



2023 Annual Performance Report for the Haileybury Sewage Treatment System & Sewage Collection System

January 1, 2023 to December 31, 2023

PREPARED BY

Ontario Clean Water Agency
on behalf of the City of Temiskaming Shores

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Executive Summary

The Haileybury Sewage Treatment System is located at 275 View Street in the community of Haileybury within the City of Temiskaming Shores. The sewage treatment plant is designed to treat a daily average flow of 2728 m³/day and a peak flow of 7392 m³/day. It is classified as a Class 2 wastewater treatment system under Ontario Regulation 129/04 and operates under Environmental Compliance Approval (ECA) No. 7579-BTFKMN for Municipal and Private Sewage Works issued on September 18, 2020.

The Haileybury Sewage Collection System is a Class 1 wastewater collection system under Ontario Regulation 129/04 that follows the requirements of ECA No. 218-W601 for Municipal Sewage Collection Systems issued on October 27, 2023.

This report summarizes the requirements of each Approval and describes the operational performance of the system to ensure production of quality effluent.

The Haileybury sewage treatment system operated well in 2023 producing a high quality effluent that met the effluent limits and objectives specified in the system's ECA.

The system met the rated capacity limit having an annual average daily flow to the lagoon of 2063 m³, which is 76% of the rated capacity. The total volume of influent flow measured in 2023 was 753,081.

There was one (1) spill and one (1) overflow event that occurred in the sewage collection system during the reporting period which are described in Section 10.

All requirements specified in the system's ECA and any issues experienced at the facility are further explained throughout the report.

Introduction

Condition 11(4) of ECA No. 7579-BTFKMN for the Haileybury Sewage Treatment Plant requires the Owner to prepare and submit a performance report to the Ministry of the Environment's District Manager on an annual basis by March 31 for the preceding calendar year. The 2023 Annual Performance Report was prepared by the Ontario Clean Water Agency (OCWA) on behalf of the City of Temiskaming Shores and is based on information kept on record by OCWA. The report has been completed in accordance with the approval and contains, but is not limited to the following information outlined in the ECA:

- A summary and interpretation of all influent monitoring data and a review of the historical trend of the sewage characteristics and flow rates;
- A summary and interpretation of all final effluent monitoring data, including concentration, flow rates, loading and a comparison to the design objectives and compliance limits in this Approval, including an overview of the success and adequacy of the Works;
- A summary of any deviation from the monitoring schedule and reasons for the current reporting year and a schedule for the next reporting year;
- A summary of all operating issues encountered and corrective actions taken;
- A summary of all normal and emergency repairs and maintenance carried out on any major structure, equipment, apparatus or mechanism forming part of the Works;
- A summary of any effluent quality assurance or control measures undertaken;
- A summary of the calibration and maintenance carried out on all influent monitoring equipment to ensure that the accuracy is within the tolerance of that equipment as required in this Approval or recommended by the manufacturer;
- A summary of efforts made to achieve the design objectives in the Approval, including an assessment of the issues and recommendations for proactive actions if any are required under the following situations:
 - i* when any of the design objectives is not achieved more than 50% of the time in a year, or there is an increasing trend in deterioration of final effluent quality;
 - ii* when the annual average daily influent flow reaches 80% of the rated capacity;
- A tabulation of the volume of sludge generated, an outline of anticipated volumes to be generated in the next reporting period and a summary of the locations to where the sludge was disposed;
- A summary of any complaints received and any steps taken to address the complaints;
- A summary of all bypasses, overflows, other situations outside normal operating conditions and spills within the meaning of Part X of EPA and abnormal discharge events;

- A summary of all Notice of Modifications to Sewage Works completed under paragraph 1.d of Condition 10, including a report on the status of implementation of all modifications;
- A summary of efforts made to achieve conformance with Procedure F-5-1 including but not limited to projects undertaken and completed in the sanitary sewer system that result in overall bypass/overflow elimination including expenditures and proposed projects to eliminate bypass/overflows with estimated budget forecast for the year following that for which the report is submitted;
- Any changes or updates to the schedule for the completion of construction and commissioning operation of major process(es)/equipment groups in the Proposed Works.

