



## **2025 WATER POLLUTION CONTROL PLANT AND SEWAGE PUMPING STATION ANNUAL REPORT**

Environmental Compliance Approval

# 4477-DK3LSL – Water Pollution Control Plant

# A-500-1122249878 – Sewage Pumping Station

March 13, 2026

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## **1.0 INTRODUCTION**

The Municipality of Brighton is pleased to present its Annual Performance Report for the Brighton Water Pollution Control Plant (WPCP) governed by ECA # 4477-DK3LSL issued on December 10, 2025, and the Harbour Street Sewage Pumping Station (SPS) governed by ECA # A-500-1122249878 issued on August 25, 2021. This report covers the operating period of **January 1 to December 31, 2025**.

Brighton's Water Pollution Control Plant (WPCP) services a population of approximately 7,000 residents, as well as Presqu'île Provincial Park. The Wastewater Collection System (WWCS) is designated as a Class II subsystem; the Water Pollution Control Plant (WPCP) is designated as a Class I subsystem.

This report has been prepared in accordance with Condition 11(4) of the WPCP ECA, and Condition 8(3) of the Harbour Street SPS ECA. Each of the ECA's include Limited Operational Flexibility (LOF) provisions to allow expedited changes to the treatment operation, subject to final MECP approvals and conditions.

The WPCP is located at 100 County Road 64, and the Harbour Street SPS is located at 7 Harbour Street. Wastewater collected from the serviced area of the Municipality passes through the Sewage Pumping Station, with forcemains delivering raw sewage to the WPCP. A second gravity feed also discharges to the Brighton WPCP. The Lagoon system is comprised of four treatment components in the order listed below:

1. One (1) 0.7-hectare Aeration Pond with two (2) mechanical surface aerators (15 hp), and five (5) aspirating aerators (three 10 hp, and two 25 hp).
2. One (1) chemical mixing chamber where ferric chloride is added.
3. One (1) 5.44-hectare Waste Stabilization Pond with three (3) baffles.
4. One (1) two-celled Constructed Wetland having a total surface area of 6.2 hectares.

The effluent from the constructed wetland is discharged continuously into a provincially significant natural wetland that borders Presqu'île Bay, which is located off the northeast shore of Lake Ontario.

## **2.0 WASTEWATER FLOWS AND RAW SEWAGE QUALITY**

The WPCP has a rated capacity of 4,600 m<sup>3</sup>/day. For purposes of monitoring and reporting raw influent flows, the Aeration Pond Effluent flow meter is referenced in **Table I** below. The Annual Average Daily Flow in 2025 is calculated at 2,871 m<sup>3</sup>/day, accounting for an average of 62% of the rated capacity. Throughout the reporting period, the highest daily flow recorded was 13,109 m<sup>3</sup>/day on May 24, while the lowest daily flow was 1,093 m<sup>3</sup>/day on August 8.

**Table I** summarizes Aeration Pond Effluent flows in 2025.

**Table I**  
**Monthly Wastewater Flows to Waste Stabilization Pond**

| Month         | Total Flow (m <sup>3</sup> ) | Average Daily Flow (m <sup>3</sup> /day) | Percent of Rated Capacity (%) |
|---------------|------------------------------|------------------------------------------|-------------------------------|
| January       | 76,567                       | 2,470                                    | 54                            |
| February      | 53,605                       | 1,914                                    | 42                            |
| March         | 125,681                      | 4,054                                    | 88                            |
| April         | 131,736                      | 4,391                                    | 95                            |
| May           | 153,856                      | 4,963                                    | 108                           |
| June          | 94,107                       | 3,137                                    | 68                            |
| July          | 73,874                       | 2,383                                    | 52                            |
| August        | 68,560                       | 2,212                                    | 48                            |
| September     | 59,594                       | 1,986                                    | 43                            |
| October       | 63,534                       | 2,049                                    | 45                            |
| November      | 70,266                       | 2,342                                    | 51                            |
| December      | 79,043                       | 2,550                                    | 55                            |
| <b>Annual</b> | <b>1,050,423</b>             | <b>2,871</b>                             | <b>62</b>                     |

## 2.1 Flow Interpretation

The variations in the flow of wastewater received at the WPCP are likely caused by infiltration and inflow to the collection system as well as the time of the year. More specifically, local precipitation events, fluctuations in groundwater elevations and snowmelt all contribute to the variations. Flow values identified above are from the Aeration Pond Effluent. This meter captures gravity and force main influent flows combined.

The Municipality is committed to continuing to make efforts to identify and eliminate sources of infiltration and inflow into the collection system.

## 2.2 Raw Sewage Quality

As per the ECA, raw sewage samples are to be collected and analyzed for select parameters normally once per month. However, for 2025, raw sewage samples were collected weekly to better determine treatment requirements of the WPCP.

**Table II** as follows summarizes raw wastewater quality for 2025. Weekly raw sewage samples provide better data for managing operation of the Aeration Pond. Results for all samples collected within a month were averaged to determine raw sewage quality values provided in **Table II**.

Raw sewage samples are collected just upstream of the WPCP in the sanitary sewer collection system. Samples of the combined sewage (pumped sewage from the Harbour Street SPS and the gravity drainage portion of the sanitary sewer system) are collected at the manhole just before the flows enter the Aeration Pond.

**Table II**  
**Monthly Raw Sewage Quality**

| Month          | CBOD5<br>(mg/L) | TSS<br>(mg/L) | Total<br>Phosphorus<br>(mg/L) | TKN<br>(mg/L) | Total Ammonia<br>Nitrogen<br>(mg/L) |
|----------------|-----------------|---------------|-------------------------------|---------------|-------------------------------------|
| January        | 181.3           | 168.3         | 4.01                          | 40.1          | 34.0                                |
| February       | 195.3           | 213.0         | 4.98                          | 45.7          | 39.9                                |
| March          | 116.8           | 110.3         | 2.44                          | 23.6          | 19.8                                |
| April          | 120.4           | 111.4         | 2.44                          | 24.2          | 22.1                                |
| May            | 148.5           | 188.5         | 3.05                          | 27.5          | 22.4                                |
| June           | 92.0            | 92.8          | 2.80                          | 27.9          | 27.5                                |
| July           | 165.2           | 187.6         | 3.64                          | 35.8          | 32.3                                |
| August         | 154.0           | 164.0         | 3.72                          | 39.5          | 36.3                                |
| September      | 149.5           | 192.0         | 4.30                          | 44.0          | 42.0                                |
| October        | 138.8           | 164.2         | 4.09                          | 46.2          | 42.9                                |
| November       | 166.8           | 122.7         | 4.13                          | 42.8          | 38.9                                |
| December       | 149.2           | 151.4         | 3.87                          | 38.9          | 34.5                                |
| <b>Average</b> | <b>148.1</b>    | <b>155.5</b>  | <b>3.62</b>                   | <b>36.3</b>   | <b>32.7</b>                         |

### **3.0 WASTEWATER EFFLUENT QUALITY AND FLOWS**

Schedule C of the ECA identifies Final Effluent Compliance Limits for the sample location downstream of the Waste Stabilization Pond and upstream of the Constructed Wetland. Effluent Design Objectives are identified in Schedule B.

Schedule D of the ECA identifies monitoring parameters for both Influent and Final Effluent monitoring.

**Table III** below outlines Final Effluent flows throughout the reporting period. The facility operated at 61% of the rated capacity throughout the reporting period, with an Annual Average Daily Flow of 2,806 m<sup>3</sup>/day.

**Table III**  
**Monthly Final Effluent Flows to Constructed Wetland**

| <b>Month</b>  | <b>Total Flow (m<sup>3</sup>)</b> | <b>Avg. Flow (m<sup>3</sup>/day)</b> | <b>Peak Monthly Flow (m<sup>3</sup>/day)</b> | <b>Percent of Rated Capacity (%)</b> |
|---------------|-----------------------------------|--------------------------------------|----------------------------------------------|--------------------------------------|
| January       | 88,497                            | 2,855                                | 5,671                                        | 62                                   |
| February      | 54,965                            | 1,963                                | 7,329                                        | 43                                   |
| March         | 132,576                           | 4,277                                | 8,208                                        | 93                                   |
| April         | 132,476                           | 4,416                                | 8,240                                        | 96                                   |
| May           | 156,419                           | 5,046                                | 12,398                                       | 110                                  |
| June          | 82,787                            | 2,760                                | 4,317                                        | 60                                   |
| July          | 69,237                            | 2,233                                | 7,338                                        | 49                                   |
| August        | 54,532                            | 1,759                                | 3,420                                        | 38                                   |
| September     | 55,808                            | 1,860                                | 7,393                                        | 40                                   |
| October       | 50,260                            | 1,621                                | 2,585                                        | 35                                   |
| November      | 66,992                            | 2,233                                | 2,738                                        | 49                                   |
| December      | 82,212                            | 2,652                                | 8,680                                        | 58                                   |
| <b>Annual</b> | <b>1,026,761</b>                  | <b>2,806</b>                         | <b>6,526</b>                                 | <b>61</b>                            |

#### **4.0 OVERVIEW OF SUCCESS AND ADEQUACY OF WORKS**

For the most part, the WPCP is successfully treating the Final Effluent for all effluent parameters apart from Total Ammonia Nitrogen (TAN). As per **Table IV** below, there were exceedances of TAN for six (6) months in 2025.

