

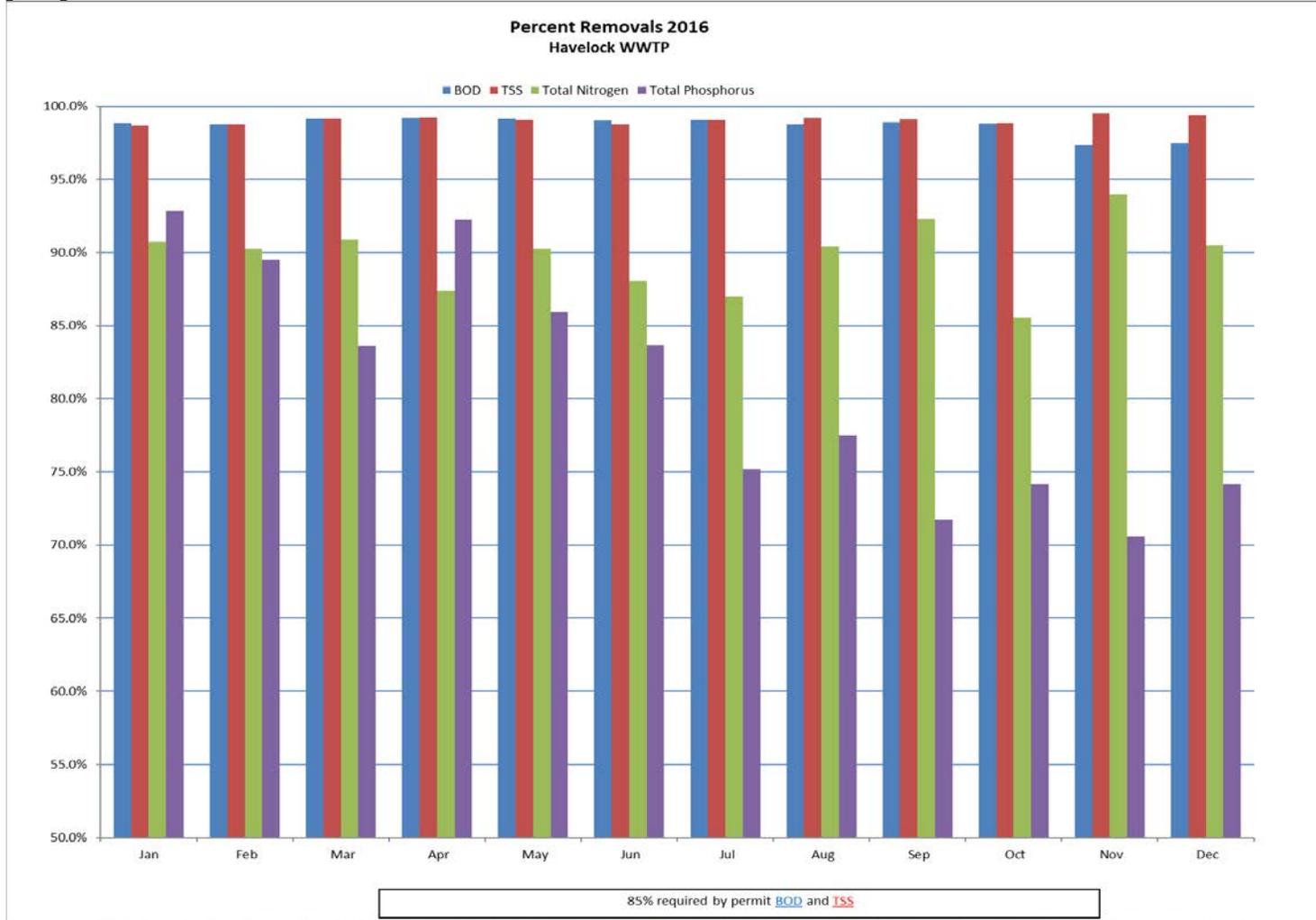


2016 City of Havelock Wastewater Treatment and Sewer Collection Facilities Report

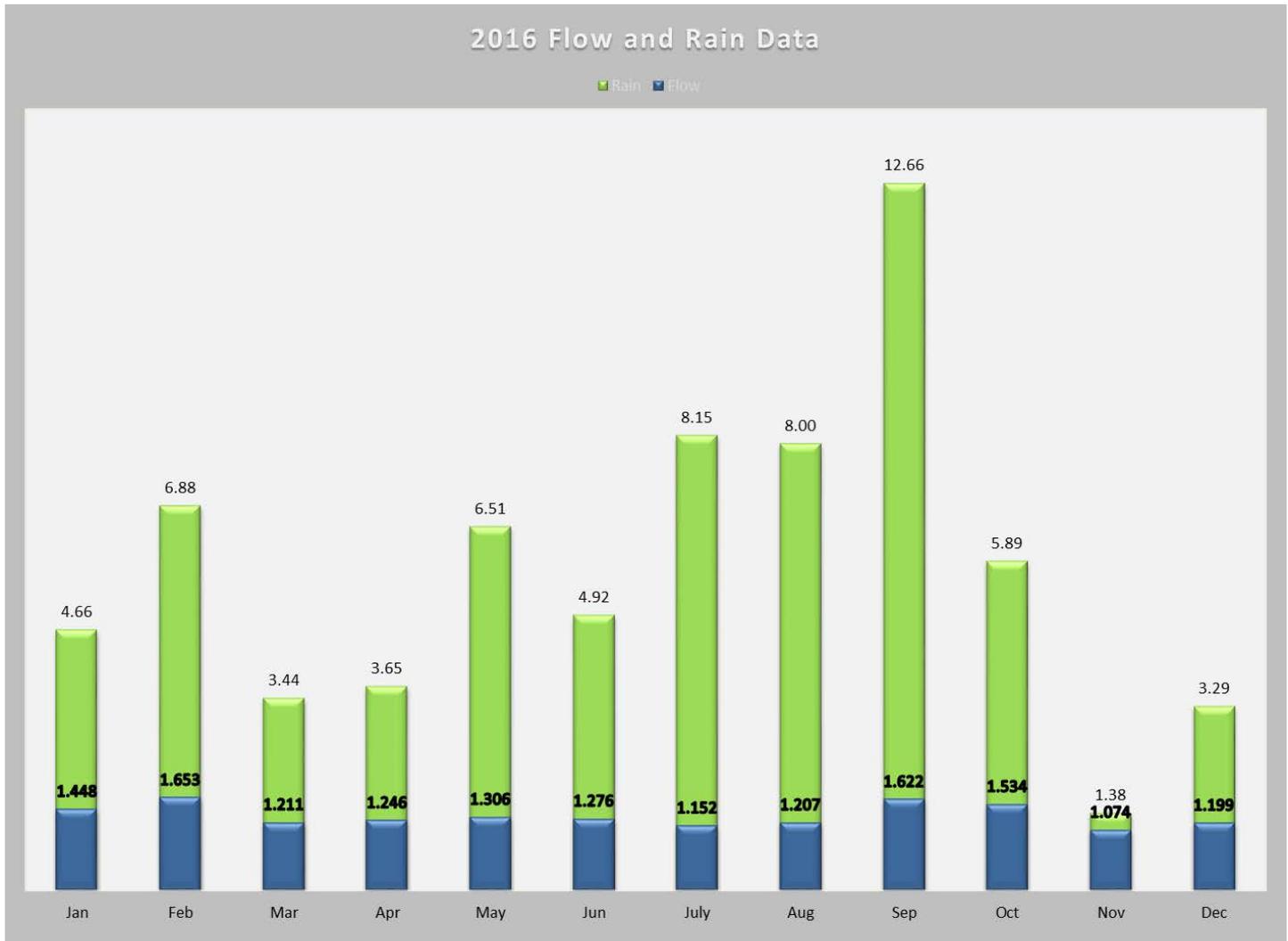
*NPDES Permit Numbers NC0021253, NC0078131, WQCS00104

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 this year 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.



The treatment plant had three reportable spills in 2016. The first was on August 28th with a volume of 1500 gallons, the spill was contained on site and did not reach surface waters. The second was on September 2nd during tropical storm Hermine, an estimated 125,000 gallons and this spill did reach surface waters. The last occurred on December 15th with a volume of 7,500 gallons, the spill was contained on site and did not reach surface waters. In all cases these spills were reported to the state as required. The chart below show the monthly average flow and rain fall in inches for 2016.



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 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. 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 2016 Calendar Year</i>
<i>Biochemical oxygen demand (BOD)</i>	<i>5.0 mg/L</i>	<i>10.0 mg/L</i>	<i>3.24 mg/L</i>
<i>Total Suspended Solids (TSS)</i>	<i>30.0 mg/L</i>	<i>30.0 mg/L</i>	<i><2.5 mg/L</i>