Condition 4.0(4.6) of the ECA No. 218-W601 for the Haileybury Sewage Collection System requires the Owner to prepare and submit an annual performance report to the Ministry of the Environment's Director on or before March 31st of each year and covers a period from January 1st to December 31st of the preceding calendar year. This report must include, but is not limited to the following information;

- If applicable, includes a summary of all required monitoring data along with an interpretation of the data and any conclusion drawn from the data evaluation about the need for future modifications to the Authorized System or system operations;
- Includes a summary of any operating problems encountered and corrective actions taken;
- Includes a summary of all calibration, maintenance, and repairs carried out on any major structure, Equipment, apparatus, mechanism, or thing forming part of the Municipal Sewage Collection System;
- Includes a summary of any complaints related to the Sewage Works received during the reporting period and any steps taken to address the complaints.
- Includes a summary of all Alterations to the Authorized System within the reporting period that are authorized by this Approval including a list of Alterations that pose a Significant Drinking Water Threat;
- Includes a summary of all Collection System Overflow(s) and Spill(s) of Sewage, including: dates, volumes and durations. If applicable, loadings for total suspended solids, BOD₅, total phosphorus, and total Kjeldahl nitrogen, and sampling results for *E.coli*, disinfection, if any and any adverse impact(s) and any corrective actions, if applicable;
- Includes a summary of efforts made to reduce Collection System Overflows, Spills, STP Overflows, and/or STP Bypasses, including the following items, as applicable:
 - a) A description of projects undertaken and completed in the Authorized System that result in overall overflow reduction or elimination including expenditures and proposed projects to eliminate overflows with estimated budget forecast for the year following that for which the report is submitted.

- b) Details of the establishment and maintenance of a PPCP, including a summary of project progresses compared to the PPCP's timelines.
- c) An assessment of the effectiveness of each action taken.
- d) An assessment of the ability to meet Procedure F-5-1 or Procedure F-5-5 objectives (as applicable) and if able to meet the objectives, an overview of next steps and estimated timelines to meet the objectives.
- e) Public reporting approach including proactive efforts.

The two reports have been merged into one and is presented as the 2023 Annual Performance Report. The report was prepared by the Ontario Clean Water Agency (OCWA) on behalf of the City of Temiskaming Shores and is based on information kept on record by OCWA.

1 System Description

Sewage System Name:	Haileybury Sewage Treatment System
Sewage System Works Number:	110000310
Sewage System Address:	275 View Street, Haileybury Ontario
Sewage System Owner:	Corporation of the City of Temiskaming Shores
Sewage Treatment ECA:	7579-BTFKMN, issued September 18, 2020
Sewage Collection ECA:	218-W601, issued October 27, 2023
Reporting Period:	January 1, 2023 to December 31, 2023

Capacity of Works:	2728 m ³ /day annual average, 7392 m ³ /day peak
Service Area:	Community of Haileybury
Service Population:	4200
Effluent Receiver:	Lake Timiskaming
Major Process:	Activated Sludge and Extended Aeration Sewage Treatment Plant

The Haileybury Sewage Treatment Plant is a Class 2 wastewater treatment plant located at 275 View Street in the City of Temiskaming Shores. It serves a population of approximately 4200 residents within the community of Haileybury and has an average rated capacity of 2728 m³/day and peak flow capacity of 7392 m³/day. The facility consists of two treatment trains; Unit 1 is an activated sludge plant constructed in 1965 and Unit 2 is an extended aeration plant constructed in 1984. The wastewater treatment plant consists of the following:

Inlet Headworks – is comprised of a grit channel, manual coarse bar screens, and a flow splitting weir to divide the raw sewage flow into two (2) parallel treatment Units, 1 and 2. There is an emergency overflow weir with a 450 mm diameter by-pass pipe to the chlorine contact tank (Treatment Unit #2).

The Control Building – inside the building there are two (2) air blowers, one duty and one standby, that supply compressed air to fine bubble diffusers in the aeration tanks and sludge holding tanks (aerobic digester), and pumps in both Treatment Units #1 and #2 to transfer sludge from the holding tanks for disposal.

The chemical feed system is comprised of two (2) chemical storage tanks and two (2) feed pumps for sodium hypochlorite injection into both chlorine contact chambers. The system is used seasonally from May 1st to November 1st each year.

There is one 200 kW emergency standby diesel generator located just outside the building. This stand-by generator can maintain all aspects of the operation during a power outage.

Treatment Units – Treatment Unit #1 has a rated capacity of approximately 1120 m³/day (peak flow of 3032 m³/day) and Treatment Unit #2 has a rated capacity of approximately 1610 m³/day (peak flow of 4360 m³/day). Both Treatment Units contain; a grinder unit equipped with emergency overflow provisions, aeration tanks equipped with fine air bubble diffusers, clarifier tanks, chlorine contact chambers for seasonal disinfection from May 1st to October 31st, sludge holding tanks (aerobic digestion) equipped with medium/coarse air bubble diffusers and a flow measurement system consisting of an ultrasonic flow metering device (Milltronics) over a weir. One outfall sewer combines the effluent from both treatment units prior to discharging into Lake Temiskaming.

