves on the reclaimed system.
⇒ Reclaimed water storage tank and hydro-pneumatic tank were cleaned and inspected.

Reclaimed Water Storage Tank

Rehabilitated Manhole

Fairfield Lift Station Pump

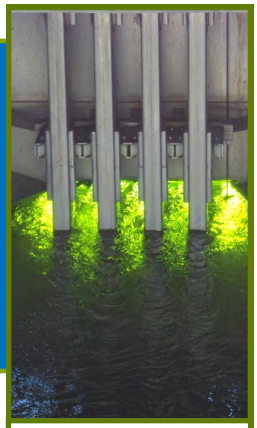
Scott King Lift Station Can

Fairfield Lift Station Well

Biosolids System

TWWTP generates biological residuals (approximately 7,187 wet tons per year), which are dewatered by centrifuges. The dewatered cake (approximately 1,983 dry tons per year) is transported to McGill Environmental Systems, where it undergoes further biological treatment to produce a Class A biosolid. These biosolids are beneficially used as soil amendments in commercial landscaping and agricultural activities.

In the past year, the TWWTP treated 1.7 billion gallons of wastewater.



Ultraviolet (UV) System

TWWTP VIOLATIONS

Notice of Violation (NOV-2024-LV-0800) for a BOD weekly and monthly average limit violation.

Notice of Deficiency (NOD-2024-PC-0187) for bypassing a pipe on-site while cleaning out a pipe to the grit classifier.

Notice of Violation (NOV-2025-DV-0047) for a reclaimed water spill on-site.

Treatment System & Process

The **Influent Pump Station (IPS)** is used to pump raw wastewater (sewage) to the treatment process to be biologically treated. The IPS is sized for 12 million gallons per day average flow.

The **Fine Screens** are used to remove fine materials from the wastewater such as grit, sand, egg shells, etc. All of the organic materials are washed off and used in the biological treatment process.

The **Five Stage Biological Nutrient System** is where all biological treatment takes place, such as removing ammonia through nitrification and denitrification processes as well as the removal of phosphorus.

The **Chemical Polishing** process removes any phosphorus that is remaining after the biological treatment process. Methanol is used in this polishing process to add additional BOD to support the denitrification treatment process.

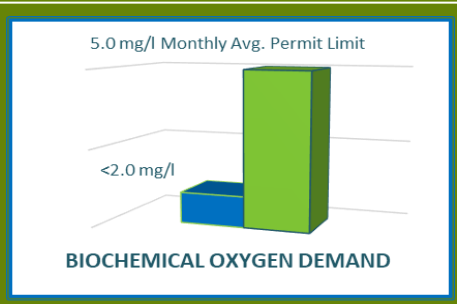
The **Clarifiers** are where the biomass is separated from the treated wastewater and then is returned to the BNR for further treatment.

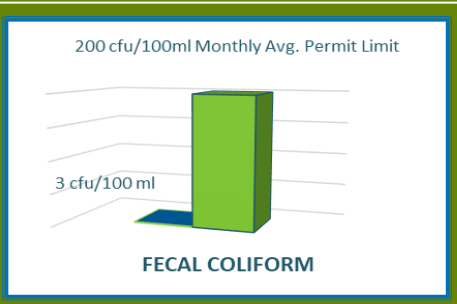
The **Tertiary Filters** are next in the clarification process which removes all remaining unsettled biomass in the treatment process.

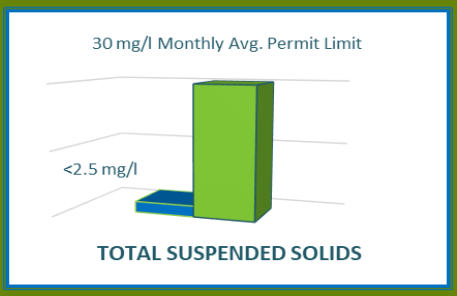
The **Ultraviolet Disinfection** treatment process is used to remove all disease causing bacteria without creating harmful by-products.

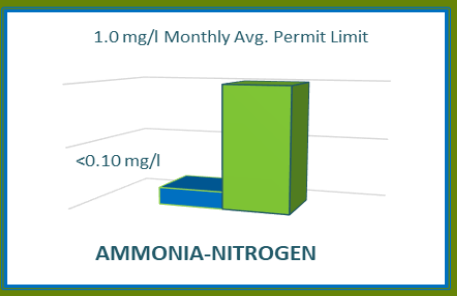
The **Reaeration** stage of the treatment process adds dissolved oxygen to the treated wastewater to meet required permit limits before it is discharged to Northeast Creek.

