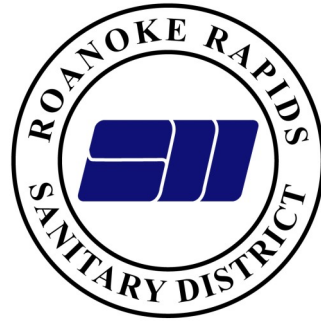


# ROANOKE RAPIDS SANITARY DISTRICT

1000 Jackson St., Roanoke Rapids, NC 27870

Wastewater Treatment Plant 536-4884  
 Collection System 537-9747  
 Administrative Office 537-9137  
**Pay-By-Phone (888) 626-9056**



Board of Commissioners:  
 P. W. Heaton, Chairman  
 J. D. Bailey, Secretary  
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Administrative Officers:  
 Dan Brown, P.E., CEO  
 Calvin Potter, Finance Officer  
 Gregg Camp, ORC, WWTP  
 Gregg Wilson, Supervisor, Collection Sys.

PERMITS:  
 NPDES - NC0024201  
 LAND APPLICATION - WQ0001989  
 LAB - NC70  
 COLLECTION SYSTEM - WQCS00027

2012 **Wastewater System Report** www.rrsd.org

## MISSION STATEMENT

To affordably provide the highest quality water services; safely collect wastewater and return clean water to the environment while promoting public trust and partnerships to the benefit of our associates and satisfaction of our customers.

The Roanoke River Wastewater Treatment Plant (WWTP) operated by the Roanoke Rapids Sanitary District (RRSD) treats wastewater from Roanoke Rapids, Gaston, Halifax County and Northampton County. Wastewater from industry, businesses, and homes enters collection system pipes and flows to the WWTP. Harmful pollutants, as determined by the North Carolina Division of Water Quality (DWQ), are removed by the treatment process. The public health and environment is protected through the discharge of high quality wastewater to the Roanoke River. Cost effective treatment is performed to maintain reasonable rates for customers of the RRSD.

DWQ has determined wastewater includes conventional and non-conventional pollutants. Conventional pollutants contain suspended solids from fecal matter or food. Non-conventional pollutants contain dissolved metals like copper and zinc. Pollutants can come from organic sources such as plant or animal origin or inorganic sources such as mineral origin. All pollutants combined and entering the treatment facility are called plant loading. Plant loading comes from two sources; controllable (industrial) and non-controllable (residential). Residential wastewater must meet RRSD's general use ordinance. It prohibits such items as petroleum products, toxic substances and cooking grease.

**ROANOKE RIVER WWTP FUN FACTS**

Location: 135 Aqueduct Road; Weldon, NC 27890  
 DWQ Plant Classification: IV (Largest State Classification)  
 Hours of Operation: 24 hours a day, 365 days a year  
 (Note: DWQ requires a licensed operator onsite at all times)  
 Year Constructed: 1963.  
 Treatment & Flow Capacity Expansion: 1983  
 Original Design Capacity: 5.5 Million Gallons per Day (MGD)  
 Current Design Capacity: 8.34 MGD  
 Design Peak Flow: 12.5 MGD  
 Treatment Type: Secondary Biological  
 2012 Average Daily Flow (ADF): 3.5 MGD  
 2012 ADF Range: 2.6 MGD to 6.7 MGD  
 2012 Minimum Flow: 1.8 ; 2012 Peak Flow: 14.7 MGD  
 NPDES Permit Effective Period: 2007 – 2012  
 Number of Employees: 13 (including eight Licensed Operators)  
 Departments: Operations, Certified Laboratory, and Maintenance  
 Year Clean Water Act Passed: 1970 (EPA established)

.....  
 • **EN ESPANOL** •  
 • El informe contiene informacion importante sobre la •  
 • calidad del agua residual en su comunidad. Traduz- •  
 • calo o hable con alguien que lo entienda bien. •  
 • ..... •

**Permit Violations** - In 2012 there were no permit limit violations. All TSS, CBOD, Fecal coliform, pH, Residual Chlorine & WET parameters were met (See NPDES Permit Limits Table). The last violation was in January 2011.