For E. coli, there is no active disinfection in the treatment process and the influence of wildlife contributes to higher E. coli values.

**Table IV** summarizes Final Effluent quality for the Waste Stabilization Pond. Final Effluent Design Objectives and Compliance Limits are also captured in the table. For Carbonaceous Biochemical Oxygen Demand (CBOD5) and Total Suspended Solids (TSS), compliance is based on an Annual Average Effluent Concentration Limit, while all other parameters have a Monthly Average Effluent Concentration Limit. In 2025, the effluent quality did not meet the objectives for TSS from January to May but was below the compliance limit for the entire year. The facility did not meet Final Effluent TAN compliance limits in January, February, March, June, July, and December.

As mentioned in previous Performance Reports, the facility is not able to consistently facilitate the nitrification process. Best efforts were made to modify operating strategies for nitrification to occur, however, with cold water temperatures in the winter, heavy dilution through the spring and early summer, and ammonia bleed-out from sludge deposits in the Waste Stabilization Pond, nitrification remains a challenge for the WPCP.

**NOTE:**

**Blue text** on Table IV denotes months that did not achieve Objective Limits.

**Red text** on Table IV denotes months that did not achieve Compliance Limits.

**Table IV**  
**Monthly Average Waste Stabilization Pond (Final) Effluent Quality**

| Parameter                                       | CBOD5<br>(mg/L)  | TSS<br>(mg/L)    | TP<br>(mg/L) | TAN<br>(mg/L)                                      | TKN<br>(mg/L)   | E. coli<br>(mg/L) | Temp<br>(°C)    | pH           | Nitrate<br>(mg/L) | Nitrite<br>(mg/L) |
|-------------------------------------------------|------------------|------------------|--------------|----------------------------------------------------|-----------------|-------------------|-----------------|--------------|-------------------|-------------------|
| <b>Effluent<br/>Objective<br/>Limit (mg/L)</b>  | 15.0<br>(Annual) | 15.0<br>(Annual) | 0.8          | May 1 - Oct 31:<br>10.0<br>Nov 1 - Apr 30:<br>15.0 | No<br>Objective | 200<br>CFU/100mL  | No<br>Objective | 6.5 -<br>9.0 | No<br>Objective   | No<br>Objective   |
| <b>Effluent<br/>Compliance<br/>Limit (mg/L)</b> | 30.0<br>(Annual) | 40.0<br>(Annual) | 1.0          | May 1 - Oct 31:<br>14.0<br>Nov 1 - Apr 30:<br>17.0 | No Limit        | No Limit          | No Limit        | 6.0 -<br>9.5 | No Limit          | No Limit          |
| January                                         | 13.0             | 19.3             | 0.54         | 21.5                                               | 24.0            | 2,420             | 0.5             | 7.1          | 0.06              | 0.05              |
| February                                        | 20.8             | 27.5             | 0.65         | 24.7                                               | 26.3            | 12,976            | 2.4             | 7.1          | 0.06              | 0.03              |
| March                                           | 22.3             | 24.0             | 0.66         | 18.9                                               | 21.6            | 4,840             | 3.1             | 7.2          | 0.31              | 0.05              |
| April                                           | 14.0             | 22.8             | 0.30         | 12.4                                               | 13.8            | 24,000            | 8.9             | 7.7          | 0.80              | 0.14              |
| May                                             | 13.5             | 23.5             | 0.20         | 14.0                                               | 15.1            | 3,590             | 15.8            | 7.7          | 0.44              | 0.12              |
| June                                            | 4.0              | 7.5              | 0.21         | 19.6                                               | 18.7            | 4                 | 21.2            | 7.5          | 0.11              | 0.04              |
| July                                            | 5.0              | 5.6              | 0.40         | 22.6                                               | 22.2            | 10                | 24.1            | 7.7          | 0.29              | 0.19              |
| August                                          | 4.5              | 5.5              | 0.39         | 12.9                                               | 13.2            | 75                | 22.9            | 7.4          | 0.37              | 1.22              |
| September                                       | 4.0              | 3.0              | 0.28         | 10.7                                               | 11.1            | 41                | 19.2            | 7.5          | 0.68              | 0.15              |
| October                                         | 4.4              | 3.8              | 0.21         | 10.5                                               | 10.9            | 17                | 14.4            | 7.7          | 1.86              | 0.23              |
| November                                        | 4.3              | 5.0              | 0.28         | 12.6                                               | 14.5            | 816               | 4.4             | 7.5          | 2.19              | 0.15              |
| December                                        | 9.2              | 12.4             | 0.42         | 21.9                                               | 22.4            | 1,203             | 1.4             | 8.1          | 0.82              | 0.07              |
| <b>Average</b>                                  | <b>9.9</b>       | <b>13.3</b>      | <b>0.38</b>  | <b>16.9</b>                                        | <b>17.8</b>     | <b>4,166</b>      | <b>11.5</b>     | <b>7.5</b>   | <b>0.66</b>       | <b>0.20</b>       |

**Table V** provides Waste Stabilization Pond effluent loading results. For CBOD5 and TSS, compliance is based on an Annual Average Daily Effluent Loading Limit, while all other parameters have a Monthly Average Daily Loading Limit. The Final Effluent from the Waste Stabilization Pond met the effluent loading limits for all required parameters, apart from TAN for the month of May.

**Table V** also estimates sludge production in the Waste Stabilization Pond.

NOTE: **Red text** on **Table V** denotes month(s) that did not achieve Compliance Limits.

**Table V**  
**Monthly Average Waste Stabilization Pond (Final) Effluent Loading**

| Parameter        | CBOD5<br>(kg/d)      | TSS<br>(kg/d)        | TP<br>(kg/d) | TAN<br>(kg/d)                          | Approximate Sludge<br>Production*                                            |
|------------------|----------------------|----------------------|--------------|----------------------------------------|------------------------------------------------------------------------------|
| <b>ECA Limit</b> | 138 kg/d<br>(Annual) | 184 kg/d<br>(Annual) | 4.6 kg/d     | May-Oct 64.4 kg/d<br>Nov-Apr 78.2 kg/d | (m <sup>3</sup> /month)<br>Based on Sludge Yield<br>of 2.8 L/ m <sup>3</sup> |
| January          | 32.1                 | 47.5                 | 1.3          | 53.0                                   | 214.4                                                                        |
| February         | 39.7                 | 52.6                 | 1.2          | 47.2                                   | 150.1                                                                        |
| March            | 90.2                 | 97.3                 | 2.7          | 76.7                                   | 351.9                                                                        |
| April            | 61.5                 | 100.1                | 1.3          | 54.4                                   | 368.9                                                                        |
| May              | 67.0                 | 116.6                | 1.0          | 69.6                                   | 430.8                                                                        |
| June             | 12.5                 | 23.5                 | 0.7          | 61.4                                   | 263.5                                                                        |
| July             | 11.9                 | 13.3                 | 1.0          | 53.8                                   | 206.8                                                                        |
| August           | 10.0                 | 12.2                 | 0.9          | 28.6                                   | 192.0                                                                        |
| September        | 7.9                  | 6.0                  | 0.5          | 21.2                                   | 166.9                                                                        |
| October          | 9.0                  | 7.8                  | 0.4          | 21.6                                   | 177.9                                                                        |
| November         | 10.0                 | 11.7                 | 0.6          | 29.5                                   | 196.7                                                                        |
| December         | 23.5                 | 31.6                 | 1.1          | 55.9                                   | 221.3                                                                        |
| <b>Average</b>   | <b>31.3</b>          | <b>43.4</b>          | <b>1.1</b>   | <b>47.7</b>                            | <b>245.1</b>                                                                 |

\*Sludge production is based on an estimated sludge yield of 2.8 L of sludge per cubic meter of wastewater treated. Sludge yield at 2.8 L/m<sup>3</sup> is based on 5% total solids in sludge blanket on the bottom of the Waste Stabilization Pond. The ECA does not limit sludge production rates.

**Table VI** provides the overall removal efficiency of the WPCP Sewage Works System comparing Raw Sewage to the Constructed Wetland Effluent (Discharge Point).

