

Town of Petrolia Water Pollution Control Plant



Managed, Operated, and Maintained by



2013 Annual Report of Operations

March 2014

Gary Johnson, Environmental Officer - Sarnia Office

Ontario Ministry of the Environment
1094 London Road,
Sarnia, Ontario.
N7S 1P1

Dear Mr. Johnson,

On behalf of the Corporation of the Town of Petrolia, in Lambton County, CH2M HILL is pleased to submit to you the annual operating report for the Town of Petrolia Water Pollution Control Plant. Please feel free to contact the undersigned if you have any questions regarding this report.

Respectfully submitted,

CH2M HILL

James Wight
Project Manager

cc: Joe Adams, Director of Operations, Town of Petrolia
Cameron Walsh, Regional Manager CH2M HILL

Introduction

The Town of Petrolia Water Pollution Control Plant (WPCP) is located at 546 Maude St in Petrolia, Lambton County, and was constructed in 1978 to replace the existing Lagoon (2) treatment system.

The original (1978) plant included an extended mechanical aeration process complete with secondary clarification, phosphorous removal, continuous polishing and disinfection. Sludge is aerobically digested and up until 1997 was thickened and trucked off site for disposal and later land applied. Since 1997 sludge has been sent to one of the lagoons for treatment.

Upgrades to the treatment plant have included UV disinfection in 1995, VFD on the pumps at the main lift station in 1996, replacement of the manual bar screen with an automatic step screen in 1999, and replacement of the filter media in May of 2010. The plant had a design capacity of 3800 m³/day and is currently treating on average 2446 m³/day since 2002. The WPCP is a tertiary extended aeration plant with two large lagoons, one used to store digested sludge, and the other to use as a backup system in the event the plant requires maintenance. The plant consists of grit removal, mechanical aeration, supplemental jet aeration, clarification, sand filtration, and ultraviolet disinfection. The collection system consists of 11 pumping stations. An amendment to the C of A was applied for in 2002 and approved by the MOE Approvals Branch to have the plant re-rated from 3180m³ to 3800m³ based on the installation of two 30hp Jet Aspirators in the aeration tanks. Another amendment to the C of A was applied for in 2008 and 2010 and approved by the MOE to clarify lagoon discharge criteria and to conduct a pilot test for the co-treatment of landfill leachate up to 25m³/day.

Monitory and Compliance Reports

The Petrolia WPCP is a class 3 facility certificate number 2372. Reports submitted to the regional environmental officer are the R1 and R2 Municipal Utility Monitoring Program reports for mechanical plants and have been included in this report. S1 and S2 lagoon reports were never submitted in the past and staff have been asked to submit them but the data required for 2013 was not available and so these reports will be generated and submitted for the year 2014. These reports are submitted quarterly to the Sarnia office of the Ontario Ministry of the Environment.

Table 1. Environmental Compliance Approval

| ECA (formerly C of A) Number | Date of Issue |
|------------------------------|-------------------|
| 5819-7EZNY7 | August 29, 2008 |
| Last Amendment | November 10, 2010 |

Table 2. Effluent Limits and Objectives for ECA

| Effluent Parameter | Concentration | Waste Loading |
|--|----------------------|---------------|
| CBOD ₅ | 10.0 mg/L | 38.0 kg/day |
| Total Suspended Solids | 10.0 mg/L | 38.0 kg/day |
| Total Phosphorus | 1.0 mg/L | 3.8 kg/day |
| Total Ammonia Nitrogen (May 1 – Nov. 30) | 3.0 mg/L | 11.4 kg/day |
| Total Ammonia Nitrogen (Dec 1 – Apr 30) | 7.0 mg/L | 26.6 kg/day |
| E. Coli (Apr 1 – Nov 30) | 200 organisms/100 mL | |
| pH of the effluent maintained between 6-9.5 at all times | | |

Monitoring Data Interpretation

Table 3. Influent Monthly Flows

| | Total | Avg | Max |
|-----|----------|----------|----------|
| Jan | 81036 | 2701.2 | 5996 |
| Feb | 59022 | 2107.929 | 4123 |
| Mar | 78,751 | 2,540 | 3,894 |
| Apr | 47048.57 | 3360.612 | 6403.68 |
| May | 139204.5 | 4496.28 | 12495.69 |
| Jun | 80071.45 | 2669.048 | 4666.55 |
| Jul | 54735.57 | 1765.664 | 2222.4 |
| Aug | 51611.45 | 1664.885 | 2314.48 |
| Sep | 52417.58 | 1747.253 | 3875.01 |
| Oct | 52347.43 | 1688.627 | 2918.43 |
| Nov | 43273.44 | 1442.448 | 2716.28 |
| Dec | 48358.61 | 1559.955 | 12713.6 |