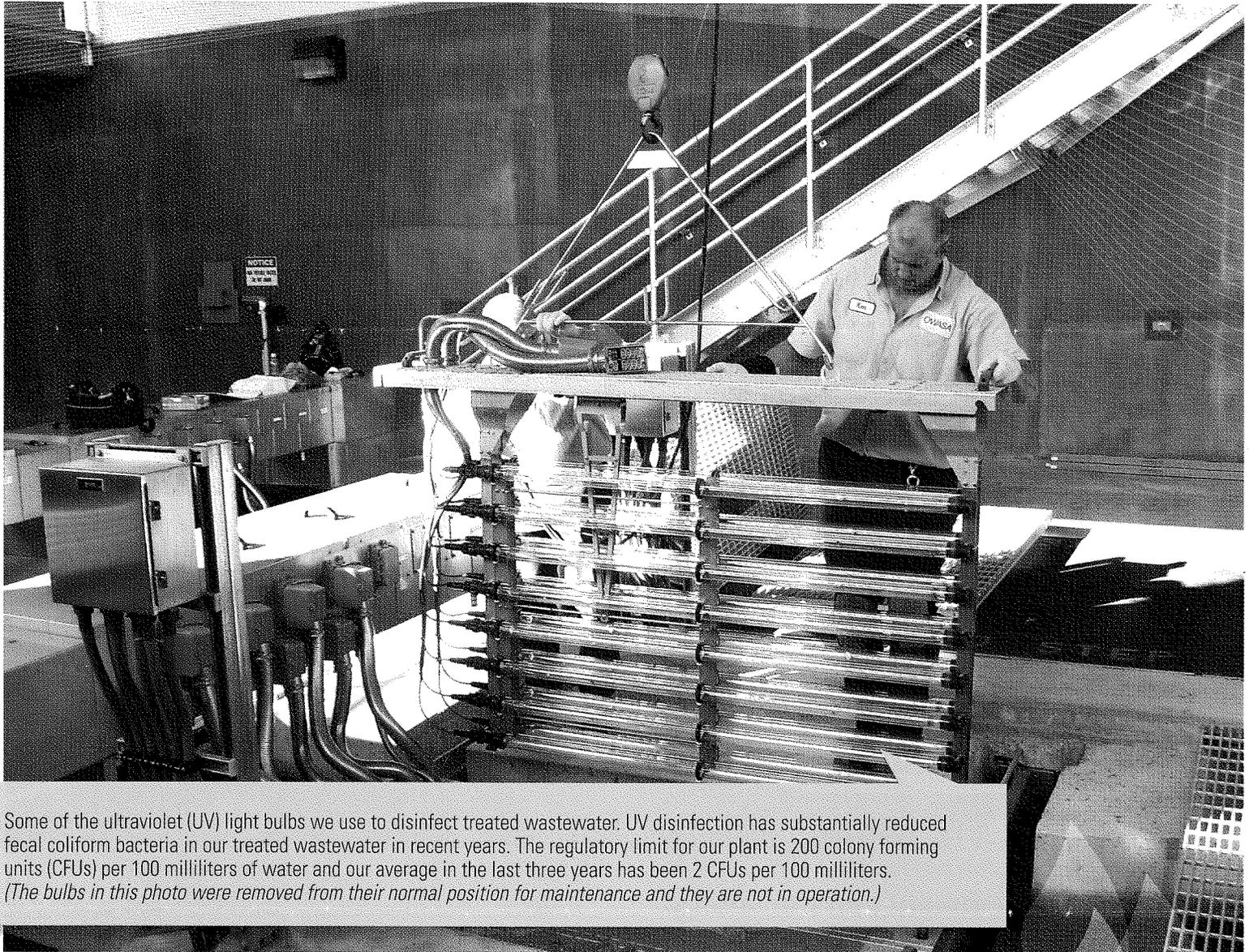




Treatment and Recycling of Wastewater and Biosolids

Annual Report
for July, 2012
through June, 2013

Orange Water and Sewer Authority, 400 Jones Ferry Road, Carrboro, NC 27510



Some of the ultraviolet (UV) light bulbs we use to disinfect treated wastewater. UV disinfection has substantially reduced fecal coliform bacteria in our treated wastewater in recent years. The regulatory limit for our plant is 200 colony forming units (CFUs) per 100 milliliters of water and our average in the last three years has been 2 CFUs per 100 milliliters. *(The bulbs in this photo were removed from their normal position for maintenance and they are not in operation.)*

HIGHLIGHTS

- We collected, treated and recycled 2.9 billion gallons of wastewater, or 8.1 million gallons per day.
- We surpassed the water quality standards for our **Mason Farm Wastewater Treatment Plant (WWTP)**. For example, the level of phosphorus in our treated wastewater was **77%** below the regulatory limit and nitrogen was **64%** below the limit. Limiting phosphorus and nitrogen is important for water quality because they promote the growth of algae, which reduce water quality and make lake water harder to treat for drinking purposes.
- We treated and recycled about **1,505** dry tons of wastewater biosolids, or about 4 tons per day. Our Class A biosolids meet the U.S. Environmental Protection Agency's (EPA's) standards for "Exceptional Quality." Our biosolids have very low levels of pathogens and metals, as shown in this report.
- In March, 2013, we began **\$10 million** of improvements at our WWTP which will reduce electricity use by about **20%** (\$125,000 annually) and enhance odor control.

WASTEWATER Treatment