Dechlorination System – A temporary dechlorination system consisting of a chemical solution (sodium bisulphite) and a pace-to-flow chemical pumping system is used to reduce the effluent total chlorine residual levels to the Federal regulatory requirements set out in the Wastewater System Effluent Regulation (WSER) effective January 1, 2021 (≤ 0.02 mg/L). The injection point is located on piping where the effluent from the two plants combine before discharging into Lake Timiskaming.

Digester – Two digesters produce aerobic sludge which hauled to the New Liskeard Lagoon for disposal (approved under ECA No. 5103-CDFJWC). The New Liskeard Lagoon ECA allows a maximum sludge volume of 8800 m³/year that can be imported from the Haileybury sewage treatment plant to the sludge storage lagoon.

The Haileybury sewage collection system consists of truck sewers, separate sewers, nominally separate sewers, forcemains and two (2) sewage pumping stations that direct sanitary sewage to the Haileybury sewage treatment plant. One station is located on Farr Drive and the other on Brewster Street.

Farr Drive SPS is located at 299 Farr Drive. The station consists of a 32.6 m³ concrete wet well that is equipped with two (2) suction pipes that are connected to two (2) dry mounted pumps (one duty and one standby) with variable frequency drives. Each pump is rated at 139 L/s at TDH of 19.5 m. The station has an emergency overflow pipe that discharges to Lake Temiskaming. The station is powered by a motor control center (MCC) and is fully controlled by a PLC SCADA system. A 200 mm diameter force main directs sewage from the pumping station to the Haileybury wastewater treatment plant.

Back up power is fed to the station by an over head power line fed from a Diesel Generator located at the Haileybury sewage treatment plant.

Brewster Street SPS is located on corner Lakeshore Road and Brewster Street. The station consists of a 4.4 m diameter by approximately 10 meter deep fiberglass wet well with a capacity of 46.7 m³. It is equipped with two (2) submersible pumps, (one duty and one stand-by). Each pump has a rated capacity of 24.7 L/s at a TDH of 10.2 m, complete with an ultrasonic transducer with back-up float level switches, control panel, provision for connection to a portable generator, ventilation pipes, discharge piping, valves and all other appurtenances to allow for the complete operation of the pumping station. The station is powered by a motor control center (MCC) and is fully controlled by a PLC SCADA system.

During normal flow conditions, the wastewater is pumped to the Farr Drive sewage pumping station. During high flow events, a 30 kW portable diesel generator is installed to allow the wastewater to be pumped to the Farr Drive sewage pumping station.

2 Monitoring Program

2.1 Monitoring Program as Outlined in the Environmental Compliance Approval

Table 1: Analytical Parameters

BOD₅	Five Day Biochemical Oxygen Demand – is measured in an unfiltered sample; includes carbonaceous and nitrogenous oxygen demand. It refers to the amount of oxygen consumed by organic matter in a specific volume of water at a specific temperature over a 5 day period. High BOD ₅ in effluent means a large quantity of oxygen was needed to break down the organic matter and identifies a large amount of organic matter in the effluent indicating inadequate treatment.
cBOD₅	Five-day carbonaceous biochemical oxygen demand – represents the oxygen depletion associated with the biodegradation of organic compounds and the oxidation of inorganic compounds such as ferrous iron and sulphide within 5 day period and at a specific temperature. High cBOD ₅ in sewage effluent means a large quantity of oxygen was needed to break down the organic and inorganic matter in the effluent indicating inadequate treatment.
TSS	Total Suspended Solids – the dry weight of suspended particles that are not dissolved in water and can be filtered. TSS is composed of settleable solids and non-settleable solids depending on the size, shape and weight of the solid particles. Settable solids are large sized particles that tend to settle more rapidly in a given period of time.
TP	Total Phosphorus – a measure of all phosphorus found in a sample, whether it is dissolved or particulate. TP is commonly used to determine the health of water bodies. Excess TP stimulates algae and weed growth that may cause fluctuations in dissolved oxygen in the receiving waters.

