

CITY OF PORTAGE LA PRAIRIE WATER POLLUTION CONTROL FACILITY 2013 ANNUAL REPORT



The Water Pollution Control Facility receives and treats both municipal and industrial wastewater. The facility treats wastewater flows generated within the City of Portage la Prairie; as well as from the Southport, Peony Farm, Saskatchewan Avenue West, Richardson Oats, and Poplar Bluff Industrial Park areas of the Rural Municipality; and from Long Plain Reserve. McCain Foods Ltd., Simplot Canada Ltd., and Nutri-Pea Foods Ltd. comprise the three industrial sources that account for 55% of total flow to the facility. Wastewater is pumped sequentially into four secondary treatment aeration basins. Each basin will cycle through timed stages of fill, aeration, and settle and the treated water is disinfected by Ultraviolet light and then discharged into the Assiniboine River.

Plant Performance

The total flow received at the facility in 2013 was 5,530,000 cubic meters. This is compared to a flow of 4,305,000 cubic meters in 2012- which equates to an increase of 29%.

The City of Portage la Prairie has an environmental license issued by Manitoba Conservation that limits various parameters that are discharged into the Assiniboine River through the discharged effluent. The average total suspended solids discharged were 13.4 mg/L with a maximum peak of 706 mg/L. The license limit is 30 mg/L. The average Biological Oxygen Demand was 3 mg/L with a limit of 30 mg/L. Maximum BOD was 16.5 mg/L. Coliform limits are calculated as a 30-day average. The highest monthly average was in July. Total coliform was 7337 CFU/100 mL and Fecal coliform was 7336 CFU/100 mL. The lowest monthly average was in October with Total Coliform reported at 3.57 CFU/100 mL and fecal coliform reported at 3.14 CFU/100 mL. The environmental license limits for total and fecal coliforms are 1500 and 100 CFU/100 mL, respectively. The average Ammonia load was 8.0 kg/day with a daily maximum of 204 kg/day. The license limits for the amount of ammonia permitted to be discharged varies each month with August having the lowest limit of 129.6 kg/day. In August, WPCF discharged an average of 4.68kg/day.

Operations Issues

Several major incidents affected the operation of the facility over 2013. In the early months, prolonged high solids and organic loadings from the on-site Industrial Pre-treatment System (BVF) put immense strain on the SBR basins. This flow also contained a large volume of unsettlable solids that are difficult to treat. This caused an increase in the amount of solids discharged from the facility and accounts for exceedence of the Manitoba Conservation Environment License on February 23rd and February 25th. This became an issue again in May when the Total suspended solids limit of 30 mg/l was exceeded on 10 days.

On Sunday, July 21st, lightning struck the odour control stack causing the main control system to malfunction as well as shorting out the alarm panel, phone system and several computer components. Due to the alarm panel being affected, the on-call staff was not notified of any operational problems. For a 12 hour period, incoming flows were discharged directly out of the basins without receiving any treatment. Once the problem was discovered, operations and maintenance staff worked diligently to restore the plant to regular operations. For over 3 days, 24 hour staffing was required to manually operate the facility until new computer equipment was installed. The total suspended solids limit was exceeded on July 21st and 22nd.

For the next several weeks, several storms continued to impact the electrical system at the wastewater treatment plant. On August 18th, the outfall pumps were tripped off during a power bump. A high-level alarm was received and the operator responded to find treated effluent pooling on the grounds after the UV Building. Proper protocol for clean-up and reporting was followed. Follow-up testing confirmed that as the water had passed through all steps of treatment, there was no reason to believe untreated wastewater had spilled.

On August 29th, power surges due to another storm caused computer control communication to be lost between the Control Room PLC and the rest of the facility. Manual control was resumed to maintain treatment. Electrical events occurred again on September 5th and September 19th both requiring manual control until equipment was repaired. Future repairs to the communication line will need to be completed as well as surge protection.

On December 13th the SBR Pumping station flooded as a result of a faulty low level float. Untreated wastewater flowed into the parking lot. Due to the extreme cold temperatures, the water froze immediately and was able to be scrapped up for disposal in the lagoon. Manitoba Conservation issued an emergency response order and all items were completed.