Our wastewater treatment includes removing solids in settling tanks; a biological process; filtration; using ultraviolet light to kill pathogens; and adding oxygen, which is important for fish in waterways that receive our treated water. Most of our treated wastewater is returned to the environment at Morgan Creek, which flows to Jordan Lake. Jordan Lake is a drinking water source for several communities in our region and is a back-up source of drinking water for OWASA for use in severe droughts and operational emergencies. Some of our treated water is reused in our reclaimed water system.

Water Quality Measure*	Annual Limit	OWASA Level (July 2012– June 2013)	Difference
Nitrogen	409,448 lbs.	146,422 lbs.	64% below the limit
Phosphorus	10,188 lbs.	2,360 lbs.	77% below the limit

* For more detailed information on our treated wastewater quality, please visit www.owasa.org, click on **What We Do**, click on **Wastewater Management** and scroll down to the link to the annual report.



One of our operators testing the water in one of our tanks that separates solids from the treated water.

BIOSOLIDS Treatment and Recycling

Biosolids are the solids that we separate from wastewater and then treat so they can be recycled. We make biosolids safe to recycle through a biological process that breaks them down to simpler compounds, and by heating the solids to about 140 degrees Fahrenheit to kill pathogens. Our biosolids treatment takes about 30 days.

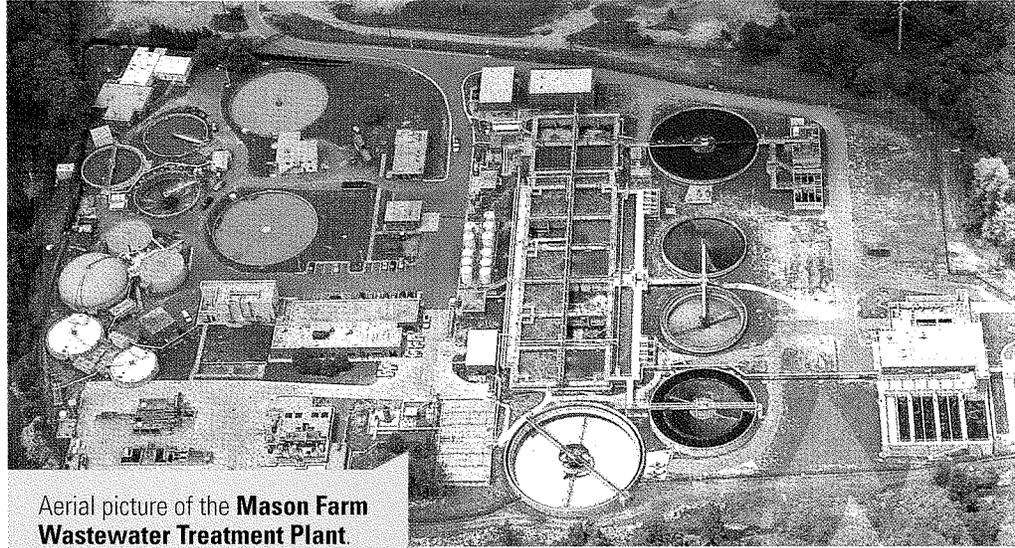
About half of our biosolids were recycled on local farmland to help grow crops for non-human consumption. The other half of our biosolids were composted with other organic material at a private facility in Chatham County which produces a soil additive for landscaping.