**Table VI**  
**Overall Removal Efficiency of WPCP Sewage Works System**

| Month          | CBOD5 (%)   | TSS (%)     | TP (%)      | TAN (%)     |
|----------------|-------------|-------------|-------------|-------------|
| January        | 96.4        | 94.4        | 89.5        | 41.0        |
| February       | 95.0        | 91.1        | 79.1        | 38.8        |
| March          | 91.6        | 89.6        | 75.1        | 1.1         |
| April          | 96.3        | 95.5        | 94.4        | 46.2        |
| May            | 96.5        | 98.1        | 90.3        | 52.7        |
| June           | 95.7        | 93.5        | 73.7        | 42.3        |
| July           | 97.6        | 98.1        | 76.7        | 36.5        |
| August         | 97.4        | 96.3        | 82.4        | 61.6        |
| September      | 97.3        | 98.4        | 90.8        | 79.1        |
| October        | 97.1        | 98.7        | 94.3        | 80.5        |
| November       | 97.6        | 98.4        | 98.8        | 76.6        |
| December       | 97.3        | 98.4        | 97.8        | 49.9        |
| <b>Average</b> | <b>96.4</b> | <b>96.1</b> | <b>87.3</b> | <b>54.1</b> |

## 5.0 OPERATING ISSUES AND CORRECTIVE ACTIONS

**Table VII** summarizes mechanical problems and corrective actions taken in 2025.

**Table VII**  
**Summary of Operating Issues and Corrective Actions**

| Location                                               | Issue                                    | Corrective Action                                                                   |
|--------------------------------------------------------|------------------------------------------|-------------------------------------------------------------------------------------|
| Water Pollution Control Plant                          | Ammonia Compliance                       | Construction started on new Water Pollution Control Plant                           |
| Water Pollution Control Plant                          | Elevated Phosphorus levels               | Increased dosing rate by 30%                                                        |
| Water Pollution Control Plant (Chemical Dosing System) | Chemical Tank Radar Unit malfunction     | Reset unit manually                                                                 |
| Water Pollution Control Plant (Chemical Dosing System) | Dosing lines brittle with age            | Replace brittle lines to prevent leaks                                              |
| Water Pollution Control Plant (Aeration Pond)          | Lack of mixing energy                    | Relocate aerator anchors to adjust flow patterns to re-suspend solids               |
| Water Pollution Control Plant (Aeration Pond)          | Aerators malfunction due to rags in pond | Clear rags and repair aerators<br>New WPCP will eliminate this issue with Headworks |
| Water Pollution Control Plant (Aeration Pond)          | DO sensor wires chewed by rodents        | Splice wires together and improve insulation on wires                               |
| Sewage Pumping Station                                 | Debris/scum blanket blocking pump intake | Disassemble pump and clear blockage                                                 |
| Wastewater Collection System                           | Inflow and Infiltration                  | CCTV inspections and repairs as identified                                          |

## 6.0 SUMMARY OF MAINTENANCE

**Table VIII** summarizes normal maintenance completed at the WPCP, SPS, Constructed Wetland and Presqu'île Park in 2025.

**Table VIII**  
**Summary of Maintenance**

| <b>Name of Equipment Maintained</b>                               | <b>Frequency</b>                | <b>Corrective Action</b>                                  |
|-------------------------------------------------------------------|---------------------------------|-----------------------------------------------------------|
| pH Meter/DO Probe                                                 | Weekly                          | Calibration (in-house)                                    |
| Portion of Wastewater Collection System                           | Annually                        | Clean, inspect, and repair as required                    |
| Flash Mixer/Aerators/Pumps                                        | Quarterly                       | Grease/check oil, remove rags and debris                  |
| Sludge Depth Measurement                                          | Annually                        | Sludge Judge                                              |
| Watson Marlow QDos                                                | Quarterly                       | Replace heads when required (usually every 3 to 4 months) |
| Siemens Mag Meter LUT400                                          | Annually (Spring)               | Calibration                                               |
| Flow Monitoring Devices at WPCP, SPS, Wetland and Presqu'île Park | Annually                        | Calibration                                               |
| SPS Debris/Scum Blanket                                           | Quarterly                       | Inspect, clean, and remove if required                    |
| Wetland Water Levels                                              | Annually (Spring, Summer)       | Lower the water levels                                    |
| Aerators                                                          | Annually (Spring, Summer, Fall) | Repair/replace parts or remove debris                     |
| Berm                                                              | Weekly                          | Inspect and repair as needed                              |
| Wetland Water Levels                                              | Annually (November)             | Raise water levels                                        |
| SPS Valves                                                        | Quarterly                       | Exercise all valves                                       |
| SPS Valves                                                        | Annually                        | Grease valves                                             |

## **7.0 EFFLUENT QUALITY ASSURANCE AND CONTROL**

Wastewater exiting the Aeration Pond passes through a chemical dosing chamber (also called the Cell). Ferric Chloride is the coagulant used to remove phosphorus and help with the settling of solids. It also aids in the settling of other substances and odour control. The dosing system operates twenty-four (24) hours a day, seven (7) days a week and is analyzed and adjusted to determine the correct dosing rate of ferric chloride for optimal performance. The system is checked and logged daily by a wastewater operator.

Samples collected at all points in the treatment process are done so by a licensed wastewater operator, following the applicable MECP guidelines. All collected wastewater samples are sent weekly to an accredited laboratory for analysis (SGS Testing Services, Lakefield, Ontario). The test results of the wastewater samples are analyzed weekly by Brighton staff. A result showing non-compliance with the required wastewater limit, as stated in the ECA, is reported to the MECP in accordance with the ECA.

## **8.0 SUMMARY OF CALIBRATION AND MAINTENANCE OF MONITORING EQUIPMENT**

**Table IX** summarizes the calibration/maintenance schedule of the monitoring equipment at the WPCP.

**Table IX**  
**Equipment Calibration/Maintenance**

| <b>Frequency of Calibration/Maintenance</b> | <b>Equipment Calibrated/Maintained</b> | <b>Company Performing Calibration/Maintenance</b> |
|---------------------------------------------|----------------------------------------|---------------------------------------------------|
| Annually                                    | Flow Monitors/Mag Meters               | Franklin/Siemens                                  |
| Annually                                    | *DO Meter/DO Probes/DR3900             | Hach Technician                                   |
| Weekly                                      | *DO Probe/pH Meters                    | In-house                                          |

\*DO stands for Dissolved Oxygen

## 8.1 Instrumentation Calibration and Performance Reports

|                                                                                                                                                                                                                                                 |  |                                                                         |  |                                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------|--|----------------------------------------------------------|
|                                                                                                                                                                |  | <h3>CALIBRATION REPORT</h3>                                             |  | TAG NO.: Lagoon<br>REPORT NO.: 250714<br>DATE: 14-Jul-25 |
| SITE: Brighton Waste Water<br>PROCESS AREA: Effluent flow from main settling ponds.<br>INSTR. TAG: Lagoon<br>MANUFACTURER: Siemens<br>MODEL: Sitrans LUT 440 & XRS-5C<br>SERIAL No.: PBD/E4090499<br>INSTR. RANGE: 0 to 1250 m <sup>3</sup> /hr |  | DATE: July 14, 2025<br>TECHNICIAN: Mike Humphries<br>REPORT NO.: 250714 |  |                                                          |

PRIMARY DEVICE: 18" Parshall Flume  
 MAX FLOW: 1250 m<sup>3</sup>/hr  
 MAX HEAD: 48.50 cm  
 CONSTANT: 3809.5  
 EXPONENT: 1.540

Output: mA Flow  
 Zero: 4 0.00  
 Max: 20 1250.0

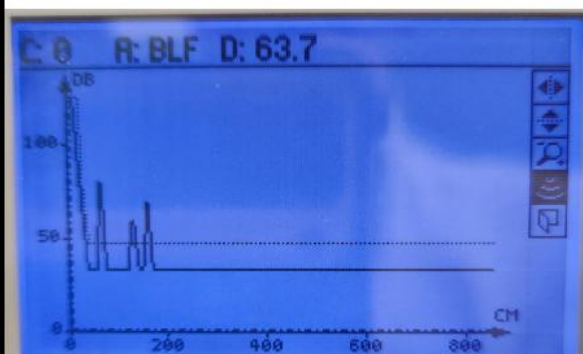


Figure of Merit: 82 %  
 Confidence: 30  
 Echo Strength: 85 dB  
 Noise Average: -6 dB

OCM Flow Table

| Head Applied (cm) | Head Displayed (cm) | Error (%) | Calculated Flow (m <sup>3</sup> /hr) | Flow Displayed (m <sup>3</sup> /hr) | Error (%) | Calculated mA Output | Measured mA Output | Error (%) |
|-------------------|---------------------|-----------|--------------------------------------|-------------------------------------|-----------|----------------------|--------------------|-----------|
| 0.00              | 0.00                | 0.00      | 0.00                                 | 0.00                                | 0.00      | 4.00                 | 4.00               | 0.00      |
| 10.00             | 9.96                | -0.40     | 109.9                                | 109.0                               | -0.80     | 5.41                 | 5.39               | -0.30     |
| 20.00             | 20.04               | 0.20      | 319.5                                | 320.0                               | 0.16      | 8.09                 | 8.10               | 0.13      |
| 30.00             | 29.96               | -0.13     | 596.5                                | 595.0                               | -0.26     | 11.64                | 11.62              | -0.13     |
| 40.00             | 40.05               | 0.12      | 929.1                                | 930.0                               | 0.10      | 15.89                | 15.90              | 0.05      |
| 48.50             |                     | #DIV/0!   | 1250.0                               |                                     | #DIV/0!   | 20.00                |                    | #DIV/0!   |

Totalizer As Found 2701240.87 m<sup>3</sup>  
 Totalizer As Left 2701292.47 m<sup>3</sup>

Zero As Found 76.71000 cm  
 Zero As Left 76.81000 cm  
 Change in Zero -0.10000 cm

#### Comments

19.0cm block used for zero.

