GreenvilleOnline.com

April 14, 2008

New treatment makes wastewater cleaner

One day, it could water lawns, fight fires

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Wastewater from Greenville's sewage treatment plants will be irrigating crops, sprinkling golf courses and dousing fires in three to 10 years, according to the Western Carolina Regional Sewer Authority.

"The quality of the water is there right now. You can see that the water that comes out is clear," says Steve Graef, WCRSA technical services director, leaning on a fence and pointing to treated water being released from one of the utility's plants into the Enoree River on the Eastside.

"But we need to put in a piping system to get the cleaned water back to where it would be used."

A recent water quality report from the state Department of Health and Environmental Control said utilities and communities should take measures to improve the quality of Upstate waterways. But Western Carolina and Greenville officials say they are working on improvements all the time.

DHEC said that at 12 of 31 monitoring stations -- eight along the Reedy River -- tests showed high levels of fecal coliform bacteria, and that between 11 percent and 78 percent of samples exceeded the acceptable level of 400 colonies per 100 milliliters of water.

The source of the pollution is leaking sewer pipes, illicit sewer connections, sanitary sewer overflows, failing septic systems, livestock waste, storm sewers and runoff, according to DHEC. And reducing that contamination means enhancing treatment, cutting the amount of wastewater treated, and upgrading equipment among other efforts, DHEC said.

Mike Murphy, director of public works for the city of Greenville, says repairs are made regularly to the city's 312 miles of sewer mains, some of which are 100 years old.

"We've been working with Western Carolina to come up with a 15-year management plan to locate and repair points where you have a breach or break in the line to take care of as much of the city's sewer system as we can," he said.

And WCRSA executive director Ray Orvin said the utility has been working with local governments as well as special purpose districts to address those issues, in addition to spending $360 million, both in terms of growth and technology, to upgrade its 10 plants in the last decade.

"We are putting in deep-bed filters and ultraviolet treatment instead of chlorine and SO2 (sulfur dioxide) for a better fecal coliform kill, getting it down to 3 (colonies per 100 milliliters of water)," he said. "When we start seeing numbers in the teens, then we investigate why it's that high."

The process begins when the sewage arrives at the plant and is sent to settling tanks, says Kevin James, assistant manager of plant operations. Then the wastewater flows via gravity to aeration tanks, then flows over walls into the filter bed before being directed to the channels where special green ultraviolet lights render the bacteria incapable of reproducing. Then it's released. The whole process takes about 15 hours and sampling is done at regular intervals.

The same technology has just been installed at the Mauldin plant, Orvin said.

Once pipes are laid, Graef said, some 40 million gallons a day of the wastewater can be used for industrial or other purposes, saving potable water for consumption, which would help with conservation, especially in times of drought.

While development increases the pressure on the sewer system, Orvin says the community and the utility have been planning for growth.

"Fifteen years ago, we were overwhelmed (by development). But we made a big effort. . .to plan for the next 25 years," he said. "We've been working closely with the development community and counties to anticipate where it's going to happen so we have capacity to facilitate that growth."

City Manager Jim Bourey said Greenville has "very stringent standards" for development to make sure hooking up to the sewer system is environmentally safe. Projects with inadequate protection cannot proceed without upgrades, he said, and the condition of the sewer lines is considered when new development is proposed.

Furthermore, he said, the city meets all federal requirements regarding storm water, and is working with a consortium of environmental and business groups to strengthen building requirements and prevent pollution along the Reedy, for instance, limiting fertilizer use or ensuring parking lot runoff doesn't go right into the river.

But Bourey said the city encompasses only a few miles of the Reedy, and that the water quality here is impacted by everything that occurs upstream, including agricultural waste and runoff, as well as by sewer system problems.

In the city, Murphy said, crews use a camera to inspect sewer lines that can find clogs and breaks. Currently, only about 7 percent of the lines can be inspected a year, he said. But the city is looking at a new robotic video system that will be able to inspect about 33 percent a year. Public Works also proposes spending up to $2.5 million every other year for the next five years to rehabilitate and replace damaged lines, he said.

Western Carolina also inspects its lines with camera equipment and effects repairs on a regular basis, Orvin said.

Illicit hookups or illegal ties into the sewer system are typically more of a problem in rural areas, Murphy said. They probably only number in the dozens citywide, he said. The city and WCRSA share information about these hookups, he said, and once discovered, property owners can face substantial fines.

The greater problem, Murphy said, is stormwater getting into the sewer lines and overloading treatment plants.

"If this huge influx of rainwater comes in, it reduces their ability to treat the permitted amount of sewage flow," he said.

According to DHEC, there were 415 reported sanitary sewer overflows in Greenville and Laurens counties between 1999 and 2006 which released more than 7.5 million gallons of untreated sanitary waste into waterways, 40 percent from heavy rains and 30 percent from clogs.

"No one likes to see overflows and we do have clogs," Orvin said. "These things are going to happen. They're a result of the life we live."