On December 22nd, an intricate diversion of flow was required to allow for contractors to install two valves for the new SBR Pumping Station. For a 9 hour period, industrial flows were stopped and municipal flow was diverted and collected into the onsite Industrial Pre-treatment system, in an effort to prevent any flow of wastewater into the existing SBR pumping station. Activities leading up to and including this day required a well coordinated effort between staff from City of Portage Waterworks, WPCF Operations and WPCF maintenance departments, Simplot Canada Ltd, McCain Foods Ltd, and Nutri-Pea Ltd. as well Parkwest and Maple Leaf Construction crews.

On December 23rd, following a construction shut-down the influent valve for basin #1 became so cold that it failed to open causing the water level in the SBR lift station to flood into the dry chamber. The operator was able to respond before any wastewater was released onto the property. The Operator was able to open the valve manually. During this same time period, power to the office area, control room, odour control, and lab was lost due to a malfunctioning main power breaker. The breaker was replaced and power was restored on the morning of December 24th. No loss of treatment or damage from freezing occurred.

Pump Stations

The City of Portage la Prairie operates and maintains twelve pumping stations throughout the city. These stations collect and pump wastewater to the treatment facility. Throughout 2013, several minor incidents occurred, however none resulted in flooding or back-up of flow. Three power outages throughout the year caused power to be lost at one or more lift stations. In each incident, power was either restored or a back-up power was connected to ensure no loss of service. In each instance, septage disposal trucks responded to ensure stations did not flood. On August 21, a fiber optic line in Ontario had been cut causing several stations to be without alarm service- regular checks were made all major pump stations until phone service was restored.

Biosolids Land Application

Biosolids are the residual solids resulting from secondary treatment of municipal wastewater and effluent from the primary treatment of industrial wastewater. These residual solids are applied to agricultural land as a fertilizer and soil amendment.

In the spring, 241.53 dry tonnes of biosolids was applied to agricultural land. The fall program required 818.05 dry tonnes to be applied. The total tonnage of biosolids applied for 2013 was 1059.58 tonnes.

Facilities Classifications and Operator Certification Levels

The Province of Manitoba requires operators and lift station maintenance staff to be certified according to the classification of the facility. Certification is obtained through experience, examination and continuing education credits. The Water Pollution Control Facility is deemed class 4. The operations foreman and two of the four Operators are unconditionally certified at level four and two operators are unconditionally certified at level three.

The Wastewater Collections system is deemed class 2. The Facility Maintenance foreman is certified at level 2. One lift station maintenance staff is certified at level 1 in collections and distribution and the second maintenance staff is working towards writing the level one exam. The goal is to have all Operators certified to the level of the facilities they operate.

Regulatory Issues

Nutrient Reduction

The Province has given notice that Portage la Prairie will have to remove nitrogen and phosphorous (nutrients) from our final effluent by January 1, 2016; however, a request for a one year extension was made. A plan for the Reduction strategy for the City of Portage was submitted to Manitoba Conservation as of January 31, 2013.

Preliminary Engineering studies (ongoing)

Pilot scale testing has started for Industrial wastewater preliminary Nitrogen removal with a pilot for Phosphorous reduction to commence in the spring of 2014. Once the results of the pilot projects have been analyzed, a more functional process design can be developed. Further discussion with industry will be required as well.