AS FOUND: PASS

AS LEFT: PASS

CERTIFIED BY: Mike Humphries

|                                                                                                                                                                                                                                                                                         |                                                                                                      |  |                                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|--|-----------------------------------------------------|
|                                                                                                                                                                                                        | <h2 style="text-align: center;">CALIBRATION REPORT</h2>                                              |  | <b>TAG NO.:</b> Marsh                               |
|                                                                                                                                                                                                                                                                                         |                                                                                                      |  | <b>REPORT NO.:</b> 250714<br><b>DATE:</b> 14-Jul-25 |
| <b>SITE:</b> Brighton Waste Water<br><b>PROCESS AREA:</b> Effluent flow to filter ponds.<br><b>INSTR. TAG:</b> Marsh<br><b>MANUFACTURER:</b> Siemens<br><b>MODEL:</b> Sitrans LUT 440 & XRS-5C<br><b>SERIAL No.:</b> PBD/LO160029<br><b>INSTR. RANGE:</b> 0 to 6730 m <sup>3</sup> /day | <b>DATE:</b> July 14, 2025<br><br><b>TECHNICIAN:</b> Mike Humphries<br><br><b>REPORT NO.:</b> 250714 |  |                                                     |

**PRIMARY DEVICE:** 2 X 90° V-Notch Weirs  
**MAX FLOW:** 6730 m<sup>3</sup>/day  
**MAX HEAD:** 24.00 cm  
**CONSTANT:** 4968.7  
**EXPONENT:** 2.500

**Output:** mA      Flow  
**Zero:** 4      0.00  
**Max:** 20      6730.0

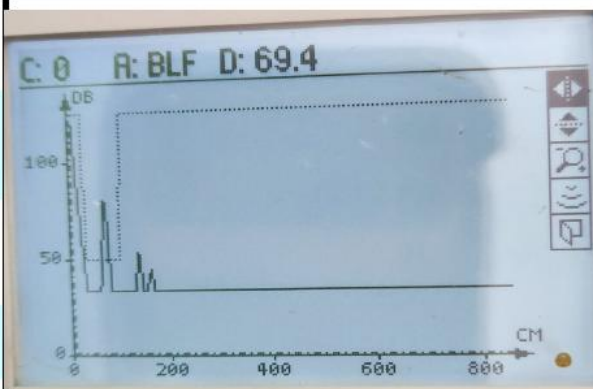


Figure of Merit: 87 %  
 Confidence: 15  
 Echo Strength: 80 dB  
 Noise Average: 1 dB

OCM Flow Table

| Head Applied (cm) | Head Displayed (cm) | Error (%) | Calculated Flow (m <sup>3</sup> /hr) | Flow Displayed (m <sup>3</sup> /hr) | Error (%) | Calculated mA Output | Measured mA Output | Error (%) |
|-------------------|---------------------|-----------|--------------------------------------|-------------------------------------|-----------|----------------------|--------------------|-----------|
| 0.00              | 0.00                | 0.00      | 0.00                                 | 0.00                                | 0.00      | 4.00                 | 4.00               | 0.00      |
| 6.00              | 5.95                | -0.84     | 210.3                                | 209.00                              | -0.63     | 4.50                 | 4.48               | -0.45     |
| 12.00             | 12.03               | 0.25      | 1189.7                               | 1193.00                             | 0.28      | 6.83                 | 6.85               | 0.32      |
| 18.00             | 17.93               | -0.39     | 3278.4                               | 3265.00                             | -0.41     | 11.79                | 11.76              | -0.29     |
| 24.00             | 24.05               | 0.21      | 6730.0                               | 6744.00                             | 0.21      | 20.00                | 20.04              | 0.20      |
|                   |                     | 0.00      | 0.0                                  |                                     | 0.00      | 4.00                 |                    | #DIV/0!   |

Totalizer As Found 5181797.07 m<sup>3</sup>  
 Totalizer As Left 5181518.63 m<sup>3</sup>

Zero As Found 71.58000 cm  
 Zero As Left 71.58000 cm  
 Change in Zero 0.00000 cm

Comments

AS FOUND: **PASS**

AS LEFT: **PASS**

CERTIFIED BY: Mike Humphries

|                                                                                                                                                                                                                                                                                                   |                                                                                                      |  |                           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|--|---------------------------|
|                                                                                                                                                                                                                  | <h2 style="text-align: center;">CALIBRATION REPORT</h2>                                              |  | <b>TAG NO.:</b> North     |
|                                                                                                                                                                                                                                                                                                   |                                                                                                      |  | <b>REPORT NO.:</b> 250714 |
|                                                                                                                                                                                                                                                                                                   |                                                                                                      |  | <b>DATE:</b> 14-Jul-25    |
| <b>SITE:</b> Brighton Waste Water<br><b>PROCESS AREA:</b> Final Effluent from North Filter Pond<br><b>INSTR. TAG:</b> North<br><b>MANUFACTURER:</b> Siemens<br><b>MODEL:</b> Sitrans LUT 440 & XRS-5C<br><b>SERIAL No.:</b> PBD/M3060437<br><b>INSTR. RANGE:</b> 0 to 20894.4 m <sup>3</sup> /day | <b>DATE:</b> July 14, 2025<br><br><b>TECHNICIAN:</b> Mike Humphries<br><br><b>REPORT NO.:</b> 250714 |  |                           |

**PRIMARY DEVICE:** Rectangular Weir  
**MAX FLOW:** 20894.4 m<sup>3</sup>/day  
**MAX HEAD:** 40.00 cm  
**CONSTANT:** 3441.35  
**EXPONENT:** 1.500

| Output: | mA | Flow    |
|---------|----|---------|
| Zero:   | 4  | 0.00    |
| Max:    | 20 | 20894.4 |



Figure of Merit: 86 %  
 Confidence: 32  
 Echo Strength: 87 dB  
 Noise Average: 23 dB

| OCM Flow Table    |                     |           |                                      |                                     |           |                      |                    |           |
|-------------------|---------------------|-----------|--------------------------------------|-------------------------------------|-----------|----------------------|--------------------|-----------|
| Head Applied (cm) | Head Displayed (cm) | Error (%) | Calculated Flow (m <sup>3</sup> /hr) | Flow Displayed (m <sup>3</sup> /hr) | Error (%) | Calculated mA Output | Measured mA Output | Error (%) |
| 0.00              | 0.00                | 0.00      | 0.00                                 | 0.00                                | 0.00      | 4.00                 | 4.00               | 0.00      |
| 10.00             | 10.04               | 0.40      | 2611.8                               | 2621                                | 0.35      | 6.00                 | 6.02               | 0.33      |
| 20.00             | 20.05               | 0.25      | 7387.3                               | 7399                                | 0.16      | 9.66                 | 9.68               | 0.24      |
| 30.00             | 29.96               | -0.13     | 13571.3                              | 13555                               | -0.12     | 14.39                | 14.37              | -0.16     |
| 40.00             | 39.98               | -0.05     | 20894.4                              | 20874                               | -0.10     | 20.00                | 20.02              | 0.10      |
|                   |                     | 0.00      | 0.0                                  |                                     | 0.00      | 4.00                 |                    | #DIV/0!   |

|                    |                           |                                     |
|--------------------|---------------------------|-------------------------------------|
| Totalizer As Found | 1741152.43 m <sup>3</sup> | <b>Comments</b><br><br><br><br><br> |
| Totalizer As Left  | 1741333.67 m <sup>3</sup> |                                     |
| Zero As Found      | 158.30000 cm              |                                     |
| Zero As Left       | 158.30000 cm              |                                     |
| Change in Zero     | 0.00000 cm                |                                     |

AS FOUND: **PASS**

AS LEFT: **PASS**

CERTIFIED BY: Mike Humphries

|                                                                                                                                                                                                                                                                                                                                    |                                                                                                             |                                                                                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                   | <h2 style="margin: 0;">CALIBRATION REPORT</h2>                                                              | <p><b>TAG NO.:</b> South</p> <p><b>REPORT NO.:</b> 250714</p> <p><b>DATE:</b> 14-Jul-25</p> |
| <p><b>SITE:</b> Brighton Waste Water</p> <p><b>PROCESS AREA:</b> Final Effluent from South Filter Pond</p> <p><b>INSTR. TAG:</b> South</p> <p><b>MANUFACTURER:</b> Siemens</p> <p><b>MODEL:</b> Sitrans LUT 440 &amp; XRS-5C</p> <p><b>SERIAL No.:</b> PBD/L8270365</p> <p><b>INSTR. RANGE:</b> 0 to 20894.4 m<sup>3</sup>/day</p> | <p><b>DATE:</b> July 14, 2025</p> <p><b>TECHNICIAN:</b> Mike Humphries</p> <p><b>REPORT NO.:</b> 250714</p> |                                                                                             |

**PRIMARY DEVICE:** Rectangular Weir

|                  |         |                     |
|------------------|---------|---------------------|
| <b>MAX FLOW:</b> | 20894.4 | m <sup>3</sup> /day |
| <b>MAX HEAD:</b> | 40.00   | cm                  |
| <b>CONSTANT:</b> | 3441.35 |                     |
| <b>EXPONENT:</b> | 1.500   |                     |

|                |           |             |
|----------------|-----------|-------------|
| <b>Output:</b> | <b>mA</b> | <b>Flow</b> |
| <b>Zero:</b>   | 4         | 0.00        |
| <b>Max:</b>    | 20        | 20894.4     |