**Bypasses** - All bypasses no matter the volume must be reported, by phone, to DWQ within 24 hours of first knowledge. A written report must follow within 5 days with corrections. In 2012 there were three bypasses. The first on 8-19 was 63,000 gallons. The other two were 8-25 with 2,458,000 gallons. Both occurred from heavy rainfall. On 8-25 nearly five inches of rain in twelve hours fell.

**Bypass Control** - Wastewater that comes into the plant from storms faster than can be treated is stored in two tanks capable of holding approximately 750,000 gallons. These two tanks are also used when maintenance on plant equipment requires draining and holding wastewater. In 2012 approximately 4,355,000 gallons were stored and returned to the plant from various high flow events and maintenance projects. At an ADF of 3,500,000 gallons in 2012 this is over a whole days worth of flow prevented from bypassing. Since use of these tanks began in 2000 45,376,879 gallons of wastewater has been prevented from bypassing. At the 2012 ADF of 3,500,000 this would be 14.2 days of flow. To prevent bypasses during a power outage, there is a diesel generator. In 2012 there were five power outages. The total time of power outage for all five events was eight and one half hours. A total of 836,084 gallons were prevented from bypassing without normal power supply.

### NPDES Permit Limits

Effluent Parameter	Weekly	Monthly	2012 Actual
TSS	45 mg/l	30 mg/l	16.3 mg/l
CBOD	37.5mg/l	25 mg/l	6.3 mg/l
Fecal Coliform	400 colonies	200 colonies	17 colonies

ph = continuous monitoring must be between 6.0 and 9.0 units.  
 Residual Chlorine = continuous monitoring must be less than 50 ppb.  
 WET = quarterly testing must be Pass.  
 Note: - Permit requirements for TSS & CBOD removal are 85%.  
 - Also test only/no limit parameters include nitrogen, phosphorus, dissolved oxygen & metals such as chromium & mercury.



Debris from I/I as a result of Hurricane Andrea



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- **ONLINE BILL PAY - www.rrsd.org**
- **PAY-BY-PHONE - (888) 626-9056**



DEFINITIONS

- I/I - Inflow of rain water or water from swollen creeks. Infiltration of ground water into old deteriorated collection system pipes. Excess I/I is expensive to treat at the WWTP and uses valuable capacity reserved for future economic development. *It is a violation of the Sewer Use Ordinance to connect roof drains or basement water pumps to the wastewater collection system.*
- NPDES - DWQ issues RRSd a National Pollutant Discharge Elimination System permit, which is reviewed and approved by the Environmental Protection Agency (EPA). During the next five years DWQ will do extensive testing not only on the waters of the Roanoke River but also its aquatic life to validate the limits that must be met in the NPDES permit.
- PPA - Priority Pollutant Analysis tests for dozens of wastewater contaminants. Conventional (oil & grease), Metals (lead) Volatile organic (benzene) Acid-extractable (phenol) & Base neutral (fluorene). EPA has determined these to be harmful to the WWTP. Elevated levels of the constituents can cause permit violations. They must be removed.
- CBOD - Carbonaceous Biochemical Oxygen Demand represents the Biological Oxygen Demand (BOD) from organic compounds and oxidation of inorganic compounds like ferrous iron and sulfide. Any BOD from nitrifying organisms, which consume oxygen in the nitrification process of converting ammonia to nitrate, is removed by adding a nitrification inhibitor. Effluent is tested for CBOD daily and the results are reported to DWQ monthly. Over 97% of CBOD in the wastewater is removed.