<i>Total Phosphorous</i>	<i>2.0 mg/L Quarterly Average</i>		<i>0.93 mg/L</i>
<i>Total Nitrogen lbs./Year (Annual Limit)</i>	<i>21,400 lbs. (Per calendar year)</i>		<i>14,466.88 TOTAL lbs.</i>
<i>Total Toxicity</i>	<i>Pass or Fail (quarterly sampling)</i>		<i>(1st Quarter- Pass)</i> <i>(2nd Quarter-Pass)</i> <i>(3rd Quarter-Pass)</i> <i>(4th 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 malfunctions. There were 8 reportable spills totaling 238,800 gallons for the calendar year of 2016. Many of these were contributed to an isolated section of gravity main that was repaired when a large offset joint was discovered at the location. A large-scale operation to video the remaining portions of the truck main feeding to the plant has been approved and will begin inspections Spring of 2017.

Water Plant Backwash Water Treatment System

The Water Treatment Plant still struggles to try to meet the state monthly limit of 30ppm (parts per million) for total suspended residuals. The new addition has increased to \$3.1M and has been awarded to State Utilities. Construction of new 500,000-gallon clarifier & six drying beds are scheduled for May or June 2017. The current Schedule of Milestones is to have the new facility operational sometime after the first of 2018.

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