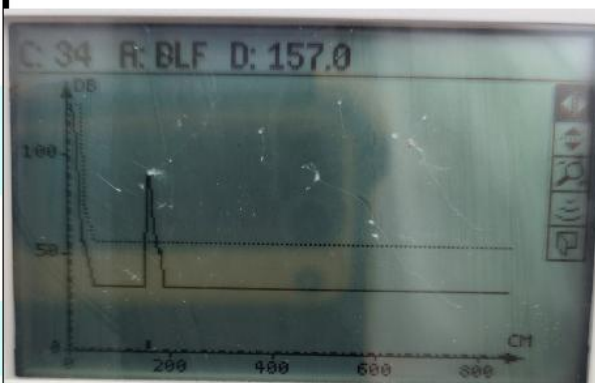


Figure of Merit: 82 %  
Confidence: 33  
Echo Strength: 90 dB  
Noise Average: 14 dB

| OCM Flow Table    |                     |           |                                      |                                     |           |                      |                    |           |
|-------------------|---------------------|-----------|--------------------------------------|-------------------------------------|-----------|----------------------|--------------------|-----------|
| Head Applied (cm) | Head Displayed (cm) | Error (%) | Calculated Flow (m <sup>3</sup> /hr) | Flow Displayed (m <sup>3</sup> /hr) | Error (%) | Calculated mA Output | Measured mA Output | Error (%) |
| 0.00              | 0.00                | 0.00      | 0.00                                 | 0.00                                | 0.00      | 4.00                 | 4.00               | 0.00      |
| 10.00             | 10.04               | 0.40      | 2611.8                               | 2621                                | 0.35      | 6.00                 | 6.03               | 6.02      |
| 20.00             | 19.97               | -0.15     | 7387.3                               | 7370                                | -0.23     | 9.66                 | 9.63               | -0.28     |
| 30.00             | 29.93               | -0.23     | 13571.3                              | 13535                               | -0.27     | 14.39                | 14.36              | -0.22     |
| 40.00             | 40.04               | 0.10      | 20894.4                              | 20919                               | 0.12      | 20.00                | 20.02              | 0.10      |
|                   |                     | 0.00      | 0.0                                  |                                     | 0.00      | 4.00                 |                    | #DIV/0!   |

|                    |                           |
|--------------------|---------------------------|
| Totalizer As Found | 2014350.97 m <sup>3</sup> |
| Totalizer As Left  | 2014411.22 m <sup>3</sup> |

|                |              |
|----------------|--------------|
| Zero As Found  | 159.16000 cm |
| Zero As Left   | 159.16000 cm |
| Change in Zero | 0.00000 cm   |

| Comments |
|----------|
|          |

AS FOUND: PASS

AS LEFT: PASS

CERTIFIED BY: Mike Humphries

|                                                                                   |                           |  |                               |
|-----------------------------------------------------------------------------------|---------------------------|--|-------------------------------|
|  | <b>CALIBRATION REPORT</b> |  | Report No.: 240418 LIT-101201 |
|                                                                                   |                           |  | Date: 18-Apr-24               |

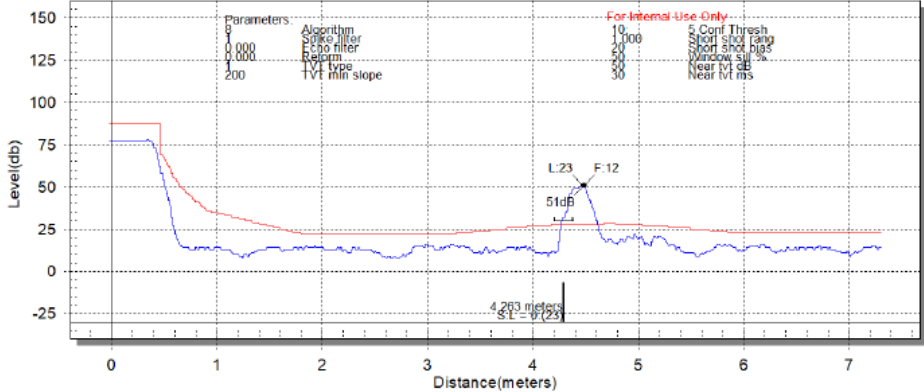
SITE: Harbour St SPS  
PROCESS AREA: Wet Well Level  
INSTR. TAG: LIT-101201  
MANUFACTURER: Siemens  
MODEL: Sitrans Multiranger 200 HMI  
SERIAL No.:  
TRANSDUCER: XPS-15

SERVICE DATE: April 18, 2024  
TECHNICIAN: Mike Humphries  
JOB REFERENCE: 240418

| Measured Distance: | MR200 Reading | (Error) Calculated | Output Type or EGU: | (Signal) mA | (Process) m |
|--------------------|---------------|--------------------|---------------------|-------------|-------------|
| (m)                | (m)           |                    | Min:                | 4.00        | 0.00        |
| 0.00               | 0.00          | 0.00%              | Max:                | 20.00       | 5.80        |

| Main Parameters               |                |
|-------------------------------|----------------|
| P001                          | 1 (Level)      |
| P002                          | 1 (Liquids)    |
| P003                          | 2 (1.0m/min)   |
| P004                          | 104 (XPS-15)   |
| P005                          | 1 (units-m)    |
| P006                          | 6.10 m (Empty) |
| P007                          | 5.80 cm (Span) |
| Confidence                    | 23             |
| Full Parameter list available |                |

| Calibration Equipment |                |                      |              |
|-----------------------|----------------|----------------------|--------------|
| Type:                 | DMM            | Laser Distance Meter | Tape Measure |
| Manufacturer:         | Fluke          | Fluke                | Stanley      |
| Model:                | Model 87       | 424D                 | 5m/25ft      |
| Serial No.:           | 94140067       |                      |              |
| Last Cal. Date:       | March 16, 2024 |                      |              |

| Test Level (Sim) | MR200 Level | Error %  | mA Expected | Fluke mA | Error %  | PLC mA |
|------------------|-------------|----------|-------------|----------|----------|--------|
| 0.0              |             | 0.00%    | 4.00        |          | -100.00% |        |
| 1.5              |             | -100.00% | 8.00        |          | -100.00% |        |
| 2.9              |             | -100.00% | 12.00       |          | -100.00% |        |
| 4.4              |             | -100.00% | 16.00       |          | -100.00% |        |
| 5.8              |             | -100.00% | 20.00       |          | -100.00% |        |

Comments: Meter has a good strong echo.  
Relay #6 set to LOE

AS FOUND: **PASS**

AS LEFT: **PASS**

CERTIFIED BY: Mike Humphries

# SIEMENS MAGFLO® Verification Certificate

## Customer:

Name Brighton, Town of  
Address 35 Alice Street  
Brighton, Ontario  
K0K 1H0  
Phone 613-475-3453  
Email \_\_\_\_\_

## MAGFLO® Identification:

TAG No./Name 0  
Sensor Code No. 7ME652  
Sensor Serial No. PBD-P3044519  
Transmitter Code No. 7ME69202CA301AA0  
Transmitter Serial No. N1P6295121  
Location Harbour St. SPS

## Results:

Verification file name or No. FIT-101205  
Transmitter Passed  
Sensor Insulation Passed  
Magnetic Circuit Passed

| Velocity    | Current Output |         |           | Frequency Output |          |           |
|-------------|----------------|---------|-----------|------------------|----------|-----------|
| Theoretical | Theoretical    | Actual  | Deviation | Theoretical      | Actual   | Deviation |
| 0.5m/s      | 4.800mA        | 4.803mA | 0.41%     | 0.500kHz         | 0.501kHz | 0.12%     |
| 1.0m/s      | 5.600mA        | 5.603mA | 0.19%     | 1.000kHz         | 1.000kHz | 0.05%     |
| 3.0m/s      | 8.800mA        | 8.805mA | 0.11%     | 3.000kHz         | 3.002kHz | 0.06%     |

Current Output 4-20mA

Frequency Output 0-10kHz

## Transmitter Settings:

**Basic** Qmax. 300.000 l/s  
Flow Direction Positive  
Low flow Cut-off 1.50%  
Empty Pipe ON

**Output** Current Output ON (4-20mA)  
Time Constant 5.0 Sec.  
Relay Output Error Level

Digital Output OFF  
Frequency Range N/A  
Time Constant N/A  
Volume/pulse 0.0 m³/p  
Pulse width 0.066 sec.  
Pulse polarity Positiv

Totalizer 1 value before test 766042.9375 m³  
Totalizer 1 value after test 766043.0625 m³  
Totalizer 2 value before test 3098.84228516 m³  
Totalizer 2 value after test 3098.84228516 m³  
Operating time in days 871

## Sensor Details:

Size DN 350 14 IN

Cal. Factor 85.31098938

Correction Factor 1.0

Excitation Freq. 3.75Hz

## Verifier Details (083F5061)

Serial No. 001113N039

Device No. 91738

Software Version 1.40

PC-Software Version 5.01

Cal. date 2024.10.24

ReCal. date 2025.10.24

## Comments

These tests verify that the flowmeter is functioning within 2% deviation of the original test parameters.  
Verification is traceable to National and International Standards.

