
TO: MAYOR J. LEHMAN AND MEMBERS OF COUNCIL

FROM: S. COULTER, MANAGER OF WASTEWATER OPERATIONS

NOTED: J.F. THOMPSON, P. ENG., CMM, PMP, DIRECTOR OF ENVIRONMENTAL SERVICES

**R. FORWARD, MBA, M.SC., P.ENG.
GENERAL MANAGER OF INFRASTRUCTURE AND GROWTH MANAGEMENT**

C. LADD, CHIEF ADMINISTRATIVE OFFICER

**RE: 2016 WASTEWATER TREATMENT FACILITY ANNUAL REPORT
FILE: A22-AN**

DATE: APRIL 3, 2017

The purpose of this Memorandum is to apprise General Committee of the compliance status of the 2016 reporting year for the City of Barrie's Wastewater Treatment Facility (WwTF). Barrie's ECA (Environmental Compliance Approval) for the Wastewater Treatment Facility (WwTF) requires that the facility Owner (i.e. Council) report annually to the MOECC within 90 days of the end of the reporting period (calendar 2016). This Memo is confirmation that the report for the year 2016 was indeed submitted to the Ministry of Environment and Climate Change (MOECC) on March 30th, 2017 in keeping with requirements of the ECA. A copy of the 2016 Annual Report, which has been submitted to MOECC, has been placed in the Councillor's Lounge for Council's perusal.

The City of Barrie's WwTF is located at 249 Bradford Street and operates under the Ministry of the Environment's Amended Environmental Compliance Approval (ECA) No. 8886-9Q3LSF dated November 12, 2014.

Sewage treatment processes include:

- Coarse and fine sewage grinding;
- Grit removal;
- Primary settling;
- High purity oxygen activated sludge treatment;
- Secondary settling;
- Nitrification by rotating biological contactors;
- Sand filtration;
- Ultraviolet disinfection;
- Treated effluent is discharged to Kempenfelt Bay;
- Biosolids are separated from the liquid sewage and are processed through dual digestion of sludge (aerobic & anaerobic); and
- Methane gas generated from this process is 'scrubbed' and used for co-generation of heat and electricity to offset plant energy demands.

In 2016, the effluent average daily flow of 48.4 mega litres per day (MLD) of sewage was treated; representing approximately 63.7% of the Plant's rated capacity of 76 MLD. The maximum daily influent flow was 94.0 MLD on March 28th, 2016 due to heavy rains and spring runoff inflowing and/or infiltrating the sanitary collection system.

The WwTF was in *full compliance* with *all effluent limits and loadings* for 2016 as indicated in Appendix “A” of the Annual Report. Over the reporting period the WwTF functioned exceptionally well, producing a high quality of treated effluent. It is important to note that when the quality of the raw sewage is compared to the quality of the final effluent discharged into Kempenfelt Bay, the Barrie WwTF achieved extremely high removal efficiencies for all regulated parameters as outlined in the table below:

Barrie WwTF Removal Efficiencies for Regulated Parameters

Regulated Parameter	Removal Efficiency (%)
	2016
Carbonaceous Biological Oxygen Demand – (cBOD ₅) (mg/L)	98.6
Total Suspended Solids (TSS) (mg/L)	99.3
Total Ammonia Nitrogen (NH ₃ –N) (mg/L)	98.4
Total Phosphorus (Tot. P) (mg/L)	99.4

The 2016 effluent phosphorous annual loading was 586 kg which is only 21% of the annual compliance loading of 2774 kg. The effluent phosphorous monthly average concentrations all met the 0.10 mg/L compliance limit for 2016 and the actual effluent annual average phosphorous concentration of 0.03 mg/L for 2016 was the lowest on record and fully met the Lake Simcoe Phosphorus Reduction Strategy limit of 0.10 mg/L. This extremely low average annual phosphorus concentration was achieved through a combination of altering the chemical coagulant addition point(s), rigorous and frequent monitoring (both a result of our focus and commitment to Process Optimization) and the fact that the plant is operating at an average of only 63.7% of its rated capacity resulting in low stress on our effluent filters whose primary purpose is phosphorous removal.

Phosphorus, ammonia and solids effluent loadings were all substantially reduced over 2015 by 57%, 63% and 62% respectively. Staff are of the opinion that this range of results is attributable to our focus on optimization efforts and dedication of staff in operating and maintaining the treatment process.

On April 11th, 2016, the City of Barrie and Wessuc Inc. jointly accepted the Exemplary Biosolids Management Award (Operating Program Category) from the Water Environment Association of Ontario (WEAO) at its annual conference in Niagara Falls, Ontario. The Exemplary Biosolids Management Award acknowledges excellence in the management of biosolids in the Province of Ontario. The Barrie Biosolids Program was subsequently featured in a three-page article in the fall, 2016 edition of *Influents* magazine (the official publication of the Water Environment Association of Ontario).

If you have any questions or require further information please contact the undersigned or S. Coulter, Manager of Wastewater Operations at extension 5826.