Table 1: Analytical Parameters

TAN	Total Ammonia Nitrogen – the total amount of nitrogen in the forms of Ammonium (NH ₄) and Ammonia (NH ₃). Ammonia is one of several forms of nitrogen that exist in aquatic environments and can cause direct toxic effects on aquatic life. High levels of ammonia can corrode and damage critical pieces of infrastructure.
TKN	Total Kjeldahl Nitrogen – measures both total organic nitrogen and ammonium. Excess nitrogen in water bodies can lead to harmful algal blooms and other negative impacts on aquatic ecosystems.
Unionized Ammonia	A neutral toxic form of nitrogen in an un-ionized state. Ammonia is an environmental concern, especially because of its danger to human or aquatic life.
DO	Dissolved Oxygen – the amount of oxygen that is available in water to sustain life, including living bacteria.
<i>E. coli</i>	<i>Escherichia coli</i> – Thermally tolerant forms of Escherichia bacteria that can live in the intestines of humans and warm-blooded animals. There are hundreds of <i>E. coli</i> strains and most are relatively harmless, however a notorious exception is <i>E. coli</i> strain O157:H7, an emerging pathogen that produces a powerful toxin and can cause severe illness. <i>E. coli</i> is used as the most widely adopted indicator of faecal pollution in water and wastewater.
pH	pH – expresses the degree or intensity of both acidic and alkaline reactions on a scale from 0 to 14 with 7 being neutral, number less than 7 signify increasingly greater acidic solutions, and numbers greater than 7 signify increasingly basic or alkaline reactions. Very high or very low pH levels can be corrosive to pipes, screening equipment and pumps, can damage biological processes and form undesirable toxic gases or heavy metals.
TCR	Total Residual Chlorine – is the sum of the free chlorine residual and the combined available chlorine residual. Chlorine is the most widely used disinfectant for municipal wastewater because it destroys target organisms by oxidizing cellular material.

Table 2: Sampling Requirements for the Raw Sewage (Influent)

Parameter	Type of Sample	Minimum Frequency
BOD ₅	24 hour composite	weekly
TSS	24 hour composite	weekly
TP	24 hour composite	weekly

Parameter	Type of Sample	Minimum Frequency
TKN	24 hour composite	weekly

Table 3: Sampling Requirements for the Final Effluent

Parameter	Type of Sample	Minimum Frequency
cBOD ₅	24 hour composite	weekly
TSS	24 hour composite	weekly
TP	24 hour composite	weekly
TAN (NH ₃ ⁻ + NH ₄ as N)	24 hour composite	weekly
<i>E.coli</i>	grab	weekly
DO	grab/field	weekly
pH	grab/field	weekly
Temperature	grab/field	weekly
TCR	grab/field	Daily
Unionized Ammonia	calculation	weekly

Notes:

TCR is measured daily from May 1 to October 31, except weekends and statutory holidays during seasonal disinfection.

pH and temperature of the Final Effluent are determined in the field at the time of sampling for Total Ammonia Nitrogen in order to calculation unionized ammonia.

Table 4: Influent and Effluent Monitoring Schedule

2023 Schedule	2023 Sample Dates	2024 Sample Dates
Weekly on Wednesdays (Refer to Appendix A)	Refer to Appendix A	Weekly on Tuesdays (Refer to Appendix A)

2.2 Deviations from the Monitoring Program

In 2023, influent and effluent samples were collected on a rotational basis between 0800 hours to 1600 hours every Wednesday unless, it was holiday (i.e. Easter Monday, Canada Day, Christmas Day, New Year Day etc...) or samples did not arrive to the laboratory on time due to shipping issues or frozen samples upon delivery.

One sampling deviation occurred in at the beginning of 2023 when the first sample of the year was collected on a Tuesday (January 3rd) as per the 2022 sample schedule instead of Wednesday, January 4th. The 2023 sampling schedule started the following week on Wednesday, January 11th.

Sampling will occur on every second Tuesday in 2024 because sampling on Mondays is impractical as the auto-sampler has to be turned on the day before sampling and having an operator working each Sunday is unfeasible. Thursday and Friday could also result in extra weekend charges, not to mention, if the sample didn't arrive at the laboratory due to courier issues or freezing then the system would be out of compliance with no opportunity to resample for the week. Sampling on the weekend is also not feasible due to excess shipping, lab and overtime charges.

Refer to Appendix A for the 2024 sample schedule for the Haileybury Sewage Treatment System.

3 Interpretation of Monitoring and Analytical Data

3.1 Influent Flow

The influent flow is a measurement based on the total volume of wastewater taken in each day. Influent flows are estimated using the flow measurements of the final effluent as the flow streams are not significantly different in flow rates and quantities.

