

2009 Annual Performance Report for the City of Jacksonville's Land Treatment Facility and Collection System

I. General Information

Facility/System Name: Jacksonville's Land Treatment Facility

Responsible Entity: City of Jacksonville
P.O. Box 128
Jacksonville, NC 28541-0128

Person in Charge/Contact: Raymond L. Holder, Plants Superintendent
Pete Deaver, Utilities Maintenance Superintendent

Applicable Permits: Spray Permit No. WQ0009267
Collection System Permit No. WQCS00268

The City of Jacksonville's collection system is composed of over 250 miles of sanitary sewer lines and 40 wastewater pumping stations. Fifteen of these pumping stations have on-site generators to provide power in the event of power failures and the other 25 pumping stations have connections, which allowed them to be powered by portable generators during power outages.

The City's Utilities Maintenance Division's staff consists of 24 employees and is responsible for maintenance, repair and the proper functioning of the sewage collection system and the maintenance and efficient operation of the wastewater pumping stations. This Division provides routine inspections of the City's manholes and is responsible for jetting sewer lines to clear blockages. This staff also provides preventive maintenance to all the pumping stations and generators to insure optimum operation. The Utilities Maintenance Division is also staffed by a Pretreatment Facilities Inspector and an I&I Analyst.

The Jacksonville Land Treatment Facility is responsible for the treatment and land application of the City's wastewater. Wastewater is transported 8 miles from Jacksonville to the Land Treatment Facility via a 36-inch diameter force main. The wastewater is treated with hydrogen peroxide for the removing of odors before flowing into the headwork facility. At the headwork facility, the influent (raw wastewater) passes through a Huber Step Screen where material greater than 1/8 inch in size is removed. The wastewater then flows into an aerated grit and grease removal system where inorganic material and floatables are removed. Wastewater then flows into a series of aerated lagoons where biological treatment of the waste occurs. Secondary treated wastewater then flows into storage lagoons. The storage lagoons have a capacity of 340 million gallons and provide storage of treated wastewater during periods of inclement weather, when spray irrigation of wastewater is not feasible. The stored treated wastewater is used to irrigate a forested 6,270 acre pine plantation. Before irrigation, this treated wastewater is chlorinated to insure that no harmful bacteria are sprayed onto the forest. The treated wastewater is applied in the spray irrigation fields at the rate of 1.4 inches per week from April 1st through October 31st and 0.7 inches per week from November 1st through March 31st. As the pines mature and their ability to store nutrients decreases, the mature trees will be harvested and used for pulp wood. Young seedlings will be planted to repeat the cycle. The system is presently designed to treat 6.0 million gallons of wastewater daily and spray irrigates about 2,000 acres of loblolly pine trees, and the facility is currently undergoing expansion to treat a total of 9.0 million gallons daily, with a storage capacity of 690 million gallons for treated wastewater. This expansion will cost approximately 45.0 million dollars and is estimated to be completed in early 2010.

The Land Treatment Facility is staffed by a Plants Superintendent, a chief operator, six wastewater plant operators, a Plants Maintenance Mechanic, a Plants Maintenance Worker and four Equipment Operators. A Chemist, assisted by two Laboratory Technicians, is responsible for the certification of the water and wastewater laboratory and performs all the required analyses for both the wastewater and water sections.

II. Facility Performance

The City of Jacksonville's Land Treatment Facility treated 1,927 million gallons of wastewater during the 2009 calendar year, at an average daily flow of 5.280 million gallons. The City was not in compliance with influent flow requirements for November and December of 2009. In November, the City had an average influent of 6.841 million gallons per day, and in December the average influent flow was 7.104 million gallons per day, exceeding the permitted daily capacity of 6.6 MGD. The elevated flows were due to frequent and heavy rains during the last six months of 2009. There were no other violations of monitoring and reporting requirements during the 2009 calendar year.

Collection System Performance

There were 14 reported overflows from the collection system during the 2009 calendar year. Only two of these overflows was greater than 1,000 gallons in volume. Below is the detail summary of the overflow that exceeded 1,000 gallons.

The first overflow occurred on July 10, 2009. At approximately 3:00 PM on July 10, 2009 City Staff discovered that a manhole located on Glade Lane, next to the Sonic Drive-In was overflowing through the holes in the lid. City crews were dispatched immediately and the overflow was stopped at approximately 5:30 PM. Approximately 6,000 gallons overflowed into an adjacent field but did not reach a receiving stream. The area was cleaned up by staff and disinfected. The following day, the solid lid on the junction box overflowed to a nearby grease trap. The City cleaned out the pump station and manhole and made arrangements to have an invert constructed and the sewer lines jetted the following week. All work was completed by July 16, 2009.

The second overflow occurred on November 18, 2009 from a manhole located near the Ellis Boulevard Pumping Station. At approximately 9:00 PM a manhole located next to the Ellis Boulevard Pumping Station began overflowing due to a excessive rain. During the rain event of November 18, the City received over 3.75 inches of rain. The Ellis Pumping Station was being renovated at the time of the rain event and the contractor had installed a by-pass pumping system. This system involved having the influent to the station diverted to a manhole just outside the station and then pumped into a gravity sewer. The rain event caused Scales Creek to flood its banks and into the bypass manhole, therefore causing the by-pass pump to pump both influent and creek water. Approximately 9,900 gallons of sewer flowed into Scales Creek. The incident ended at 9:30 AM on February 19th. The area was cleaned and water quality samples were obtained. In order to prevent future overflows of this type, Four manholes were raised and water tight manhole covers installed at the Ellis Boulevard Pumping Station. Two of these manholes are located adjacent to the station and the other two located on a large gravity line flowing into the station.

Summary

The City of Jacksonville's Land Treatment Facility and collection system performed very well during the calendar year 2009. The rainfall for 2009 was 61.18 inches. The City has replaced 34 linear feet (LF) of 8-inch sewer lines, 460 LF of 10-inch sewer line, and 165LF of 4-inch lines for new service drops within the City. Eight sewer line projects were added to the collection system during 2009, totaling 12,125 LF of 8-inch sewer pipe.

In 2008, the City began construction for the expansion of the City's Land Treatment Facility. The expansion will add an additional 3.0 million gallons of treatment and irrigation capacity, over 240 million gallons of effluent storage and an upgrade of the present Main Pumping Station that pumps all of the City's Wastewater to the Land Treatment Facility. Construction is scheduled to be completed in February 2010.

In addition to replacing deteriorated sewer lines, the City has a program that replaces pumps in pumping stations that are over 20 years old. The City replaced and upgraded the Fisherman's Wharf Pumping Station, The Triangle Pumping Station and the Brinson Creek Pumping Station. The Collins Heights Pumping Station was upgraded. All of this was due to the replacement of the Highway 17 Buddy Phillips Bridge which required the force main to be removed. The City also has a program to install rainstopper manhole inserts in manholes throughout the collection system. The City experiences many blockages in the collection system due to oil and grease entering the system. There is also a provision in the City's Sewer Use Ordinance that requires individual restaurants to clean their grease interceptors at least every 60 days. Over 183 restaurants are visited and their grease traps inspected at least twice a year to insure compliance.

I certify under penalty of law that this report is complete and accurate to the best of my knowledge. I further certify that this report has been made available to the users or customers of the named system and that those users have been notified of its availability.

Responsible Person and Title

Date