The Durham County Triangle Wastewater Treatment Plant’s (TWWTP) effluent discharges into Northeast Creek. Northeast Creek flows into the New Hope Arm portion of Jordan Lake near Highway 751 and has an average hydraulic retention time of 418 days before discharging over the dam seventeen miles downstream. Jordan Lake is a water supply source for several communities, a recreational area for fishing and swimming, and a habitat for many aquatic animals. TWWTP staff take pride in their work to ensure that our effluent discharge is of high quality to protect Northeast Creek.
Durham County owns and maintains a wastewater collection system which includes 95 miles of gravity sewer, 9 miles of pressurized force mains, and 13 pump stations.

In the past 12 months Durham County had three reportable spills.

- On April 25, 2017, a spill estimated at 70 gallons of wastewater occurred resulting from root intrusion into a sewer lateral line.
- On May 25, 2017, an estimated 750 gallons spilled into a stormwater retention pond that discharges to an unnamed tributary of Stirrup Iron Creek due to debris in the line.
- On June 13, 2017, a spill estimated at 1,101,450 gallons of wastewater, occurred due to a collapsed section of sewer line.

The Durham County Utilities Division prides itself on providing a high level of customer service. All commercial 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.

The Triangle Wastewater Treatment Plant (TWWTP) operates a reuse water system. Some of the uses of this water include: landscape irrigation, industrial cooling, industrial process water and sewer cleaning. Approximately 99.2 million gallons of Reuse water was distributed during the fiscal year.

The TWWTP generates waste biological residuals (approximately 600 million wet pounds per year), which are dewatered by centrifuges. The dewatered cake (approximately 14.5 million wet pounds per year) is transported to McGill’s Composting, 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.
The TWWTP was compliant in all sampling events for the past year, while treating 1.84 billion gallons of wastewater.

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 organic 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 take 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 returned to the BNR for further treatment.

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

The Ultraviolet Disinfection treatment process is used to remove all disease causing bacteria without 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.

### Treatment System & Process

<table>
<thead>
<tr>
<th>Effluent Annual Average Data</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BIOCHEMICAL OXYGEN DEMAND</strong></td>
</tr>
<tr>
<td>Monthly Avg. Permit Limit: 5.0 mg/l</td>
</tr>
<tr>
<td>Monthly Avg. Limit: &lt;2.0 mg/l</td>
</tr>
<tr>
<td><strong>TOTAL SUSPENDED SOLIDS</strong></td>
</tr>
<tr>
<td>Monthly Avg. Permit Limit: 30 mg/l</td>
</tr>
<tr>
<td>Monthly Avg. Limit: &lt;2.5 mg/l</td>
</tr>
<tr>
<td><strong>AMMONIA-NITROGEN</strong></td>
</tr>
<tr>
<td>Monthly Avg. Permit Limit: 1.0 mg/l</td>
</tr>
<tr>
<td>Monthly Avg. Limit: &lt;0.1 mg/l</td>
</tr>
<tr>
<td><strong>TOTAL NITROGEN</strong></td>
</tr>
<tr>
<td>Annual Permit Limit Load Limit: 89,702 lbs.</td>
</tr>
<tr>
<td><strong>TOTAL PHOSPHORUS</strong></td>
</tr>
<tr>
<td>Annual Permit Limit Load Limit: 4,451 lbs.</td>
</tr>
</tbody>
</table>
**EPA Issues a Final Rule Governing Amalgam Separators**

EPA promulgated pretreatment standards to reduce mercury discharges from dental offices into the POTW under regulation 40 CFR Part 441 effective July 14, 2017. Any dental offices that use or remove amalgam must operate and maintain an amalgam separator. If an existing dental office currently has an amalgam separator, it must be replaced with an ISO 11143 compliant amalgam separator after its lifetime has ended but no later than June 14, 2027. New dental offices must comply with the final rule immediately.

Dental offices will not be considered Significant or Categorical Industrial Users. They will be required to submit a one-time compliance report to the POTW that will include information about the facility, the operation of the facility, and a certification statement signed by an authorized representative that the dental office meets the requirements of the final rule. Additional information can be found at: https://www.epa.gov/eg/dental-effluent-guidelines.

---

**Lab & Pretreatment Program**

The Triangle Wastewater Treatment Plant’s (TWWTP) laboratory staff collects and analyzes wastewater samples as required by the NPDES permit and the reclaim 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.

The 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 workers’ health and safety. Currently, there are forty-three permitted industries that are regularly inspected and monitored to ensure their discharges meet specific permit limits. Thirteen of these industries are Significant Industrial Users (SIUs). Biosafety Laboratories in our service area have also been identified. Currently, thirteen of these labs are 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.

---

**August 31, 2017**

Notification:

This Performance Annual Report covering July 1, 2016 through June 30, 2017, 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

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
Acting Deputy Director