



**SOME THINGS JUST  
DON'T BELONG  
IN THE TOILET**

**City of Wilson  
Wastewater Collection  
and Treatment System Report  
Fiscal Year 2017-2018**



# “Some Things Just **DON'T** Belong in the Toilet”

Toilets are meant for one activity, and you know what we're talking about! When the wrong thing is flushed, results can include costly backups on your own property or problems in the City's sewer collection system, and at the wastewater treatment plant. That's why it is so important to treat toilets properly and flush only your personal contributions to the City's wastewater system.

## “Disposable Does Not Mean Flushable”

Flushing paper towels and other garbage down the toilet wastes water and can create sewer backups and SSOs. The related costs associated with these SSOs can be passed on to ratepayers. Even if the label reads “flushable”, you are still safer and more environmentally correct to place the item in a trash can.

“It's a Toilet,  
**NOT**  
a Trash Can!”

The following is a partial list of items that should not be flushed:

- ✘ Baby wipes, diapers
- ✘ Cigarette butts
- ✘ Rags and towels
- ✘ Cotton swabs, medicated wipes (all brands)
- ✘ Syringes
- ✘ Candy and other food wrappers
- ✘ Clothing labels
- ✘ Cleaning sponges
- ✘ Toys
- ✘ Plastic items
- ✘ Aquarium gravel or kitty litter
- ✘ Rubber items such as latex gloves
- ✘ Sanitary napkins
- ✘ Hair
- ✘ Underwear
- ✘ Disposable toilet brushes
- ✘ Tissues (nose tissues, all brands)
- ✘ Egg shells, nutshells, coffee grounds
- ✘ Food scraps
- ✘ Oil
- ✘ Grease
- ✘ Medicines



## HOMINY CREEK WATER RECLAMATION FACILITY (WRF)



The WRF is located in Wilson at 3100 Stantonsburg Road. It is a state-of-the-art regional treatment plant that processes wastewater for approximately 20,000 metered customers and a service population of approximately 52,500. The City of Wilson also treats wastewater from the Town of Black Creek, the Town of Lucama and the Town of Sims.

The term water reclamation defines the treatment or processing of wastewater to make it reusable with specific treatment reliability. Reclaimed water must also comply with very stringent water quality criteria. The term water reuse defines the use of treated wastewater for beneficial uses, such as agricultural irrigation and industrial cooling. The City of Wilson is committed to reusing reclaimed water in areas that drinking water is not needed such as irrigation water for Wedgewood Golf Course, the Burt Gillette Athletic Complex and industrial process/cooling water. The reclaimed water system is part of the City’s water conservation plan.

### NPDES PERMIT COMPLIANCE

The WRF was compliant with all NPDES permit limits this year.

### Table Definitions & Key

**PPM (Parts per Million)** – a unit of measurement. Parts per million compares to 1 minute in 2 years.

**BOD (Biochemical Oxygen Demand)** – a required test that determines the amount of oxygen required by microorganisms to consume pollutants. BOD is measured in PPM.

**TSS (Total Suspended Solids)** – a required test that measures the amount of suspended solids in a sample. TSS are measured in parts PPM.

**FC (Fecal Coliform)** – a required test used to determine the presence of disease causing organisms. FC are harmless but are used as indicators of other organisms (if FC are present others may be present). FC is measured as number of colonies per 100 milliliters of sample.

**MGD (Million Gallons per Day)** – a unit of measurement for flow volume.

### PLANT PERFORMANCE

Pollutant	Concentration
<b>Ammonia Nitrogen</b>	<b>PPM</b>
Average	0.06
Permit Limit	1.0/3.0 (summer - monthly/weekly) 2.0/6.0 (winter - monthly/weekly)
<b>Biochemical Oxygen Demand</b>	<b>PPM</b>
Average	0.3
Permit Limit	5.0/7.5 (summer - monthly/weekly) 10.0/15.0 (winter - monthly/weekly)
<b>Total Phosphorus</b>	<b>PPM</b>
Average	0.22
Permit Limit	2.00 (quarterly)
<b>Total Suspended Solids</b>	<b>PPM</b>
Average	0.1
Permit Limit	30.0/45.0 (monthly/weekly)
<b>Total Nitrogen</b>	<b>Lbs/Yr</b>
Pounds Discharged	54,549
Permit Limit	157,886
<b>Fecal Coliform</b>	<b>Colonies/100 milliliters (ml) of sample</b>
Average	3
Permit Limit	200/400 (monthly/weekly)
<b>Chronic Toxicity</b>	
Test Performed Quarterly	Passed all
Permit Limit	Pass or Fail
<b>Flow</b>	<b>Million Gallons per Day (MGD)</b>
Average	8.36
Permit Limit	14.00 (monthly)