Our biosolids have very low levels of pathogens and metals, as shown in the table below.

Substance	EPA Limit for Exceptional Quality Biosolids	OWASA Average (July 2012– June 2013)	Difference between EPA limit and OWASA average
Fecal coliform bacteria	1000 per gram	28 per gram	- 97%
Mercury	17 parts per million (ppm)	1 ppm	- 95%
Cadmium	39 pm	1 ppm	- 98%
Arsenic	41 pm	less than 2 ppm	- 95%
Lead	300 ppm	10 ppm	- 97%

RECLAIMED Water

Reclaimed water (RCW) is highly treated wastewater which can be used for non-drinking purposes. From July 2012 through June 2013, the University and UNC Hospitals used about 230 million gallons of RCW, or about one-third of the University's overall water use. Like other forms of water conservation, use of RCW reduces the need to draw water from our lakes. RCW therefore makes us better prepared for future droughts, reduces the future cost of expanding our system capacities, and reduces greenhouse gas emissions from the use of conventional fuel to pump water and wastewater.



Aerial picture of the **Mason Farm Wastewater Treatment Plant**.

SANITARY Sewer System

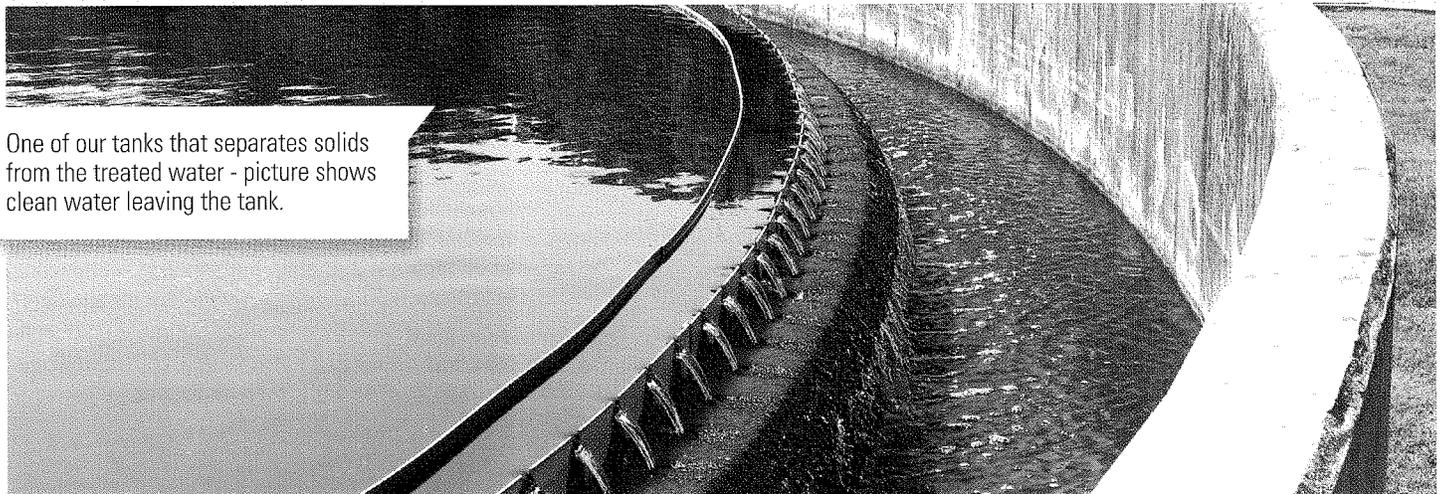
We maintain **338 miles** of sanitary sewers and **21 facilities** where we pump wastewater uphill, but most of our sewers operate with the simple force of gravity. (Our sanitary sewer system is separate from the local stormwater systems.)