The rated capacity of the Haileybury Sewage Treatment Plant is of 2728 m³/day (average daily flow). The average daily flow is defined as the cumulative total sewage flow of influent into the sewage treatment plant during a calendar year divided by the number of days during which sewage was flowing to the sewage treatment plant that year.

Compliance is achieved when the annual average daily flow does not exceed 2728 m³/day or a peak design flow of 7392 m³/day. The annual average daily flow for 2023 was 2063 m³/day, which represents 76% of the rated capacity. A peak flow of 11,387 m³/day was reached on April 12th during periods of heavy rain and snow melt. This was the highest peak flow since 2019 (12,029 m³/day).

The total amount of sewage received by the plant in 2023 was 753,081 m³.

In an effort to keep annual flows below 80%, the City has a program in place to reduce infiltration using municipal service permits that address proper connections to the sanitary sewer system for new construction. Also, the frequency and duration of bypass and overflow events will continue to be monitored which will help determine steps to reduce the infiltration into the system. In the last 11 years the system exceeded 80% of the average rated capacity only once; in 2019 (81%).

Figure 1 compares the monthly influent flow rates recorded in 2023 to the rated capacity and peak capacity of the plant.

Flow trends are critical to assessing the adequacy of size of the treatment system. Figure 2 shows both the annual average and annual peak values for the past 11 years plotted against the rated capacity and peak flow capacity of the wastewater system.

3.1.1 Monthly Influent Flows

Table 5: Comparison of the Monthly Influent Flows to the Rated Capacity

2023	Total Influent Flow (m³/d)	Average Daily Influent Flow (m³/d)	% of the Avg. Capacity (2728 m³/d)	Maximum Influent Flow (m³/d)	% of the Max. Capacity (7392 m³/d)
January	45,477	1467	54%	2442	33%
February	35,461	1266	46%	2374	32%
March	39,406	1280	47%	1598	22%
April	134,311	4477	164%	11,387*	155%
May	79,791	2573	94%	10,777*	146%
June	43,768	1459	54%	2637	36%
July	56,402	1819	67%	3416	46%
August	51,610	1665	61%	2555	35%
September	63,657	2122	78%	8012*	109%
October	95,486	3080	113%	7731*	105%
November	63,464	2115	78%	3902	53%
December	43,949	1418	52%	1674	23%

* High flows occurred in April and May due to rapid snow melt and heavy rains. High flows in September and October due to very heavy rainfall.