### Collection System Maintenance and Projects Completed:

- 57 miles of pipe cleaned (about 16% of the entire 359-mile system – 10% required)
- 5,700 feet of pipe replaced
- 94 sewer services replaced
- 130 manholes rehabbed
- 36 grease blockages cleared from sewer mains

### Sanitary Sewer Overflows



Sanitary sewer overflows (SSOs) occur when untreated sewage is discharged into the environment prior to reaching the sewer treatment facilities. These typically occur at manholes, pump stations, or broken sewer pipes. Infiltration/inflow (I/I) is unwanted water that enters the sewer collection system through deteriorating older pipes, leaking manholes, illegal connections such as roof drains, etc. During heavy rains pipes can become overloaded from I/I and cause SSOs. Pipe stoppages caused by fats, oils and grease can also lead to SSOs. Replacing and rehabilitating these lines and manholes reduces I/I into the sanitary sewer system, thus protecting the public health, improving treatment plant efficiency and reducing system maintenance. Generators provide emergency back-up power for pump stations and help prevent SSOs.

During fiscal year 2017-2018, the City of Wilson did not experience any reportable SSOs. The WRF treated 3.1 billion gallons of wastewater during this period.

Customers who observe a sanitary sewer overflow should report these as emergencies to the City of Wilson Unified Communications Center at (252) 399-2424.

Cientes que observan un desbordamiento del drenaje sanitario, deben reportar estas situaciones de emergencia al centro de comunicaciones unificadas de la Ciudad de Wilson, al telefono (252) 399-2424.

### How Does Your Publicly Owned Treatment System Work?

The treatment system uses the same physical, chemical and biological processes used by nature to clean water. Everything we know about water, chemistry, bacteria, hygiene and engineering has gone into this system we use to purify our wastewater. The City maintains about 359 miles of sanitary sewers lines (piping system that collects and transports the wastewater) and 21 pumping stations that help carry wastewater from homes, schools, commercial buildings and industrial sources to the treatment plant.

Once at the WRF, the treatment process begins. The treatment plant is designed to treat 14 MGD. The plant currently averages treating 8.4 MGD. The following describes the treatment process:

#### Physical Methods - Primary Treatment

- Bar Screens – catch and remove large material (wood, rocks, etc) as they flow past.
- Grit Chamber – removes heavy particles that settle rapidly like gravel, sand, seeds and coffee grounds. As the water enters the chamber, gravity causes the grit to settle to the bottom.
- Sedimentation (settling) Tanks – as water flows into the tanks, heavy organic particles settle to the bottom and are withdrawn and pumped to the solids handling facilities for additional treatment. Floatable material is skimmed off and pumped to the solids handling facilities.

Primary treatment removes approximately 45% of the pollution.

#### Biological Methods – Secondary Treatment

- Activated Sludge – wastewater is mixed with millions of microorganisms. During constant aeration (mixing air containing oxygen into the wastewater) the microorganisms (bacteria) absorb oxygen and feed on the pollutants.
- Final Settling Tanks – solids made up of microorganisms from the activated sludge process settle to the bottom. Some of the microorganisms are sent back to the activated sludge process to continue eating pollutants and some are removed and sent to the solids handling facilities for disposal.

Secondary treatment removes approximately 95% of the pollution; however, in order for the WRF to comply with permit limits additional treatment is needed.

#### Physical/Chemical/Biological Methods – Advanced Treatment

- Nutrient Removal – nutrients (phosphorous and nitrogen) can cause an overabundance of algae growth in waterways. As the algae dies, bacteria feed on the decaying matter using up oxygen needed by fish and other aquatic life. This depletion of oxygen can lead to fish kills. Phosphorous and nitrogen are removed biologically and chemically at the treatment plant.
- Filtration – removes those particles that primary and secondary treatment could not remove. The wastewater passes through sand filters that remove remaining particles. Filtration removes 99.9% of the pollution.
- Disinfection – the final stage of treatment uses sodium hypochlorite (liquid bleach containing chlorine) to disinfect the water. Disinfection kills off any disease-causing organisms that may remain after passing through the other treatment steps. Chlorine can cause problems in rivers and streams so we remove the chlorine before discharging the treated water to Contentnea Creek.