Odour

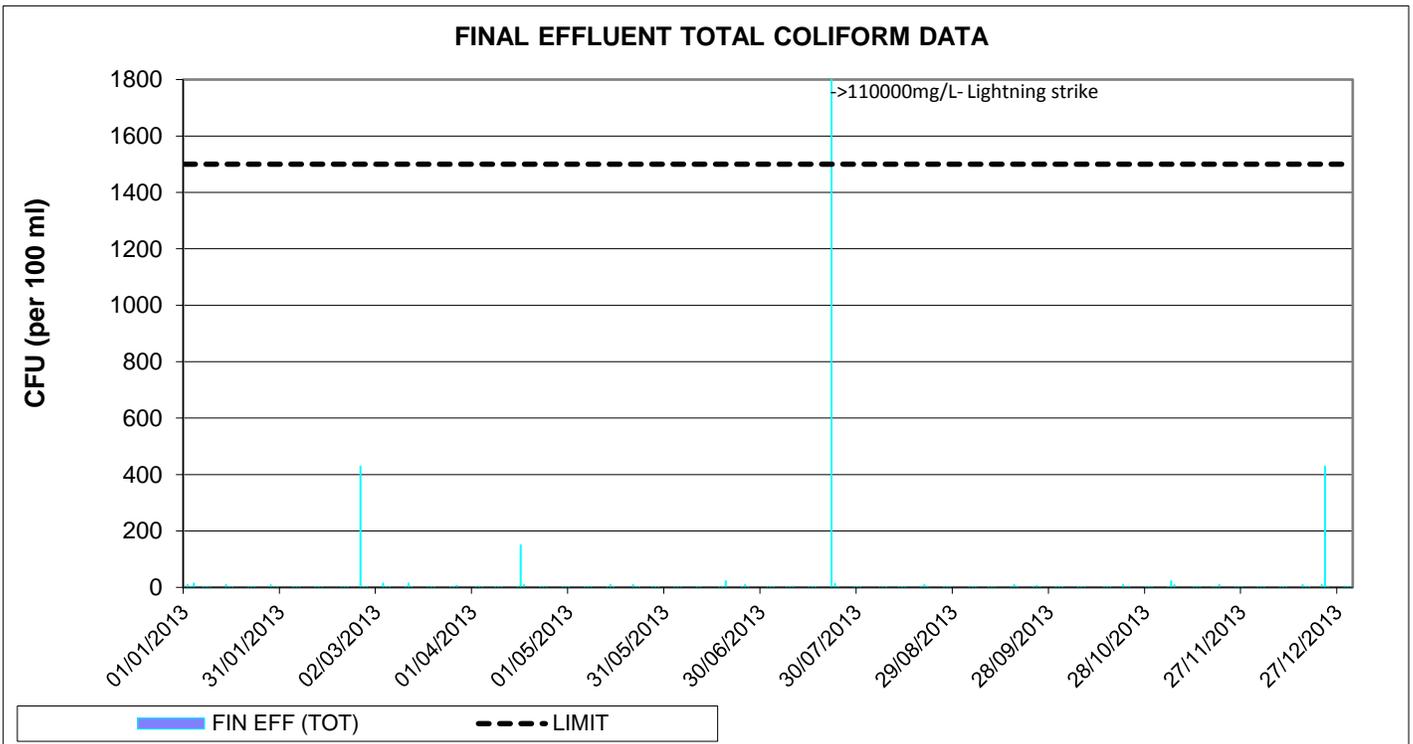
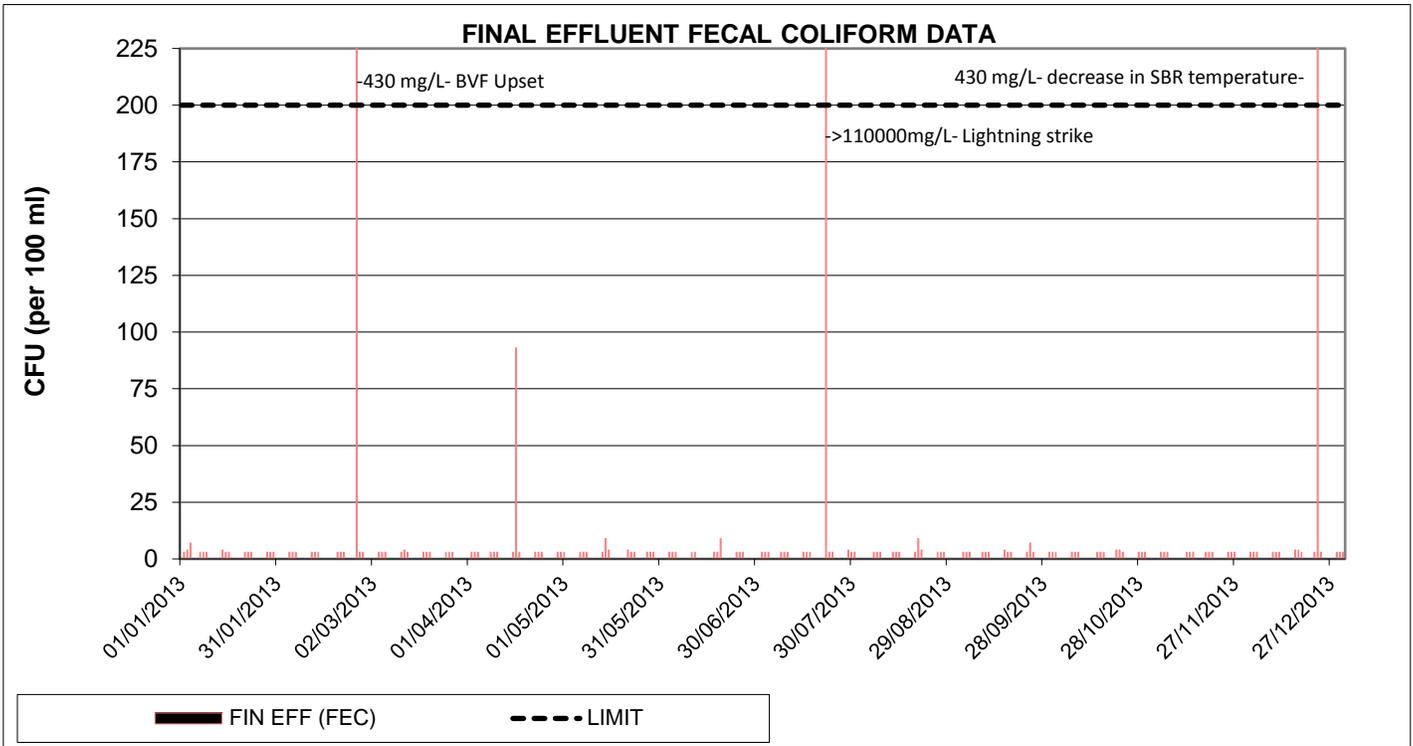
A reoccurring concern is the odourous gas being emitted from the onsite Industrial Pre-treatment facility, which is operated by McCain Foods Lt. Several recommendations have been made to the operations team for permanent solutions. City of Portage la Prairie staff request daily to weekly requests to McCain operators to check the system for displaced caps from sample ports that allow the gas to escape. Odour is a component of the City of Portage environmental license however, in order for Manitoba Conservation to enforce this portion, three written complaints from three different sources, must be received to their department.