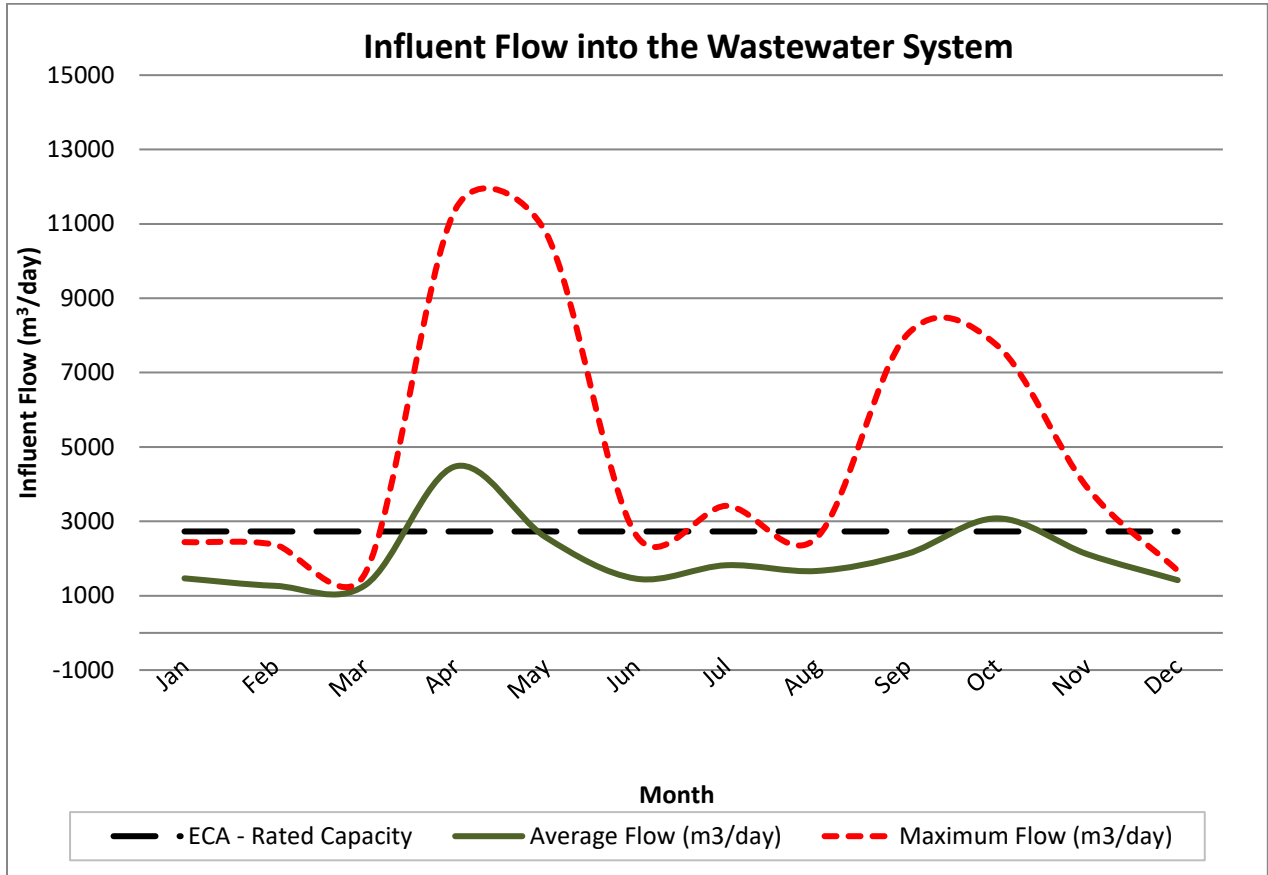


Figure 1 – 2023 Influent Flow

3.1.2 Annual Influent Flows

Table 6: Comparison of the Annual Influent Flow to the Rated Capacity

Design Capacity (m ³ /day)	2728	Maximum Flow Capacity (m ³ /day)	7392
2023 Average Flow (m ³ /day)	2063	2023 Maximum Flow (m ³ /day)	11,387
Percent of Capacity (%)	76%	Percent of Capacity (%)	154%
Total volume of wastewater treated in 2023		753,081m ³	

3.1.3 Historical Influent Flows

Table 7: Comparison of Historical Influent Flows (2013 to 2023)

Year	Total Influent Flow (m ³ /d)	Average Day Flow (m ³ /d)	% of the Avg. Capacity (2728 m ³ /d)	Maximum Influent Flow (m ³ /d)	% of the Max. Capacity (7392 m ³ /d)
2023	753,081	2063	76%	11,387	154%
2022	664,391	1820	67%	9615	130%
2021	626,414	1716	63%	9818	133%
2020	756,825	2068	76%	9606	130%
2019	802,526	2199	81%	12,029	163%
2018	600,743	1646	60%	8484	115%
2017	666,403	1826	67%	8253	112%
2016	656,451	1794	66%	8139	110%
2015	663,598	1818	67%	11,337	146%
2014	788,837	2161	79%	10,779	146%
2013	736,314	2017	77%	11,501	156%