### Returning the Water to Nature or Reusing the Water

Most of this clean water – now called effluent – is discharged into Contentnea Creek but some of the effluent is sent to the City’s reclaimed water system (beneficial reuse) to be used for irrigation or industrial process water and cooling water.

### What’s Left Behind

Now, what about the material that has been removed from the water? These solids are called residuals: heavy matter that must be treated in order to safely return to the environment.

The following steps are used to further treat the residuals:

- Enclosed heated tanks called digesters use microorganisms to turn the residuals into inert (inactive), harmless organic matter.
- Belt filter presses are used to remove water from the residuals to reduce the volume that must be disposed of.
- The treated residuals (organic material) are used by area farmers as a fertilizer and soil amendment.

### Biogas

A by-product of the digestion process described above is the production of methane gas (biogas). The WRF uses part of the biogas produced as fuel to heat the digesters, thus significantly reducing the amount of time required to digest the solids. The excess is burned off by a waste gas burner. The City has future plans to install a system that will utilize the excess biogas to generate energy that can be used to operate other equipment or used for green energy credits.

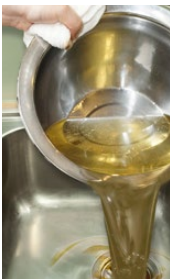
### “What The Customer Can Do To Help”

In order to help the City of Wilson continue a high standard of water quality and protection of the environment please follow these simple steps:

**DO NOT** pour grease, fats and oils from cooking down the drain – instead, collect the grease in a container and dispose of it in the garbage.

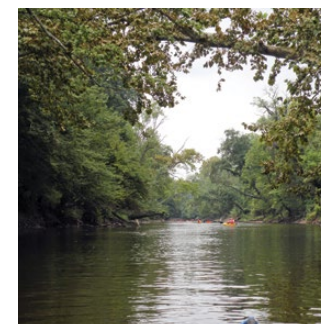
**DO NOT** use the toilet as a wastebasket – place a wastebasket in each bathroom for the disposal of solid waste, disposable diapers, condoms, and personal hygiene products that DO NOT belong in the sewer system.

**DO NOT** use the sink to dispose of food scraps – instead, place food scraps in the garbage for disposal with solid wastes, or better yet, start a compost pile.



**Do not pour grease, fats and oils down the drain.**

### Protecting The Neuse River



The Lower Neuse River Basin Association, Inc. (LNBA) and the Neuse River Compliance Association, Inc. (NRCA) are 501(c) (3) non-profit corporations comprised of municipalities and industries located in the Neuse River Basin. The mission of these organizations is to monitor and preserve the waters of the Neuse River and Neuse River estuary through innovative and cost-effective wastewater treatment and reduction strategies. The NRCA group is composed of 24 wastewater treatment facilities located in the Neuse River Basin. NRCA was issued North Carolina’s first basin-wide NPDES permit for nitrogen control January 1, 2003 and was reissued in January 1, 2008 and January 1, 2014. The group was given a mandate to reduce their Total Nitrogen discharge by 30%. Through the combined efforts of its entire membership, the NRCA exceeded the mandated 30% nitrogen reduction by removing over 65% of their nitrogen loading to the Neuse River estuary since 1995.

The City of Wilson is proud to be a charter member of both the LNBA and NRCA.

### Affiliations

The City of Wilson Water Reclamation Division is affiliated with the following organizations:

- Water Environment Federation
- American Water Works Association
- N.C. Water Quality Association
- N.C. Water Environment Association
- N.C. Water Works Association
- N.C. Pretreatment Consortium
- N.C. Rural Water Association

## FOR MORE WATER QUALITY INFORMATION

**City of Wilson – Water Resources**  
(252) 399-2492

[www.wilsonnc.org/water-resources](http://www.wilsonnc.org/water-resources)

**N.C. Environmental Education**  
[www.eenorthcarolina.org](http://www.eenorthcarolina.org)

**Lower Neuse Basin Association**  
[www.lnba.net](http://www.lnba.net)

**River Guardian Foundation, Inc.**  
[www.riverguardfdn.org](http://www.riverguardfdn.org)

**NCDEQ**  
(919) 733-2321  
[www.deq.nc.gov](http://www.deq.nc.gov)

**Water’s Worth It**  
[www.watersworthit.org](http://www.watersworthit.org)

**Sound Rivers**  
[www.soundrivers.org](http://www.soundrivers.org)