- TSS - Total Suspended Solids include all particles suspended in water which will not pass through a filter. Suspended solids are present in residential wastewater and many types of industrial wastewater. Effluent is tested for TSS daily and the results reported to DWQ monthly. Over 94% of the TSS in the wastewater is removed.
- Effluent - Treated wastewater discharge into a receiving stream which is the Roanoke River.
- Bypass - Incomplete treatment of wastewater into the Roanoke River. Considered as a spill.
- WET - Whole Effluent Toxicity refers to the total toxic effect to aquatic organisms from all pollutants contained in a facility's wastewater (effluent). RRSd uses the "Pass or Fail" Chronic Toxicity test procedure and it is one way EPA implements the Clean Water Act's prohibition of the discharge of toxic pollutants in toxic amounts. Quarterly WET tests measure our wastewater's effect on the water flea's (*Ceriodaphnia Dubia*) ability to survive, grow and reproduce.
- mg/l - A milligram per liter of water is equivalent to 1 ppm (part-per-million) because a liter of water weighs 1,000 grams and a milligram is 1 one thousandth of a gram. 1 ppm = 1 drop of gas in an auto gas tank or one minute in two years.\*
- ppb - A part-per-billion is equivalent to 1 microgram (ug/l) per liter of water. 1 ppb = one second of time in 32 years or about one drop of water in a swimming pool.\*

\*Analogies are used to help people understand the magnitude of a concentration; not to minimize the risk of a concentration-its effect on human health or the environment

WASTEWATER PROGRAMS AND SERVICES

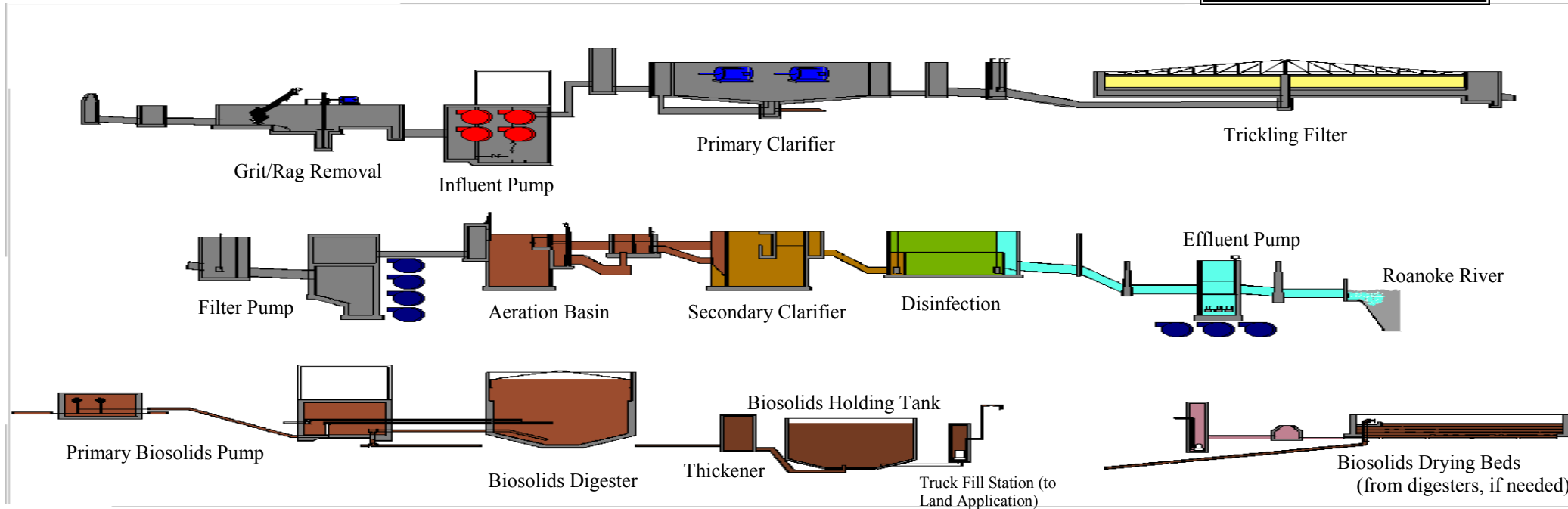
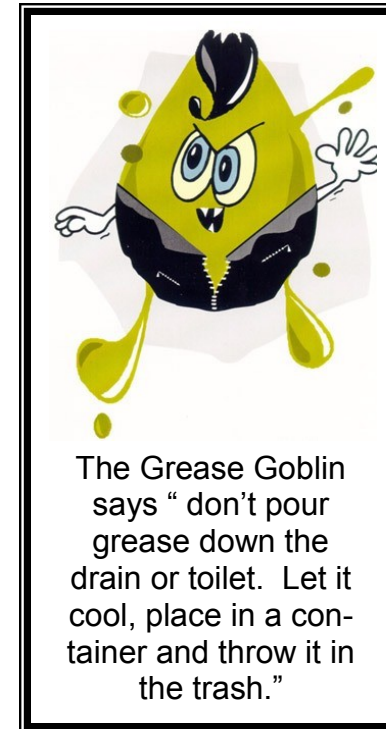
**Collection System** - The collection system consists of six pump stations and 130 miles of sewer pipes connecting homes and businesses to the WWTP. Main sizes are 8 inches in subdivisions and 12 to 30 inches along the river and creeks. The oldest pipes have been in the ground and in use since before 1930. During 2012 over 16.35 miles of sewer lines were TV inspected and cleaned; 20.5 miles (approximately 74.5 acres) of outfalls and cross country lines were cut and cleared by RRSd. In 2012 we had 9 reportable Sanitary Sewer Overflows (SSO) at six locations; totaling 127,301 gallons. In October of 2012, RRSd rehabbed a 372 ft. section of 18" clay pipe of the Roanoke Outfall to eliminate I&I from several points in that line. The District replaced Manhole 180 in Hwy 48 with a new manhole. At this time, the District also rerouted the force main from 48 Lift Station to the