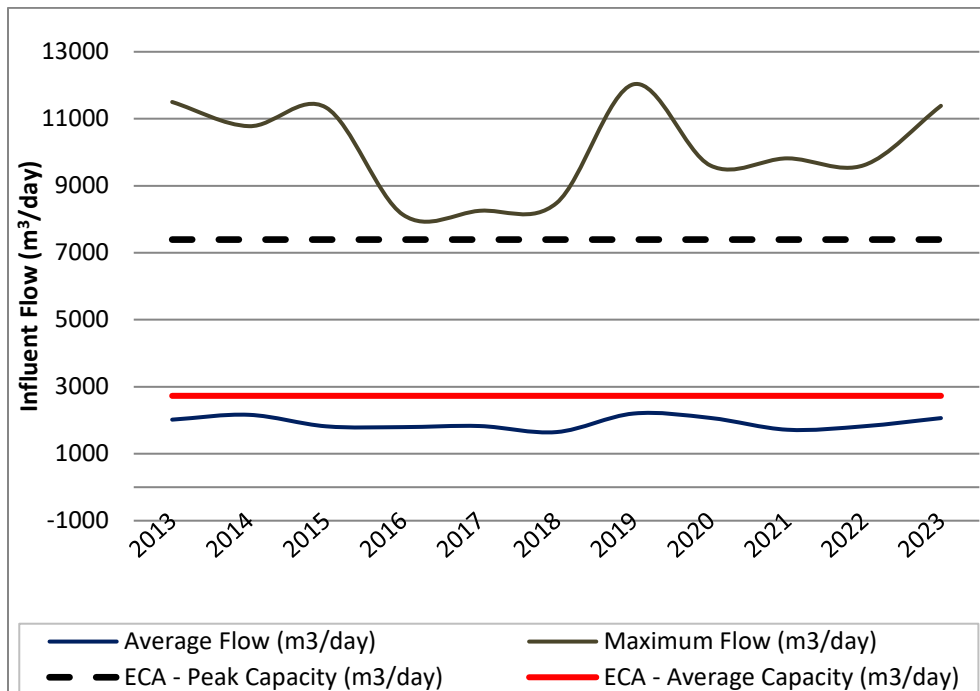


Figure 2 – Historical Influent Flow Trends (2013 to 2023)

3.2 Effluent Flows

The effluent from the clarifiers in both treatment trains passes through v-notch weirs equipped with milltronics measuring devices before discharging to Lake Temiskaming through a combined outfall sewer. For this facility, the influent flow is measured using the effluent flows meters as the flow streams are similar in flow rate and quantity. A summary and interpretation of the flow data is found in Section 3.1 on Page 13.

3.3 Influent (Raw Sewage) Quality

Influent samples are required to be collected on a weekly basis. This section summaries the annual average and annual maximum concentrations of analytical parameters for 2023. A monthly summary of the influent data is available in Appendix B.

Table 8: Influent Concentrations

Parameter	Annual Average	Annual Maximum
BOD ₅ (mg/L)	< 77.9	190
TSS (mg/L)	120	420
TP (mg/L)	1.91	4.36
TKN (mg/L)	17.1	35.5

"<" means values include results that were less than the laboratory's method detection limit

3.3.1 Historical Trends of Influent Characteristics

The characteristics of the raw wastewater influence the design and efficacy of the wastewater treatment process. Influent data and trends for BOD₅, TSS, TP and TAN/TKN from 2013 to 2023 are provided in Appendix C.

The trends show that the average BOD₅ concentration varied from 44 to 153 mg/L over the last 11 years with a maximum level of 1100 mg/L in 2022.

The average TSS concentration ranged from 46 to 363 mg/L with a maximum concentration of 11,800 mg/L in 2022.

The average TP levels remained fairly low and consistent over the last 11 years (1.4 to 3.8 mg/L).

The average TAN/TKN concentrations remained fairly consistent over the last 11 years averaging approximately 17 mg/L. A maximum TAN/TKN level of 48 mg/L occurred in 2022.

3.4 Effluent Quality

The Haileybury sewage effluent quality is based on the carbonaceous biochemical oxygen demand (cBOD₅), total suspended solids (TSS), total phosphorus (TP), pH, total chlorine residual

and *E.coli* levels. In 2023, the system produced a high quality effluent which met the compliance limits specified in the system's ECA.

An annual summary of the final effluent parameter levels are shown in Table 9 and an annual summary of the effluent loadings are presented in Table 10.

Table 9: Effluent Concentrations

Parameter	Annual Minimum	Annual Maximum	Annual Average	Compliance Limit	Exceedance
cBOD ₅ (mg/L)	0.5	5.6	1.7	25 (annual average)	No
TSS (mg/L)	< 1.0	23	< 3.5	25 (annual average)	No
TP (mg/L)	0.030	0.861	0.106	1.0 (annual average)	No
TAN (mg/L)	< 0.01	4.64	< 0.257	N/A	No
<i>E.coli</i> (cfu/100mL)	5	19	9	200 (monthly MGM) ¹	No
Dissolved Oxygen	7.3	10	9.2	N/A	No
pH	6.03	8.20	7.09	6.0 to 9.5 (inclusive)	No
Temperature (°C)	8.0	25	15	N/A	No
Un-ionized Ammonia (mg/L)	0.000	0.008	0.001	N/A	No
TCR (mg/L) ³	0.00	0.02	0.01	0.5 (maximum) ²	No

"<" means values include results that were less than the laboratory's method detection limit.

cfu ≡ colony forming units.

NOTE 1: The *E. coli* limit of 200 cfu/100mL as a monthly geometric mean (MGM) only comes into effect when chlorination is carried out between May 1st and October 31st each year. Minimum, maximum and average results are calculated from results during this period.

