

# 2013 City of Havelock Sewer Collection and Wastewater Treatment Facilities Report

\*NPDES Permit Numbers NC0021253, NC0078131

## 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 2013; 99.3% 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 and approximately 89.3% of nitrogen and 86.5% of phosphorous was removed. There are no reportable violations in the waste water treatment process for 2013. The following chart (Wastewater Treatment Plant Performance) indicates the high quality of the water returned to Slocum Creek during calendar year 2013.

## Wastewater Treatment Plant Performance

Parameter Monitored	*NPDES Permit Limit Summer	NPDES Permit Limit Winter	Average for 2013 Calendar Year
Biochemical oxygen demand (BOD)	5.0 **ppm	10.0 **ppm	1.67**ppm
Total Suspended Solids (TSS)	30.0 **ppm	30.0 **ppm	0.47 **ppm
Total Phosphorous	0.7 **ppm	1.0 **ppm	0.60**ppm
Total Nitrogen (annual limit) Pounds (lbs)	21,400 lbs. (Per calendar year)		TOTAL 16,443 lbs.

\*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 then is 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 was under construction in 2013 to replace aging infrastructure and increase the plant's capacity. The upgrades consist of replacing following components:

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

The upgrades will reduce maintenance cost of the older equipment that has reached their usable life cycles. The upgrades will also allow the City to fully utilize the rated flow of the current Waste Water Treatment Plant. The current rated flow is 1.9 MGD and the current upgrades that started in 2013 will allow us to safely treat 2.25 Million Gallons per Day. This utilizes the current facilities to their fully rated flows, at the lowest capital cost possible. The planned improvements will also ensure the final water produced will continue to meet the highest standards set forth by the City of Havelock and the North Carolina Division of Water Quality. The construction is scheduled to be complete in April of 2014.

## **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 waste 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 pump stations are equipped with automatic dialers that alert staff 24 hours a day of any malfunction or high level. The systems that are in place do prevent spills; however Sanitary System Overflows or (SSOs) although rare do still occur. The City had a total of 2 reportable spills and two minor non reportable spills. The total of the SSOs for the 2013 year was 5500 gallons spilled. This is a total of .001% of the total 502 million gallons of water that flowed through the collection system in 2013. The following table is a report of each reportable SSO for the calendar year 2013.

<b>Date</b>	<b>Violation</b>	<b>Summary</b>	<b>Environmental Impact</b>	<b>Corrective Action</b>
11/14/2013	Sanitary Sewer Overflow of 4500 gallons	A small sewer service or lateral line failed due to material failure causing a blockage downstream of the initial break at 510 Fontana Blvd.	No impact noted	The spill was immediately contained by City Personnel minimizing the impact of the spill. The area was cleaned using the Cities vacuum truck. City personnel found roots in the main downstream of the broken lateral. Roots were removed from the line and the line was inspected to ensure it was clear.
7/30/13	Sanitary Sewer Overflow of 300 gallons	The manhole at the corner of Webb Blvd. and E. Main street had an SSO due to heavy rains, in excess of 4 inches of in a two hour period. This caused a surcharge in the system due to inflow and infiltration of the sewer lines.	No impact noted.	The initial spill was vacuumed up and the area treated with hydrated lime. City crews took video of lines in the area and performed dye testing. Results of the area investigation revealed found broken cleanouts in low areas that were taking in storm water. Crews followed up and ensured that all noted cleanouts were repaired.

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

- *Always dispose of all fertilizers and pesticides per the manufacturers recommendations. Also, 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 for sewer service.*
- *Dispose of solid wastes such as disposable diapers, paper towels, and personal hygiene products in the garbage and not 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 upon request and at;***

| [www.havelocknc.us](http://www.havelocknc.us) ***on the public services department site.***