new manhole. RRSd secured a planning grant from The Rural Center in 2012 to further evaluate the Belmont area via smoke testing, manhole evaluations and storm water dye testing to source I&I, which has been the root cause of many reportable spills over the past few years.

**Pretreatment Program** - The pretreatment program monitors local industries that discharge a controllable load. Overloading may interfere with the WWTP or cause pass through of the plant of a pollutant. The plant capacity to treat pollutant loading from controllable and uncontrollable sources is known from plant design capacity; verified by the results of certified lab testing. Available pollutant loading may be allocated to industry or left in reserve for future growth. Just as DWQ issues RRSd a permit to limit our discharge to the Roanoke River; RRSd issues industry permits to limit discharge to the WWTP.

**FOG Program** - Fats, Oils and Grease (FOG) are a controllable load discharged by restaurants or homeowners. The program is regulated by Ordinance as a condition of the Collection System Permit issued under a DWQ administrative order to reduce SSOs ( Sanitary System Overflows). One full time employee is responsible for public education, enforcement and inspection of grease traps. Placing ads in newspapers and distributing brochures to restaurants help educate the public about both the monetary and environmental benefit that the elimination of FOG has on the District. In addition to homeowner plumbing bills and collection system costs, FOG loading interferes with WWTP processes.

**Bio-Solids Program** - Removal of TSS and CBOD by the wastewater treatment process produces solids, which must be treated using anaerobic digestion and lime stabilization to reduce harmful pathogens. The anaerobic digestion process heats primary solids to 95° F with mixing in the absence of oxygen. Lime stabilization raises the pH of secondary solids to 12.0 for a specified period of time. Thousands of tests are performed annually on residual solids to ensure regulated levels of treatment are met. In 2012, approximately 3,379,000 gallons of solids were stabilized. Once stabilized, solids can be land applied for its nutrient value, moisture content, and soil amendment properties. DWQ issued RRSd a 5-year Land Application permit in 2007 that authorizes the District to safely manage the application of bio-solids. The District has over 3,000 acres permitted with local area farmers for this program. There are periods when crop rotations or weather conditions prevent land applying bio-solids. In 2004, the District purchased 150 acres of pasture land for bio-solids application. In 2012 471,000 gallons were applied to the site. During 2009 an agreement with the Soil Conservation Service was entered. The plan was to develop a model site and enhance wildlife attraction. Trees were cut , areas fenced off and buffer zones created.



RRSD Wastewater Treatment Plant Profile

**PAY YOUR WATER BILL ONLINE** **START TODAY**

See the "Getting Started" instructions @ [www.rrsd.org](http://www.rrsd.org)