Capital Expenditures

The concrete walls and floor in the grit removal chamber had corroded and was in need of restoration. The work was completed in October.

Roof repairs were completed on the penthouse portion of the main building as well as on the UV building.

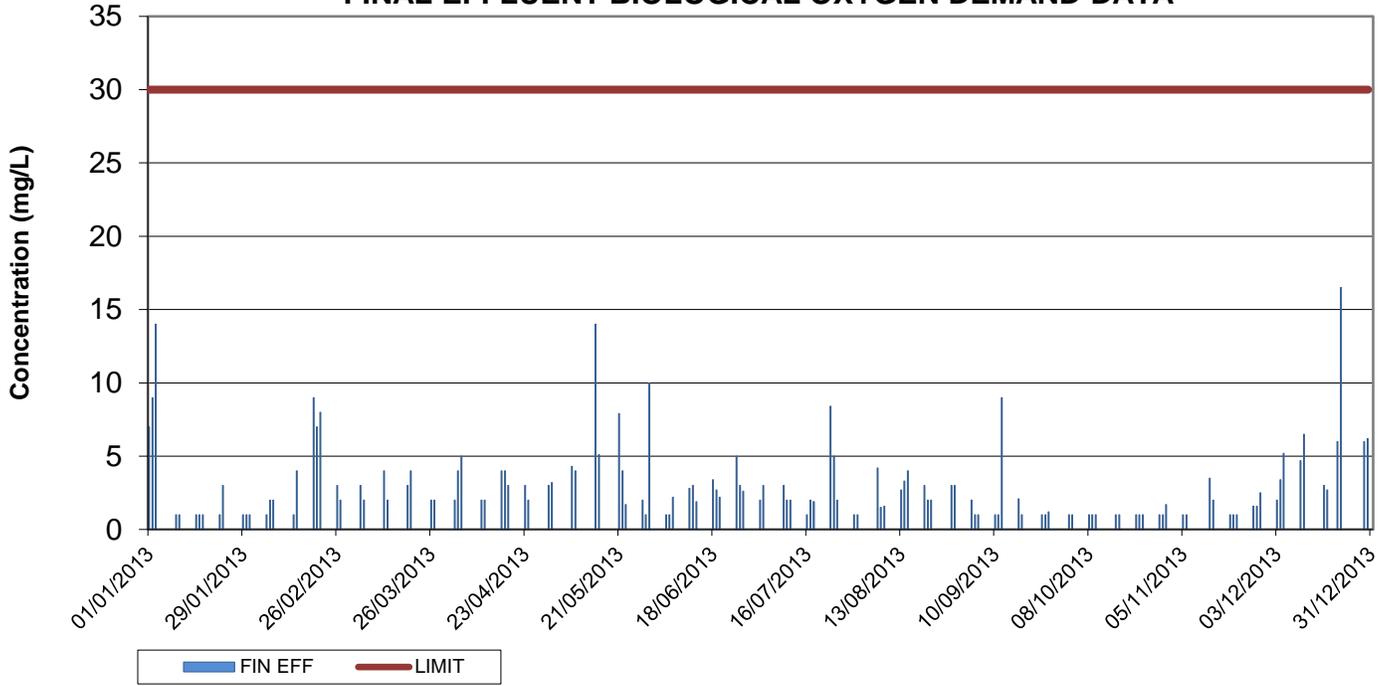
The construction of the new SBR Pumping Station began in November. Municipal and industrial flows combine in the SBR Pump station and are then conveyed into the SBR basins for treatment. This is an integral part of the system. The current pumping station has corroded pipes, inoperable valves, and concrete that has been extensively corroded due to highly corrosive gases. It was not possible to repair the current station and still receive flow. It is expected that the new SBR Pump Station will be completed by May of 2014. This project was advanced due to the deteriorating condition of the pump station and the elevated risk of failure.