Date and signature

2025.07.14

Mike Humphries

# SIEMENS MAGFLO® Verification Certificate

## Customer:

Name Brighton, Town of  
Address 35 Alice Street  
Brighton, Ontario  
K0K 1H0  
Phone 613-475-3453  
Email

## MAGFLO® Identification:

TAG No./Name 0  
Sensor Code No. 7ME652  
Sensor Serial No. PBD-P3034515  
Transmitter Code No. 7ME69202CA301AA0  
Transmitter Serial No. N1P6295123  
Location Harbour St. SPS

## Results:

Verification file name or No. FIT-101105  
Transmitter Passed  
Sensor Insulation Passed  
Magnetic Circuit Passed

| Velocity    | Current Output |         |           | Frequency Output |          |           |
|-------------|----------------|---------|-----------|------------------|----------|-----------|
| Theoretical | Theoretical    | Actual  | Deviation | Theoretical      | Actual   | Deviation |
| 0.5m/s      | 4.800mA        | 4.801mA | 0.09%     | 0.500kHz         | 0.500kHz | -0.01%    |
| 1.0m/s      | 5.600mA        | 5.601mA | 0.05%     | 1.000kHz         | 1.000kHz | 0.03%     |
| 3.0m/s      | 8.800mA        | 8.803mA | 0.07%     | 3.000kHz         | 3.002kHz | 0.08%     |

Current Output 4-20mA

Frequency Output 0-10kHz

## Transmitter Settings:

**Basic** Qmax. 300.000 l/s  
Flow Direction Positive  
Low flow Cut-off 1.50%  
Empty Pipe ON

**Output** Current Output ON (4-20mA)  
Time Constant 5.0 Sec.  
Relay Output Error Level

Digital Output OFF  
Frequency Range N/A  
Time Constant N/A  
Volume/pulse 0.0 US G/p  
Pulse width 0.066 sec.  
Pulse polarity Positiv

Totalizer 1 value before test 1026390.5 m³  
Totalizer 1 value after test 1026390.625 m³  
Totalizer 2 value before test 62.24431992 m³  
Totalizer 2 value after test 62.24488449 m³  
Operating time in days 871

## Sensor Details:

Size DN 300 12 IN  
Cal. Factor 62.78400421  
Correction Factor 1.0  
Excitation Freq. 3.75Hz

## Vericator Details (083F5061)

Serial No. 001113N039  
Device No. 91738  
Software Version 1.40  
PC-Software Version 5.01  
Cal. date 2024.10.24  
ReCal. date 2025.10.24

## Comments

These tests verify that the flowmeter is functioning within 2% deviation of the original test parameters.  
Verification is traceable to National and International Standards.

Date and signature

2025.07.14

Mike Humphries

# SIEMENS MAGFLO® Verification Certificate

## Customer:

Name Brighton, Town of  
Address 35 Alice Street  
Brighton, Ontario  
K0K 1H0  
Phone 613-475-3453  
Email

## MAGFLO® Identification:

TAG No./Name 0  
Sensor Code No. 7ME652  
Sensor Serial No. 122202H091  
Transmitter Code No. 7ME691  
Transmitter Serial No. 401730N041  
Location Presqu'île Provincial Park

## Results:

Verification file name or No. FIT-Presqu'île  
Transmitter Passed  
Sensor Insulation Passed  
Magnetic Circuit Passed

| Velocity    | Current Output |         |           | Frequency Output |          |           |
|-------------|----------------|---------|-----------|------------------|----------|-----------|
| Theoretical | Theoretical    | Actual  | Deviation | Theoretical      | Actual   | Deviation |
| 0.5m/s      | 4.800mA        | 4.802mA | 0.29%     | 0.500kHz         | 0.500kHz | 0.06%     |
| 1.0m/s      | 5.600mA        | 5.603mA | 0.21%     | 1.000kHz         | 1.001kHz | 0.13%     |
| 3.0m/s      | 8.800mA        | 8.805mA | 0.11%     | 3.000kHz         | 3.004kHz | 0.13%     |

Current Output 4-20mA

Frequency Output 0-10kHz

## Transmitter Settings:

**Basic** Qmax. 2000.00 l/min  
Flow Direction Positive  
Low flow Cut-off 3.00%  
Empty Pipe ON

**Output** Current Output OFF  
Time Constant N/A  
Relay Output Error Level

Digital Output Pulse  
Frequency Range N/A  
Time Constant N/A  
Volume/pulse 0.99999953 US G/p  
Pulse width 0.066 sec.  
Pulse polarity Positiv

Totalizer 1 value before test 130834.8125 m³  
Totalizer 1 value after test 130834.8359375 m³  
Totalizer 2 value before test 446.95614624 m³  
Totalizer 2 value after test 446.95614624 m³  
Operating time in days 5105

## Sensor Details:

Size DN 150 6 IN  
Cal. Factor 15.6641264  
Correction Factor 1.0  
Excitation Freq. 7.5Hz

## Vericator Details (083F5061)

Serial No. 001113N039  
Device No. 91738  
Software Version 1.40  
PC-Software Version 5.01  
Cal. date 2024.10.24  
ReCal. date 2025.10.24

## Comments

These tests verify that the flowmeter is functioning within 2% deviation of the original test parameters.  
Verification is traceable to National and International Standards.

Date and signature

2025.07.14

Mike Humphries



## Certificate of Instrument Performance Certificat de Conformité

Company Name / Nom de la Compagnie : MUNICIPALITY OF BRIGHTON

Account Number / No. de compte : 40170999

Certification Number / Numéro du Certificat : WO-01571923

|                                              |                                                           |
|----------------------------------------------|-----------------------------------------------------------|
| Part Number / No. de pièce : LPV440.99.00012 | DR3900 Laboratory VIS Spectrophotometer with RFID* Techno |
| Serial Number / No. de série : 1834843       |                                                           |
| External Reference / Référence externe :     |                                                           |

Hach Sales & Service Canada Ltd. certifies that your instrument has been serviced, calibrated, verified with standards and now meets new product specifications.

Hach Sales & Service Canada Ltd. atteste que votre instrument a été entretenu, calibré et vérifié selon les normes en vigueur. Ses spécifications actuelles sont équivalentes à celles d'un produit neuf.

Certified by / Certifié par :

Kevan Prendergast

Certification Date / Date de certification :

11/28/2024

Purchase Order / Bon de Commande: water plant

Date of Service / Date de service: 11/28/2024

Work Order Number / Numéro de Commande: WO-01571923 - Visit - PPV

| Product / Produit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Product / Produit Description                             | Serial Number / No. de Série | Asset Tag |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|------------------------------|-----------|
| LPV440.99.00012                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | DR3900 Laboratory VIS Spectrophotometer with RFID* Techno | 1834843                      |           |
| Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                           |                              |           |
| As found, the condition of the instrument was GOOD and the firmware version was 1.33. The instrument was cleaned, the lamp was replaced, and the optical performance was verified using LZV537 Filters. Unit passed all initialization steps. Certification results were as follows: KV450/3 >2.8 Abs = 4.777, NG 9/1 @ 1.465 Abs +/- 3% = 1.469, NG 5/2 @ 0.619 Abs +/- 3% = 0.620, NG 11/2 @ 0.307 Abs +/- 3% = 0.306, HO @ 360.9 nm +/- 2 nm = 360.1 nm, BG 20/2 @ 807.0 +/- 2nm = 806.4 nm. After PM service, the firmware version was 1.33. The analyzer was restored to normal operation, and its performance and condition were within specifications.B: 4.787, 1.472, 0.621, 0.307, 360.5, 806.7 |                                                           |                              |           |



## *Certificate of Instrument Performance*

## *Certificat de Conformité*

Company Name / Nom de la Compagnie : MUNICIPALITY OF BRIGHTON

Account Number / No. de compte : 40170999

Certification Number / Numéro du Certificat : WO-01571923

|                                             |                               |
|---------------------------------------------|-------------------------------|
| Part Number / No. de pièce : HQ30D          | oo HQ30d FLEXI PORTABLE METER |
| Serial Number / No. de série : 131100096249 |                               |
| External Reference / Référence externe : DO |                               |

Hach Sales & Service Canada Ltd. certifies that your instrument has been serviced, calibrated, verified with standards and now meets new product specifications.

Hach Sales & Service Canada Ltd. atteste que votre instrument a été entretenu, calibré et vérifié selon les normes en vigueur. Ses spécifications actuelles sont équivalentes à celles d'un produit neuf.

