



2014 City of Havelock Sewer Collection and Wastewater Treatment Facilities Report

*NPDES Permit Numbers NC0021253, NC0078131, WQCS00104

WASTE WATER TREATMENT OVERVIEW

After you wash dishes, take a shower, brush your teeth, or wash a load of clothes, the used water travels through a system of pipes to Havelock's wastewater treatment plant where impurities are removed before returning the water to the environment. The City of Havelock has some of the most stringent wastewater discharge limits in the state. During 2014; 99.6% of the Biological Oxygen Demand (BOD is a measure of the strength of the wastewater), was removed from the wastewater. The treatment process removed 99.8% of the suspended solids, approximately 89.5% of total nitrogen, and 86.4% of phosphorous. The one test that exceeded permit limits was a quarterly toxicity test in April 2014. That test only indicates a possible toxin may be present. Follow up testing was performed and no toxins were found. The following quarterly toxicity tests were successful. All other daily and monthly sample readings were within permitted limits. The following chart (Wastewater Treatment Plant Performance) indicates the high quality of the water returned to Slocum Creek during calendar year 2014.

Wastewater Treatment Plant Performance

Parameter Monitored	*NPDES Permit Limit Summer	NPDES Permit Limit Winter	Average for 2014 Calendar Year
Biochemical oxygen demand (BOD)	5.0 **ppm	10.0 **ppm	0.82 ppm
Total Suspended Solids (TSS)	30.0 **ppm	30.0 **ppm	0.37 **ppm
Total Phosphorous	0.7 **ppm	1.0 **ppm	0.59 **ppm
Total Nitrogen (annual limit) Pounds (lbs)	21,400 lbs. (Per calendar year)		18,862.37 TOTAL lbs.
Total Toxicity	Pass or Fail (quarterly sampling)		(1 st Quarter- Pass) (2 nd Quarter-Fail) (3 rd Quarter-Pass) (4 th Quarter-Pass)

*National Pollutant Discharge Elimination System (NPDES)

**parts per million (ppm)

HOW HAVELOCK'S WASTEWATER IS TREATED

Once at the treatment plant, the wastewater enters a bar screen and grit removal system where rags, sticks, large inorganic particles, and grit are removed to prevent interference and excessive wear on other process equipment. The wastewater is then pumped up to the complete mix aeration basins for BOD (biological oxygen demand) removal, and then flows to three second-stage aeration basins where nitrification (conversion of ammonia to nitrate nitrogen) occurs. Next, the treated wastewater flows into two final clarifiers where biosolids settle to the bottom and the clear treated water flows off the top of the clarifiers and travels to a set of three denitrification filters, which provide tertiary treatment (effluent polishing). As the water travels through the filters, any remaining fine particles are removed and the nitrate nitrogen is converted to nitrogen gas. The clean water or effluent from the denitrification filters subsequently flows to the ultraviolet disinfection facility for the destruction of harmful microorganisms and then into a final reaeration basin for oxygenation. The flow is next measured and sampled by an automatic sampler which collects the treated water 24 hours a day, at a rate proportional to the flow, as the clean water returns to the environment entering the east prong of Slocum Creek.

Waste Water Treatment Plant Upgrades

The Waste Water Treatment Plant completed construction in 2014 replacing aging infrastructure and increasing the plant's capacity. The upgrades consisted of replacing the following components:

- The Ultraviolet Disinfection System
- The Influent Mechanical Bar Screen
- Addition of an Effluent Pump Station
- Several underground piping upgrades

The upgrades are currently complete except for the effluent line in the Neuse River which is scheduled to be completed in February 2015.

Collections System Performance

The City's wastewater collection system consists of approximately 73 miles of sewer lines, some as deep as 25 feet below ground. The system collects used water from the homes and businesses throughout the City and transports it by gravity lines, pump stations, and force mains to the wastewater treatment plant on Jackson Drive. The collection system is maintained around the clock and the lift stations are equipped with automatic dialers that alert staff 24 hours a day of a malfunction. There were no reportable spills for the calendar year 2014.

Water Plant Backwash Water Treatment System

The backwash system's purpose is to collect the water used in the cleaning of the water filters and softeners at the Water Treatment Plant. The system allows particulate material to settle before the backwash flow exits the plant.

The Water Treatment Plant was unable to meet the new state monthly permit limit of 30 ppm (parts per million) for total suspended residuals, with a sample reading of 37 ppm reported for December 2014. The City has secured an engineering service to start investigating any needed upgrades to meet the new permit limits. **Note that this exceedance is totally separate from the drinking water distribution system and has no bearing on drinking water quality.**

WHAT CAN I DO TO HELP HAVELOCK TO CONTINUE TO IMPROVE WATER QUALITY?

- *Limit your personal use of pesticides and fertilizers. Use and dispose of toxic chemicals properly. Take used motor oil to a recycling center.*
- *To prevent sanitary sewer overflows, dispose of cooking oils and grease as a solid waste in your home garbage container. Never pour oil or grease into sink drains, garbage disposals, or toilets.*
- *Repair broken clean-outs and replace broken or missing clean-out caps on your household sewer line as they occur. Make sure that none of your household gutters are transporting rainwater into the sewer system. Treating rainwater adds to every customer's cost and can lead to fines for the City.*
- *Please do not flush disposable wipes, diapers or any paper products other than toilet paper down the drain.*
- *Use water wisely. Repair leaks in household plumbing promptly. Irrigate your lawn or garden only in the early morning or late evening hours. Do not let water continue to run while shaving or brushing your teeth.*

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Copies of this report are available at the City of Havelock Water Billing Office and online at www.havelocknc.us