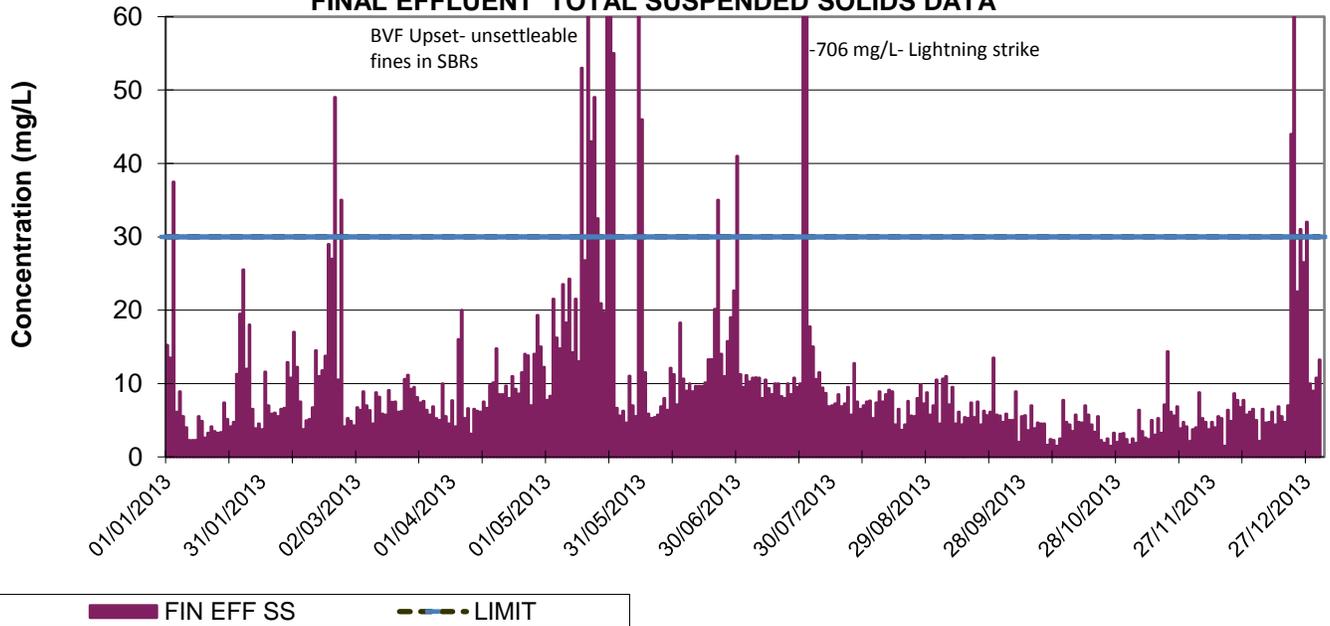
COLIFORM YEAR TO DATE ANALYSIS

FECAL COLIFORM ANALYSIS (FEC)		TOTAL COLIFORM ANALYSIS (TOT)	
TOTAL ANALYZED	158	TOTAL ANALYZED	158
GEOMEANS	3.7	GEOMEANS	4.4

