



INFRASTRUCTURE DEPARTMENT MEMORANDUM

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TO: MAYOR NUTTALL AND MEMBERS OF CITY COUNCIL

FROM: G. JORDEN, MANAGER OF WASTEWATER OPERATIONS, EXT. 4349

NOTED: S. DIEMERT, P. Eng., DIRECTOR OF INFRASTRUCTURE
B. ARANIYASUNDARAN, P. Eng., PMP,
GENERAL MANAGER OF INFRASTRUCTURE AND GROWTH MANAGEMENT
M. PROWSE, CHIEF ADMINISTRATIVE OFFICER

RE: 2023 WASTEWATER OPERATIONS ANNUAL REPORTS

DATE: June 12, 2024

The purpose of this memo is to provide a summary of the 2023 operation of the Wastewater Treatment Facility (WwTF), and the Wastewater Collection System (WWCS). The Ministry of Environment, Conservation and Parks (MECP), as part of the Environmental Compliance Approvals (ECAs) for each of these facilities, requires that a report be submitted annually.

Both reports were submitted to the MECP on March 28th, 2024, satisfying the requirements of the ECAs.

Copies of the complete 2023 Annual Reports have been posted on the City of Barrie's (City) website, and on the Wastewater Operations Branch webpage on InSite.

2023 Wastewater Treatment Facility Annual Report:
<https://www.barrie.ca/Wastewater-Treatment-Facility-Annual-Report.pdf>

2023 Wastewater Collection System Annual Report:
<https://www.barrie.ca/Wastewater-Collection-System-Annual-Report.pdf>

Wastewater Treatment Facility

The City's WwTF operates under the MECP's amended ECA, No. 0284-B2ML52, dated August 24th, 2018. Fully treated effluent is discharged to Kempenfelt Bay. Residual solids are converted to biosolids and used as a fertilizer on local farms. Methane gas generated from the biosolids conversion process is used for co-generation of heat and electricity, offsetting approximately \$450,000 in electricity charges annually.

The effluent average daily flow of 50.9 mega litres per day (MLD) of treated sewage represented approximately 67.0% of the plant's rated capacity of 76 MLD. The maximum daily effluent flow was 72.9 MLD on April 1st, 2023, which was the result of heavy rainfall accessing the sanitary collection system.

The WwTF maintained full compliance with all required effluent concentration and loading limits. Additionally, the plant met all ECA daily objectives with few exceptions. Over the reporting period the WwTF functioned exceptionally well, producing a high quality of treated effluent. The effluent annual average phosphorous concentration was 0.04 mg/L (99.2% removal by concentration), and the average ammonia effluent concentration was 0.13 mg/L (99.5% removal).

Phosphorous and nitrogen (known as ammonia), are nutrients that contribute to plant growth and oxygen depletion in receiving waters, with ammonia also being toxic to fish. Final effluent phosphorous is also subject to the limits and objectives of the Lake Simcoe Protection Act and the Lake Simcoe Phosphorous

Reduction Strategy. The final effluent phosphorous annual loading was 743 kg, which is 27% of the annual compliance loading maximum of 2,774 kg. The actual effluent annual average phosphorous concentration was 0.04 mg/L, which fully met the Lake Simcoe Phosphorus Reduction Strategy limit of 0.1 mg/L, and objective of 0.07 mg/L.

All other reportable parameters were treated to levels well below their regulated limits, including Total Suspended Solids (99.0% removal), and cBOD (98.3% removal).

Wastewater Collection System

The City owns and operates a WWCS that terminates at the WwTF. The WWCS currently operates under the MECP, ECA No. 014-W601, dated February 15, 2023. The WWCS is comprised of 12 sewage pumping stations (SPS) and over 550 km of gravity flow sewers. Additionally, the City assumes responsibility for the maintenance of sanitary laterals from the sewer main to the property line when the lateral experiences a structural failure. The City completed, or oversaw the repair, or replacement of 45 sanitary laterals.

There were no spills, overflows, and/or related sewer use bylaw issues related to any SPS.

Within the gravity sewer portion of the system, there were 5 incidents related to spills, overflows, and/or related sewer use bylaw issues that required an investigation and/or response from City staff, either by Wastewater Operations or Environmental Compliance. All but one of the incidents were the result of private-side misuse of the sewer resulting in an overland spill and were reported to the MECP in accordance with all regulatory requirements. One incident occurred on City property as a result of damage caused by a construction contractor. No directives or orders have been issued to the City because of these incidents.

Wastewater Operations Branch Successes

The WWOB had several successes that are not reflected within the annual reports. Notable accomplishments include:

- Secured a \$100k Provincial grant to allow the Branch to lead a full-scale pilot project in 2024 to determine the effectiveness of biosolids dewatering, as well as the feasibility and potential value of phosphorous recovery in a joint study with the University of Guelph.
- Expansion of the septage receiving program, generating over \$250k in revenue.
- Achieved unprecedented removal of effluent ammonia/nitrogen due, in large part, to an improved sampling and analysis program that provides staff with the ability to make sound, data-based decisions about process controls.
- Participation in the Canadian Standards Association Wastewater Management Standards Group which is developing a Quality Management System for the wastewater operations industry.
- Completed an outreach video on the WwTF to be posted on the Corporate website:
<https://vimeo.com/earlybirdfilmsca/review/938737761/e6631c82ed>

This memo provides a compilation of information that demonstrates the commitment of the Branch towards protecting the health of Lake Simcoe and the residents of Barrie.