

WASTEWATER PROGRAMS AND SERVICES

"Rtgytgcvgp"Rtqitc o/"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.

"HQI"Rtqitc o/"Hats, Qils and Irease (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.

"Dkq/Uqnkfu"Rtqitc o/"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 201, approximately 3,015,600 gallons of solids were stabilized. Once stabilized, solids can be land applied for its nutrient value, moisture content, and soil amendment properties. DW5 issued RRSd a 5 year permit.

"Ncpf" Crrnkcvkqp permit in 2007 that authorizes the District to safely manage the application of bio-solids. The District has over 3,100 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 pasture land for bio-solids application. In 201, gallons were applied to the site. The site is developed as a model site with the help of the Soil Conservation Service. Trees have been cut, areas fenced off and buffer zones created.



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 - DW5 issues RRSd a **P**ational **R**ollutant **F**ischarge **G**limination **U**ystem permit, which is reviewed and approved by the Environmental Protection Agency (EPA). During the next five years DW5 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 - **P**riority **R**ollutant **C**alysis tests for dozens of wastewater contaminants. Conventional (oil & grease), Metals (lead) Volatile organic (benzene) Acid-extractible (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 - **C**arbonaceous **D**iochemical **O**xygen **D**emand 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 DW5 monthly. Over 97% of CBOD in the wastewater is removed.

- TSS - **T**otal **U**suspended **U**olids 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 - **W**hole **G**ffluent **V**oxicity 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 **m**illigram 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 **p**art-per-**b**illion 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