FINAL EFFLUENT BIOLOGICAL OXYGEN DEMAND DATA



FINAL EFFLUENT TOTAL SUSPENDED SOLIDS DATA



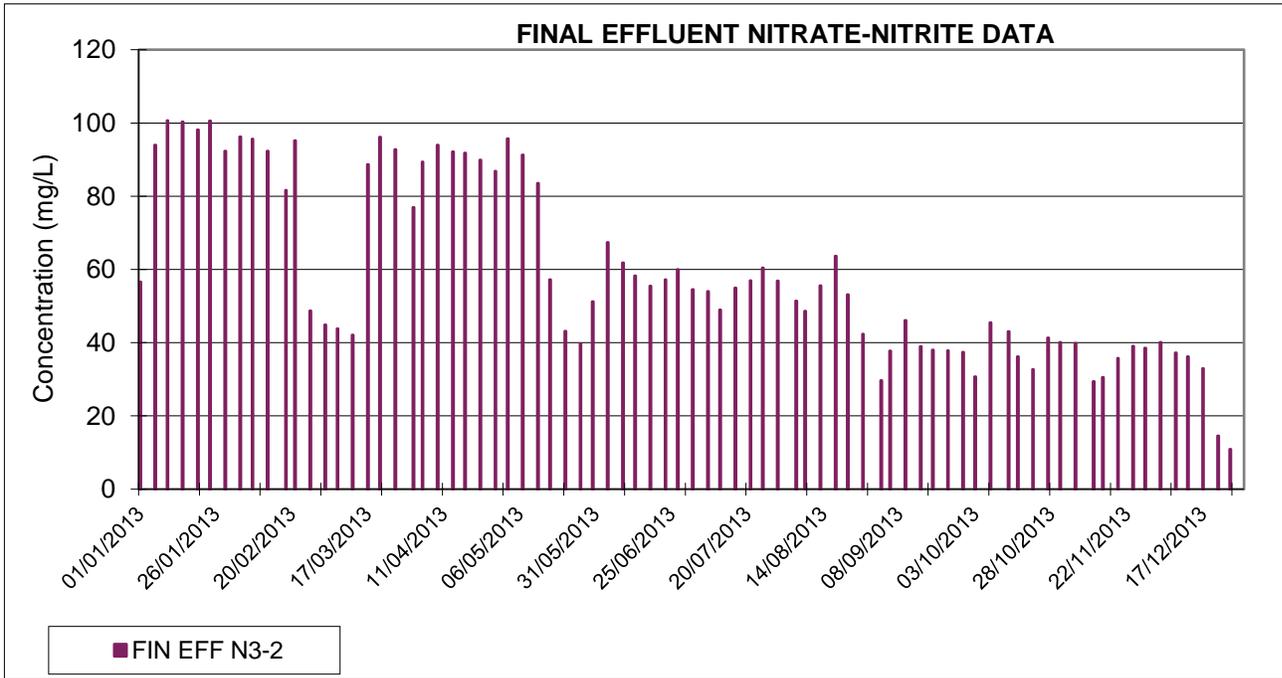
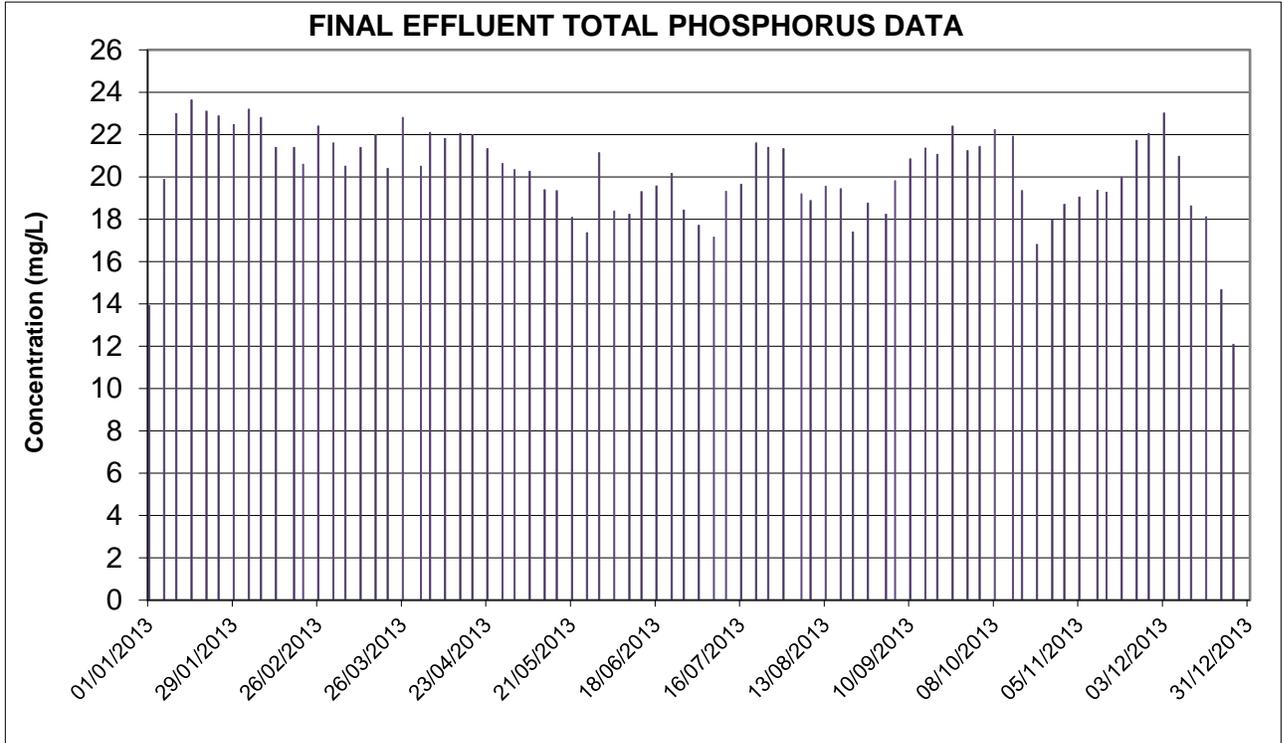
YEAR TO DATE ANALYSIS RESULTS