Certified by / Certifié par :

Kevan Prendergast

Certification Date / Date de certification :

11/28/2024

| Product / Produit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Product / Produit Description | Serial Number / No. de Série | Asset Tag |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|------------------------------|-----------|
| HQ30D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | oo HQ30d FLEXI PORTABLE METER | 131100096249                 | DO        |
| <b>Notes</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                               |                              |           |
| As found, the condition of the meter was good, the condition of the LDO probe was good, and the firmware version was 2.4.0.738. The meter was cleaned, batteries were replaced, communication with attached sensor was verified and meter passed all functional tests. The DO probe were calibrated. The calibration result was: 97.3 % saturation and was within specifications. After PM service the firmware version was 2.4.0.738, the meter and probe were restored to normal operation and its performance and condition were within specifications. |                               |                              |           |



## Certificate of Instrument Performance Certificat de Conformité

Company Name / Nom de la Compagnie : MUNICIPALITY OF BRIGHTON

Account Number / No. de compte : 40170999

Certification Number / Numéro du Certificat : WO-01571923

|                                                |                                                            |
|------------------------------------------------|------------------------------------------------------------|
| Part Number / No. de pièce : 9020000           | Hach LDO sc Model 2, DO Probe with Luminescent Dissolved O |
| Serial Number / No. de série : 193110000118    |                                                            |
| External Reference / Référence externe : NORTH |                                                            |

Hach Sales & Service Canada Ltd. certifies that your instrument has been serviced, calibrated, verified with standards and now meets new product specifications.

Hach Sales & Service Canada Ltd. atteste que votre instrument a été entretenu, calibré et vérifié selon les normes en vigueur. Ses spécifications actuelles sont équivalentes à celles d'un produit neuf.

Certified by / Certifié par :

Kevan Prendergast

Certification Date / Date de certification :

11/28/2024

| Product / Produit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Product / Produit Description                            | Serial Number / No. de Série | Asset Tag |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|------------------------------|-----------|
| 9020000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Hach LDO sc Model 2, DO Probe with Luminescent Dissolved | 193110000118                 | NORTH     |
| Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                          |                              |           |
| As found, the condition of the probe was good, the firmware version was 1.00, the sample reading was 2.81 O2, and the gain factor was 1.00. The probe was cleaned, inspected, and the sensor cap and gasket were replaced. A new calibration code was transferred to the probe via RFID calibration cap. An air calibration was performed, and the recorder output was confirmed. After PM service was completed the firmware version was 1.00, as left reading of the probe was 3.89 O2 and the gain factor was 1.00. The probe has been restored to normal operation, and its performance and condition were within specifications. |                                                          |                              |           |



## *Certificate of Instrument Performance*

## *Certificat de Conformité*

Company Name / Nom de la Compagnie : MUNICIPALITY OF BRIGHTON

Account Number / No. de compte : 40170999

Certification Number / Numéro du Certificat : WO-01571923

|                                                |                                                            |
|------------------------------------------------|------------------------------------------------------------|
| Part Number / No. de pièce : 9020000           | Hach LDO sc Model 2, DO Probe with Luminescent Dissolved O |
| Serial Number / No. de série : 182480000064    |                                                            |
| External Reference / Référence externe : SOUTH |                                                            |

Hach Sales & Service Canada Ltd. certifies that your instrument has been serviced, calibrated, verified with standards and now meets new product specifications.

Hach Sales & Service Canada Ltd. atteste que votre instrument a été entretenu, calibré et vérifié selon les normes en vigueur. Ses spécifications actuelles sont équivalentes à celles d'un produit neuf.

Certified by / Certifié par :

A handwritten signature in black ink, appearing to be "Kevan P".

Kevan Prendergast

Certification Date / Date de certification :

11/28/2024

| Product / Produit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Product / Produit Description                            | Serial Number / No. de Série | Asset Tag |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|------------------------------|-----------|
| 9020000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Hach LDO sc Model 2, DO Probe with Luminescent Dissolved | 182480000064                 | SOUTH     |
| Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                          |                              |           |
| As found, the condition of the probe was good, the firmware version was 1.00, the sample reading was 3.16 O2, and the gain factor was 1.00. The probe was cleaned, inspected, and the sensor cap and gasket were replaced. A new calibration code was transferred to the probe via RFID calibration cap. An air calibration was performed, and the recorder output was confirmed. After PM service was completed the firmware version was 1.00, as left reading of the probe was 3.70 O2 and the gain factor was 1.00. The probe has been restored to normal operation, and its performance and condition were within specifications. |                                                          |                              |           |

## **9.0 EFFORTS AND RESULTS TO MEET EFFLUENT OBJECTIVES**

Despite best efforts to reduce ammonia concentrations in the system, the lagoon-based treatment has continued to produce results above the limits stated in the ECA. The municipality, in conjunction with an engineering firm has developed a comprehensive plan to build a conventional type, extended aeration treatment plant. Construction of the new plant commenced in 2025 with the goal of achieving all compliance objectives once operational.

The Municipality of Brighton has implemented several interim efforts under the Limited Operational Flexibility (LOF) process of the ECA to improve performance of the lagoon treatment system.

Since 2015, five (5) aerators have been added to the Aeration Pond. Total aeration power now provided is 110 horsepower (approx. 83 kilowatts). Of the five (5) new aerators, three (3) of the aerators (10 hp each) were added to the Aeration Pond in late June 2020.

For several years, on/off aerator operation combined with manual “**decanting**” of the surface layer of Aeration Pond effluent with the aerators turned off has been practiced. This would assumedly retain solids within the Aeration Pond and allow Volatile Suspended Solids (VSS) to build to levels that would support nitrification.

A Notice of Modification to Sewage Works (Notification Number 7) for trial decanting, combined with on/off aeration, was submitted to the MECP in August 2017. A renewal of the decanting process was again requested in 2018 (Notification Number 8). Notification Number 8 is included in **Appendix A** located on Page 27.

Notification Number 8 was subsequently approved by the MECP under the LOF conditions of the current ECA. Decanting was completed again in 2025 by the manual decanting method detailed below.

### Decanting Method

Based on preliminary evaluations, the simplest method to achieve manual decanting was to:

- Manually turn off all aerators at approximately 7 am.
- Wait one half (1/2) to one (1) hour to allow settling of solids in the Aeration Pond.
- Manually lift the first six (6) inch stop log to release the first “batch” of clear decant.
- After approximately one (1) additional hour, manually remove the second stop log to release a second batch of clear decant.
- Overall, such draining of decant lowered water levels in the Aeration Pond by approximately twelve (12) inches (300 mm).
- At approximately 2 pm, re-install both stop logs and then turn on all aerators. The Aeration Pond will slowly refill.
- Allow aerators to run from 2 pm to approximately 7 am the next day. Then repeat the decant process for daily decanting.

Operators completed regular measurements/monitoring of dissolved oxygen and solids in the Aeration Pond. Regarding dissolved oxygen, generally, the four (4) hour decant period (8 am to 12 pm) resulted in falling dissolved oxygen levels in the Aeration Pond, though oxygen levels did not normally fall below 1 mg/L. Once the aerators were restarted, there was occasionally a temporary, further drop in oxygen levels before oxygen levels rebounded to above 3 mg/L.

The surface area of the Aeration Pond is approximately 6,000 m<sup>2</sup>. The volume contained in the top 0.3 m of the pond is approximately 1,800 m<sup>3</sup>. Therefore, given a fill time of seventeen (17) hours (2 pm to 7 am), the stop logs would not normally start overflowing before 7 am of the next day if incoming sewage flows were less than 106 m<sup>3</sup>/hour (or 2,500 m<sup>3</sup>/day).

Normally, once the Aeration Pond was decanted for four (4) hours or shorter, the remaining storage depth of approximately twelve (12) inches (300 mm) was sufficient to store the incoming sewage flow until the next morning, without overflowing the stop logs. At some points aeration was run 24/7 due to depleted DO levels.

#### Results – Retention of Volatile Suspended Solids and Removal of Ammonia

Decanting was completed on a sporadic basis during 2025 but generally full-time aeration (and normal overflow of the Aeration Pond to the Waste Stabilization Pond) was practiced during the summer of 2025.

#### Other Results

Other than TAN, decanting beginning in January 2025 appeared to improve, or at least maintain, the high quality of effluent being discharged from the downstream Waste Stabilization Pond. Values of CBOD<sub>5</sub>, TSS and TP were all below respective compliance limits.

#### Summary

The decanting process, combined with on/off operation of the aerators, appears capable of building relatively high levels of VSS (but not as high as was originally thought) in the Aeration Pond. Relocation of aerator anchors in 2025 proved to assist in the re-suspension of solids in the Aeration Pond. The addition of three (3) aerators in June 2020 demonstrated that the additional mixing energy was sufficient to suspend high levels of VSS (greater than 400 mg/L) in the Aeration Pond.

These higher levels of VSS were coinciding with very good ammonia removal rates but in 2025, even with low levels of VSS, the system still responded. However, the ability of the extra mixing energy to maintain high levels of VSS appeared to diminish in early winter (December) when water temperatures in the Aeration Pond dropped below 10° C. Added aeration also tends to lower the temperature of the Aeration Pond quicker than it used to. Lower levels of VSS in December were not coinciding with lower levels of ammonia removal. It is recommended that continued experimentation with various combinations of on/off aerator operation (either manually or by timers) coupled with decanting, be continued during 2026.

At this time, it is our assumption that the reason the 110 hp total combined aerator energy did not keep VSS levels above 400 mg/L in the early winter was due to the increased viscosity of water under cold conditions. Therefore, additional aerators for late fall and winter use could provide the additional mixing energy required to keep enough VSS in suspension to achieve a VSS concentration of at least 400 mg/L and preferably higher (500 to 600 mg/L).