OVERFLOWS from our Sewers

When wastewater flow in a sewer is blocked, if a sewer is damaged or if wastewater flow exceeds a pipe's capacity, the result is an overflow. In 2012-13, there were seven overflows from our sewers and they totaled an estimated **15,085 gallons**, which is a fraction of one per cent of the total wastewater we received (**2.9 billion gallons**). If you see a wastewater overflow, please contact us at **919.968.4421**. We will stop the overflow if it is from our sewer, or contact the property owner if the leak is from a private pipe.

WHAT OWASA Does to Prevent Wastewater Overflows

- We inspect the inside of our sewers with video cameras to find blockages, damage and leaks.
- We periodically clean sewers to remove blockages by grease, roots, debris, etc.
- We fix leaks and cracks in our sewers to keep rainwater and groundwater from getting in and wastewater from leaking out. We also put special dishes under manhole covers to help keep out stormwater.
- We mow and clear our easements once a year to help keep tree and shrub roots from growing into and blocking our sewers; and to maintain safe, timely access for maintenance, etc.
- We repair, renew and replace sewers to ensure adequate capacity, structural integrity and reliable operation. In 2012-13, we replaced or renewed **1,652 feet** of sewers at a cost of about **\$173,000**. A contractor hired by OWASA checked the condition of **9.9 miles** of sewers.



One of our tanks that separates solids from the treated water - picture shows clean water leaving the tank.

PLEASE Help Prevent Wastewater Overflows

- Household fat and grease should be disposed of with trash taken to a landfill. Cooking oil is recyclable at the Orange County Household Hazardous Waste Collection facility on Eubanks Road. Restaurants and other businesses that produce waste fat, oil and grease are required to have grease traps and clean them regularly. Waste fat, oil and grease are recycled by companies that clean grease traps.
- Before planting trees, shrubs, etc. in an OWASA sewer easement, please contact us about the kinds of shallow-rooted plants that may be allowed in the outer part of an easement, and to request OWASA's approval of a landscaping plan.



One of our biological treatment tanks that help clean wastewater.

SAFE Disposal of Medication

Please do not flush medications down a toilet or sink. Wastewater treatment plants are not designed to remove pharmaceutical compounds. Improperly disposed pharmaceutical compounds may therefore get into a creek, river or lake that is a water supply. National research is underway to more fully understand the potential effects of pharmaceuticals in the waterways on human health, aquatic life and the environment.

Drug Disposal Programs at Local Police Departments: You can safely dispose of unused medication at the Chapel Hill and Carrboro Police Departments and at periodic drug take-back events in our region.

IF YOU Have Questions or Comments or Want to Tour Our Wastewater Treatment Plant

We invite you to contact us at **919.968.4421** or **info@owasa.org**.

A more detailed version of this report is available on our website, **www.owasa.org**, under **What We Do** in the **Wastewater Management** page. Please use the link to the **Annual Report** near the bottom of the page.



A public, non-profit agency providing water, sewer and reclaimed water services to the Carrboro-Chapel Hill community.

Orange Water and Sewer Authority

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