



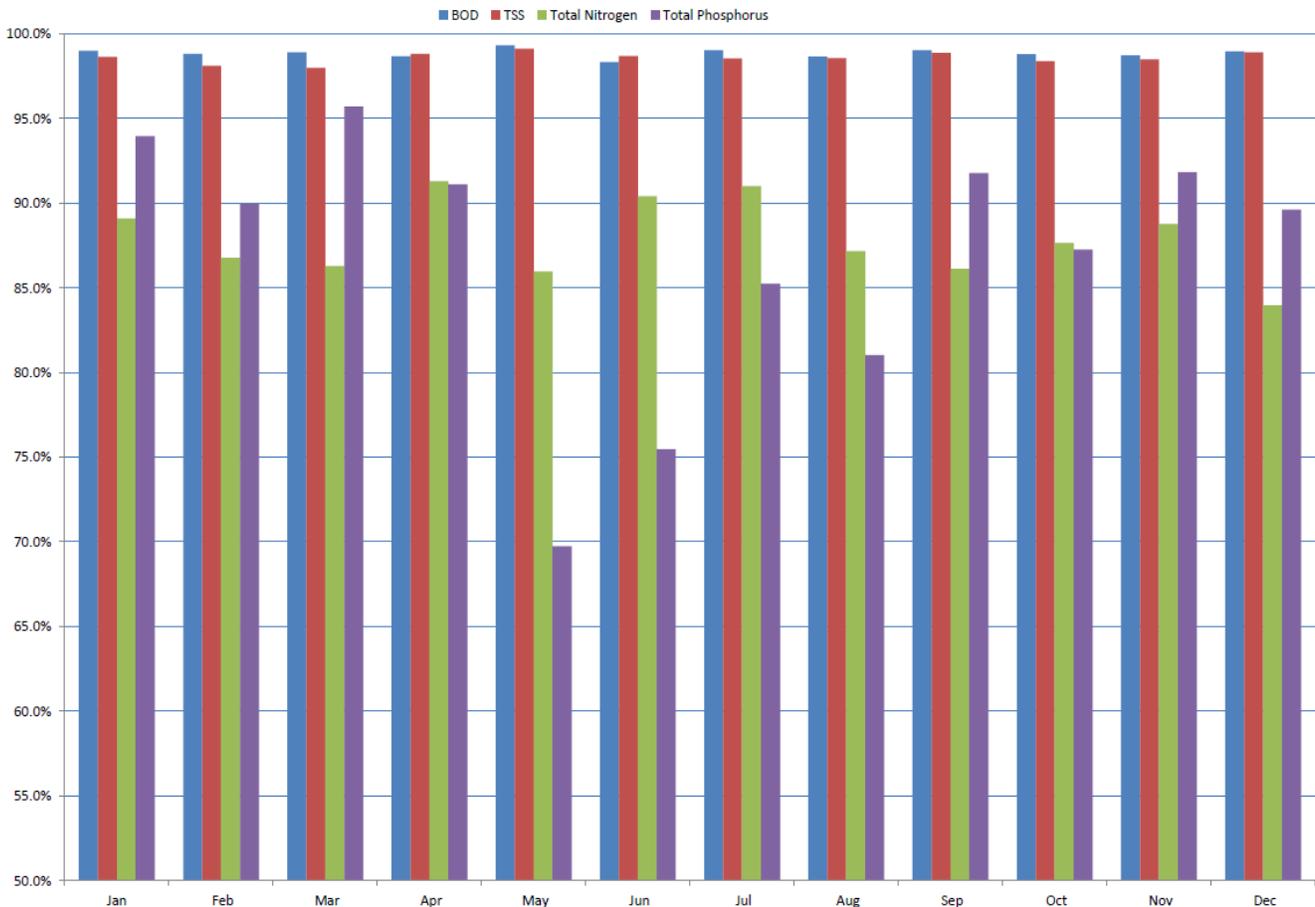
# 2015 City of Havelock Wastewater Treatment and Sewer Collection Facilities Report