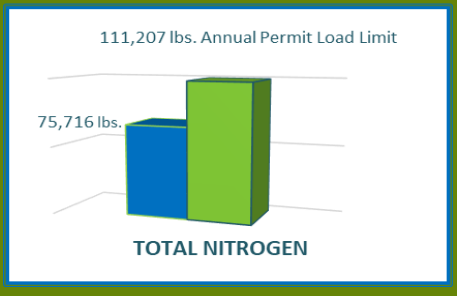
Effluent Annual Average Data

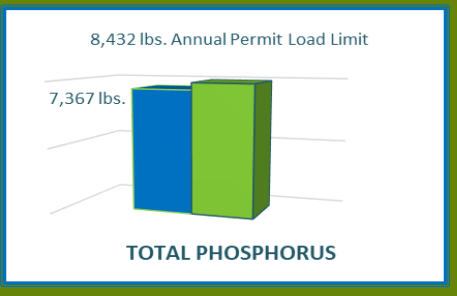












Clarifier

Lab

Triangle Wastewater Treatment Plant's (TWWTP) laboratory staff collects and analyzes wastewater samples as required by the NPDES permit and the reclaimed water permit. Currently, the laboratory is certified by the Division of Water Resources Laboratory Certification Branch to analyze ammonia, biochemical oxygen demand, total residual chlorine, conductivity, dissolved oxygen, fecal coliform, pH, temperature, and total suspended solids. Staff determines the age and health of the activated sludge and identifies microorganisms, such as amoebae, bacteria, ciliates, flagellates, nematodes, rotifiers, and water bears.

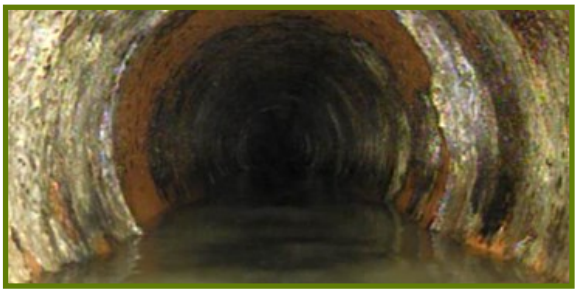
Fats, Rags, Oil & Grease

Disposing of Fats, Rags, Oils, and Grease (FROG) down the drain or toilets causes build up inside pipes and could result in a complete blockage. Clogged pipes overflow in your home and in the environment resulting in costly maintenance and repairs to residents.

Pipe with Congealed F.O.G.

Industrial Pretreatment Program

TWWTP implements an Industrial Pretreatment Program (IPP) to control pollutants which may cause pass through or interfere with the treatment plant's processes, which may contaminate sewage sludge, or potentially be hazardous to worker's health and safety. Currently, there are sixty-four permitted industries that are regularly inspected and monitored to ensure their discharges meet specific permit limits. Sixteen of these industries are Significant Industrial Users (SIUs). Biosafety Laboratories in our service area have also been identified and nine are currently permitted. Several of the Industrial Pretreatment Permit holders are required to certify that their facility has followed biosafety procedures consistent with the fifth edition of the Biosafety in Microbiological and Biomedical Laboratories, US DHHS -PHS, -CDC and -NIH for the deactivation of Biosafety Level 1, 2, 3 or 4 materials prior to discharge to the sewer system.



CCTV view of grease lined sewer pipe

August 31, 2025

Notification:

This Performance Annual Report covering July 1, 2024 through June 30, 2025, was forwarded to the NC Department of Environmental Quality. Public Notice of the report was advertised in the Durham Herald Sun newspaper and is available for review at the following locations:

Clerk to the Board
200 East Main St.

Main Library
300 N. Roxboro St.

South Regional Library
4505 S. Alston Ave.

Website
www.dconc.gov/utilities

Certification:

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 system and that those users have been notified of its availability.

Stephanie Brixey
Deputy Director

FATS are solid at room temperature. Examples include butter, shortening, margarine, peanut butter, meat trimmings, uncooked poultry skin, and dairy products; chesses, milk, cream, sour cream, and ice cream.
RAGS consist of paper towels, disposable wipes, tissues, napkins, and other textiles.
OILS are liquid at room temperature and include all cooking oils and salad dressings.
GREASE turns to liquid during cooking, but solidifies when cooled such as gravy, mayonnaise, melted meat fat, bacon and sausage, boiled poultry skin, and salad dressing.