With that said, additional aerators would likely increase the rate of heat loss from the Aeration Pond and therefore drive down effluent temperatures.

## **10.0 TOTAL AMMONIA NITROGEN**

Removal of Total Ammonia Nitrogen (TAN) has been a long-standing issue for the Brighton WPCP. LOF provisions under previously issued notices were undertaken largely to improve removal of ammonia nitrogen in the lagoon system.

Since 2018, efforts to improve TAN removal focused on the operation of the aerators on timers in conjunction with manual decanting of the Aeration Pond. These measures were intended to build levels of VSS and increase sludge age in the Aeration Pond to promote development of nitrifying bacteria. In 2025, we continued with decanting and fine tuning of the Aeration Pond. More critically, the additional 30 horsepower provided by the three (3) additional aerators in June 2020 proved very successful in achieving higher concentrations of VSS, but in 2025 it showed the system could also work with low VSS.

As stated previously, the Municipality has worked closely with a hired engineering firm as well as the MECF to design a conventional type, extended aeration treatment plant that includes headworks, aeration tanks, clarifiers and disinfection. The Municipality, through the design of an upgraded WPCP is committed to rectifying the long-standing issue with TAN. Construction of the new plant is ongoing and is expected to be completed by March 2028.

### **10.1 Total Phosphorus**

As per **Table IV** (page 5), there were no exceedances in 2025 of the Total Phosphorus limit of 1.0 mg/L for the lagoon.

### **10.2 Carbonaceous Biochemical Oxygen Demand and Total Suspended Solids**

As per **Table IV** (page 5), levels of Carbonaceous Biochemical Oxygen Demand and Total Suspended Solids remained below the Concentration Compliance limits for all months in 2025 and achieved full compliance with the Annual Average Effluent Loading limits evidenced in **Table V** (page 6). The facility did not meet the Effluent Objective for CBOD<sub>5</sub> (15.0 mg/L) in February and March, as well as the Effluent Objective for TSS (15.0 mg/L) from January to May.

## 11.0 BIOSOLIDS MANAGEMENT

No Bio-Solids were removed in 2025.

Below is an estimate of sludge production in the lagoon system in 2025.

The volume of sludge produced and stored in the Waste Stabilization Pond is estimated as follows:

- Total sewage flow in 2025 – **1,050,423 m<sup>3</sup>**
- Assume starting sludge yield of 3.5 L/m<sup>3</sup> (as per Table 16-1 of Design Guidelines for Sewage Works – MECP, 2008)
- The above sludge yield is for conventional activated sludge plants with anaerobic treatment and phosphorus removal. Sludge yield in Table 16-1 is based on average solids content of 4%.
- Some consolidation of sludge will occur over time in the Waste Stabilization Pond. Assume sludge thickening from 4% to 5% will occur. Therefore, sludge yield will be slightly less, or  $0.8 \times 3.5 \text{ L/m}^3 = \mathbf{2.8 \text{ L/m}^3}$ .
- Therefore, using the formula *Total Sewage Flow (m<sup>3</sup>) x Sludge Yield (L/m<sup>3</sup>) / 1000*, total sludge production in 2025 is estimated to be **2,941 m<sup>3</sup>**.

**Table X**  
**Net Sludge Production**

| <b>Total Sewage Flow in 2025</b> | <b>Sludge Yield</b>  | <b>Total Sludge Produced</b> | <b>Average Sludge Depth Added</b> | <b>Sludge Removed</b> | <b>Net Sludge Added to Lagoon in 2025</b> |
|----------------------------------|----------------------|------------------------------|-----------------------------------|-----------------------|-------------------------------------------|
| 1,050,423 m <sup>3</sup>         | 2.8 L/m <sup>3</sup> | 2,941 m <sup>3</sup>         | 0.05 m                            | 0 m <sup>3</sup>      | 2,941 m <sup>3</sup>                      |

Note: Average Sludge Depth Added as indicated above is extra sludge depth produced in the Waste Stabilization Pond in the current year and based on an approximate surface area of 54,400 m<sup>2</sup>. It is calculated as *Total Volume of Sludge Produced (m<sup>3</sup>) / Surface Area (m<sup>2</sup>)*.

## 12.0 SUMMARY OF COMPLAINTS

The Municipality received no complaints in 2025.

## 13.0 SUMMARY OF BY-PASSES, SPILLS AND ABNORMAL DISCHARGES

There were no by-passes, sewage spills, or abnormal discharges in 2025.

## **14.0 SUMMARY OF SEWER WORK COMPLETED**

In 2025, the Municipality of Brighton continued to identify, clean, and repair a portion of the sewer collection system to ensure reduced infiltration and inflow issues and improve efficiency in the collection system.

Reducing infiltration into the system reduced potential overloading on the WPCP and the receiving environment, thus reducing run-time of pumping equipment and energy usage for pumping sewage. One of the main issues is sump pumps that are illegally tied into the sanitary system which cause a surge to the pumping station and the WPCP; treating clear water is costly and takes up reserved capacity of the sanitary system.

The Municipality plans to invest further funding for sewer repairs in attempts to remove more infiltration and inflow into the sanitary system.

## **15.0 RAINBOW TROUT TOXICITY TESTING**

The Municipality of Brighton submitted quarterly samples of Final Effluent from the WPCP to a toxicity laboratory (Nautilus Environmental, Guelph, Ontario) for LC 50 testing using young rainbow trout.

All tests completed in 2025 have passed toxicity testing. Sampling and testing were done in accordance with Environment Canada requirements.

## APPENDIX A

### NOTICE OF MODIFICATION TO SEWAGE WORKS SUBMITTED TO MECP UNDER LOF PROCESS – 2018



Ministry of  
the Environment

#### Notice of Modification to Sewage Works

RETAIN COPY OF COMPLETED FORM AS PART OF THE ECA AND SEND A COPY TO THE WATER SUPERVISOR (FOR MUNICIPAL SYSTEMS) OR DISTRICT MANAGER (FOR INDUSTRIAL SYSTEMS)

#### Part 1 – Environmental Compliance Approval (ECA) with Limited Operational Flexibility

(Insert the ECA's owner, number and issuance date and notice number, which should start with "01" and consecutive numbers thereafter)

| ECA Owner                | ECA number  | Issuance Date<br>(mm/dd/yy) | Notice number |
|--------------------------|-------------|-----------------------------|---------------|
| Municipality of Brighton | 3081-9XQNZK | 07/07/15                    | 8             |

#### Part 2 – Description of the modifications as part of the Limited Operational Flexibility

(Attach a detailed description of the sewage works)

Previously, Brighton installed timers on the existing four aerators in the aerated cell of the sewage treatment works. On/off cycling of the aerators was attempted to retain biological solids in the aerated cell, to increase sludge age and promote formation and retention of nitrifying bacteria. This notice seeks to augment aeration timers by allowing removal of existing stop logs (two, 6" tall stop logs) in the morning to "decant" clarified water from the aerated cell when the aerators are off. Once the boards are reinstalled later in the same day, all aerators would be returned to operation.

Description shall include:

1. A detail description above of the modifications and/or operations to the sewage works (e.g. sewage work component, location, size, equipment type/model, material, process name, etc.)
2. An assessment of the anticipated environmental effects
3. Updated versions of, or amendments to, all relevant technical documents required by this ECA that are affected by the modifications as applicable, e.g. site plan, design brief, drawings, emergency and spill prevention plan, etc.

#### Part 3 – Declaration by Professional Engineer

I hereby declare that I have verified the scope and technical aspects of this modification and confirm that the design:

1. Has been prepared or reviewed by a Professional Engineer who is licensed to practice in the Province of Ontario;
2. Has been designed in accordance with the Limited Operational Flexibility as described in the ECA;
3. Has been designed consistent with Ministry's Design Guidelines, adhering to engineering standards, industry's best management practices, and demonstrating ongoing compliance with s.53 of the Ontario Water Resources Act; and other appropriate regulations.

I hereby declare that to the best of my knowledge, information and belief the information contained in this form is complete and accurate

|                                  |                    |
|----------------------------------|--------------------|
| Name (Print)                     | PEO License Number |
| Jeff Graham, P. Eng.             | 90222860           |
| Signature                        | Date (mm/dd/yy)    |
|                                  | 06/21/2018         |
| Name of Employer                 |                    |
| GSS Engineering Consultants Ltd. |                    |

#### Part 4 – Declaration by Owner

I hereby declare that:

1. I am authorized by the Owner to complete this Declaration;
  2. The Owner consents to the modification; and
  3. This modifications to the sewage works are proposed in accordance with the Limited Operational Flexibility as described in the ECA.
4. The Owner has fulfilled all applicable requirements of the *Environmental Assessment Act*.

I hereby declare that to the best of my knowledge, information and belief the information contained in this form is complete and accurate

|                                      |                                      |
|--------------------------------------|--------------------------------------|
| Name of Owner Representative (Print) | Owner representative's title (Print) |
| Mr. Keith Lee                        | Wastewater Supervisor                |
| Owner Representative's Signature     | Date (mm/dd/yy)                      |
|                                      | 06/21/2018                           |