\*NPDES Permit Numbers NC0021253, NC0078131, WQCS00104

## WASTE WATER TREATMENT OVERVIEW

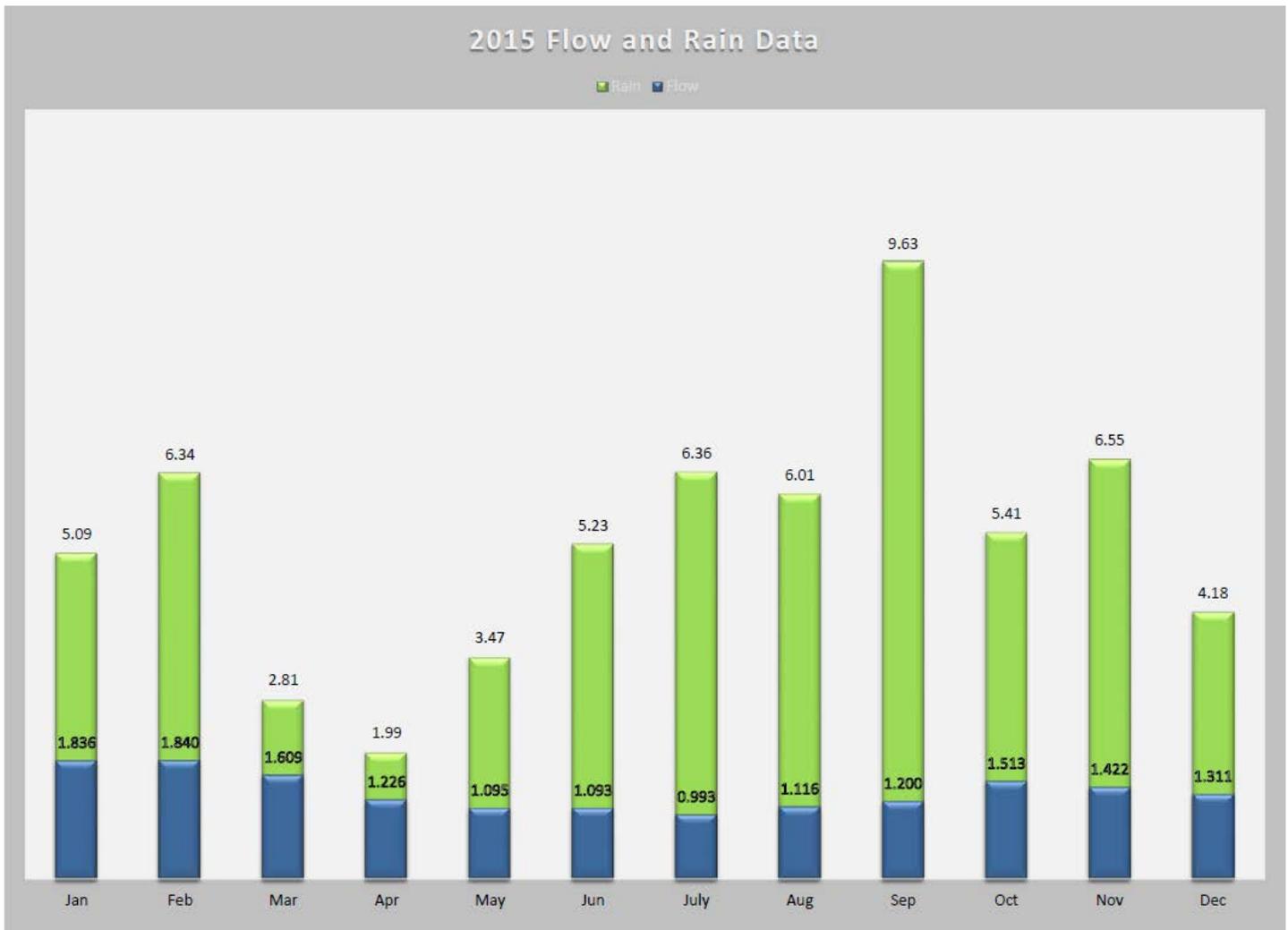
After you wash dishes, take a shower, brush your teeth, or wash a load of clothes, the used water travels through a system of pipes to Havelock’s wastewater treatment plant where impurities are removed before returning the water to the environment. The City of Havelock has some of the most stringent wastewater discharge limits in the state. During 2015; 98.9% of the Biological Oxygen Demand was removed from the wastewater. The treatment process also removed 98.6% of the suspended solids, 87.9% of total nitrogen, and 86.9% of total phosphorous.

Percent Removals 2015  
Havelock WWTP



85% required by permit **BOD** and **TSS**

All other weekly and monthly parameter readings were within permitted limits. The treatment plant had one reportable spill on September 28<sup>th</sup> of 1500 gallons. The chart below show the monthly average flow and rain fall in inches for 2015.



### 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. In March of 2015 the final part of the upgrade was completed which consisted of a 24-inch effluent force main and cascade aerator for discharge into the Neuse River. Flow from the plant is calculated by a magnetic flow meter and effluent samples are taken per the cities NPDES permit. The following chart (Wastewater Treatment Plant Performance) indicates the high quality of the water returned to The Neuse River during calendar year 2015.

**Wastewater Treatment Plant Performance**

<i>Parameter Monitored</i>	<i>*NPDES Permit Limit Summer</i>	<i>*NPDES Permit Limit Winter</i>	<i>Average for 2014 Calendar Year</i>
<i>Biochemical oxygen demand (BOD)</i>	<i>5.0 mg/L</i>	<i>10.0 mg/L</i>	<i>&lt;2.0 mg/L</i>
<i>Total Suspended Solids (TSS)</i>	<i>30.0 mg/L</i>	<i>30.0 mg/L</i>	<i>&lt;2.5 mg/L</i>
<i>Total Phosphorous</i>	<i>2.0 mg/L Quarterly Average</i>		<i>0.68 mg/L</i>
<i>Total Nitrogen lbs./Year (Annual Limit)</i>	<i>21,400 lbs. (Per calendar year)</i>		<i>17,076.29 TOTAL lbs.</i>
<i>Total Toxicity</i>	<i>Pass or Fail (quarterly sampling)</i>		<i>(1<sup>st</sup> Quarter- Pass) (2<sup>nd</sup> Quarter-Pass) (3<sup>rd</sup> Quarter-Pass) (4<sup>th</sup> Quarter-Pass)</i>

\*National Pollutant Discharge Elimination System (NPDES)

**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 was one reportable spill totaling 3500 gallons for the calendar year of 2015.

**Water Plant Backwash Water Treatment System**

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 30.5 ppm reported for December 2015. The City has secured a \$2.5M loan to fund a new WTP Backwash Solids Handling Project which is a physical addition to the existing plant to allow the plant to meet the new limits for total suspended residuals. The design phase is scheduled to be complete in September 2016. The project is being designed by Rivers & Associates. The current Schedule of Milestones is for construction to begin on or about June 2017.

**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.

**How to Contact Us:** City of Havelock Public Services Department Telephone: (252) 444-6409  
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City of Havelock Wastewater Collection System, Telephone: (252) 444-6409 Tim Bert, ORC

**Copies of this report are available at the City of Havelock Water Billing Office and at;  
[www.havelocknc.us](http://www.havelocknc.us)**