FIN EFFBOD DATA

TOT. #FAILURES 0
 TOT. SAMPLES ANALYZED 134
 PERCENT FAILURE 0.00%

SS ANALYSIS

TOT. #FAILURES 21
 TOT. SAMPs ANALYZED 365
 PERCENT FAILURE 5.75%



YEAR TO DATE ANALYSIS RESULTS

**TP
DATA**

TOT. #FAILURES
TOT. SAMPLES ANALYZED

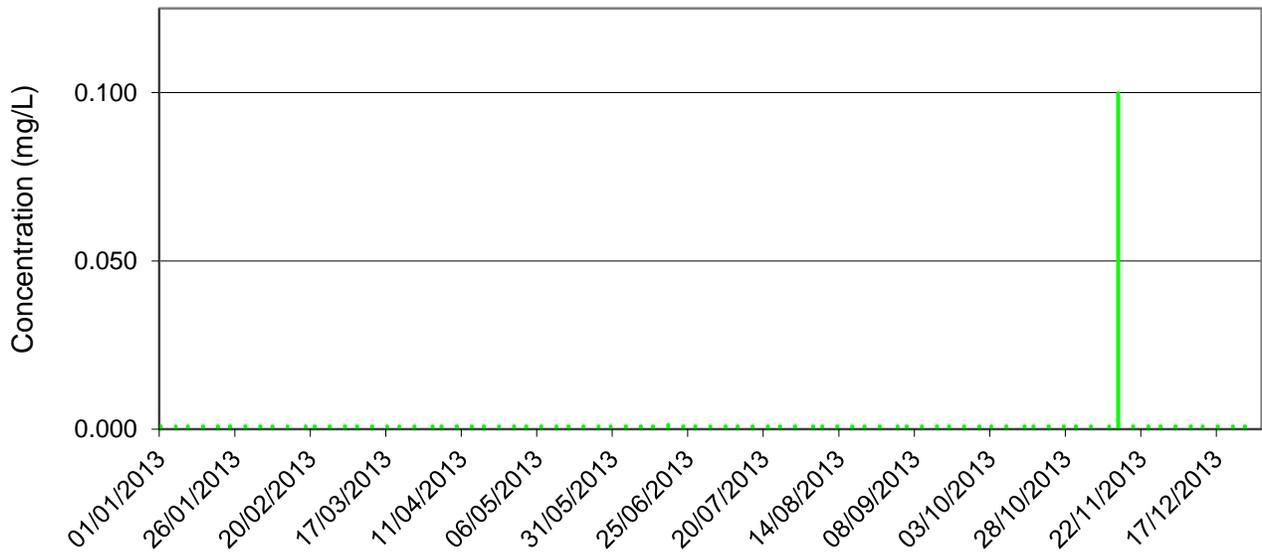
0
78

N3-2 ANALYSIS

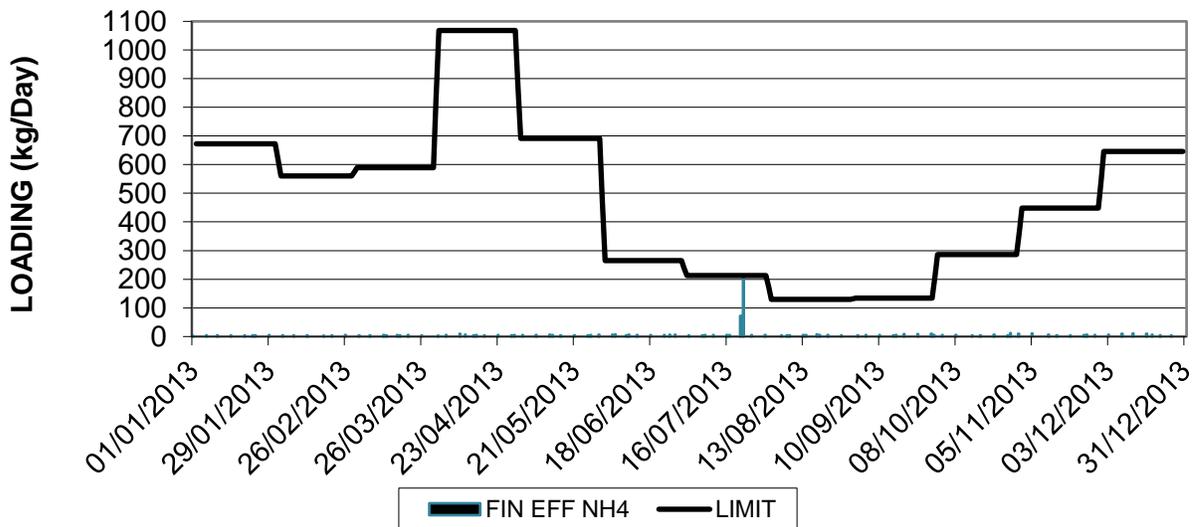
TOT. #FAILURES
TOT. SAMPS ANALYZED

0
78

FINAL EFFLUENT PHENOL DATA



FINAL EFFLUENT TOTAL AMMONIA DATA



YEAR TO DATE ANALYSIS RESULTS

PHENOL ANALYSIS

TOT. #FAILURES 0
 TOT. SAMPS ANALYZED 78

AMMONIA ANALYSIS

TOT. #FAILURES 0
 TOT. SAMPS ANALYZED 100
 PERCENT FAILURE 0.00%