NOTE 2: The Provincial total residual chlorine (TRC) limit of 0.5 mg/L (maximum at any time) only comes into effect when chlorination is carried out between May 1st and October 31st each year.

A Federal regulatory limit of ≤ 0.02 mg/L for total chlorine residual in wastewater effluent came into effect on January 1, 2021.

NOTE 3: A daily total chlorine residual (TCR) was not collected and tested on June 8th. The operator scheduled to conduct the round was off that day and operations forgot to conduct the residual sampling. The TCR results will be sent to all operations staff each day a sample is tested using a group chat to ensure no samples are missed.

Table 10: Effluent Loadings

Parameter	Annual Minimum	Annual Maximum	Annual Average	Compliance Limit	Exceedance
BOD ₅ (kg/d)	1.5	13	3.5	68.2	No
TSS (kg/d)	< 1.6	31	< 11	68.2	No
TP (kg/d)	0.068	1.31	0.270	2.7	No

"<" means values include results that were less than the laboratory's method detection limit.

Appendix B includes a Monthly Process Data Report which summarizes the effluent monitoring and analysis conducted at the facility during the reporting period.

3.5 Sewage Treatment Program Success and Adequacy

The Performance Summary shows the efficiency of the plant performance through pollutant removal rates from raw sewage through to the final effluent.

Table 11 demonstrates that the system's treatment process was very successful in reducing the levels of BOD₅/cBOD₅, TSS, TP and total ammonia (TKN/TAN) from the influent, producing high quality effluent.

Table 11: Performance Summary

Parameter	Influent (annual average)	Effluent (annual average)	% Removal
BOD ₅ /cBOD ₅ (mg/L)	< 77.9	1.7	98%
TSS (mg/L)	120	< 3.5	97%
TP (mg/L)	1.91	0.106	94%
TKN/TAN (mg/L)	17.1	< 0.257	98%

4 Effluent Quality Assurance and Control Measures Undertaken

The following activities are included in regular operator and supervisory activities to assure high level performance of the sewage treatment operations including high effluent quality and accurate flow monitoring:

- Operational staff have current and appropriate level of certification for the operation of the facility and continue to learn and achieve knowledge of the process and equipment

Experienced staff has a high level of regulatory competence. New staff receives on-going training to achieve operational knowledge and regulatory competence.

- The pumping stations and the treatment plant are inspected by a certified OCWA operator regularly during the work week.
- Certified operators conduct daily reviews of selected data from continuous monitoring equipment which is captured by a remote monitoring system.
- In-house tests; pH, temperature, DO and total chlorine residual are conducted by licensed operators for monitoring purposes using standard methods for Water and Wastewater.
- Samples are collected as required and analyzed by Testmark Laboratories located in Kirkland Lake, Ontario. Analysis of the samples is conducted in accordance with the Standard Council of Canada (SCC), in cooperation with the Canadian Association for Laboratory Accreditation Inc. (CALA). Quality control procedures are method specific and include laboratory duplicate samples, spiked blanks and spiked duplicates.
- A sampling system which includes an excel developed sample calendar, which is updated at the beginning of each year, and a chain of custody binder are used to ensure all samples are collected as per the requirements identified in the system's ECA.
- Operations and Compliance staff review facility round sheets and laboratory reports to monitor the routine operation of the treatment system and ensure compliance with the ECA.
- All process and laboratory data is logged in a process data management system.
- Routine maintenance is scheduled and tracked to completion using OCWA's Workplace Maintenance System (WMS). Instrumentation equipment is tested and maintained as per manufacturer's recommendations.
- Certified operators monitor chemical usage and make adjustments as required.
- Sodium hypochlorite is added to the treatment process from May 1st to October 31st to reduce *E.coli* levels and sodium bisulphite is added to the effluent to lower the chlorine concentration before discharging to Lake Temiskaming.
- Any bypass, overflow or upset events that occur in the system are tested, monitored and reported to the local Health Unit and Spills Action Center (SAC) and local Health Unit.
- All flow and effluent quality data is reviewed by the Overall Responsible Operator and Compliance staff to identify any changes in concentrations and/or emerging trends. All non-compliances are reported to Ministry's Spills Action Center (SAC) and the local MECP inspector.

The Haileybury sewage effluent had a history of elevated *E. coli* levels during the seasonal disinfection period when trying to meet the Federal regulatory requirement of ≤ 0.02 mg/L set out in the Wastewater System Effluent Regulation (WSER). In May of 2022, a chemical solution (sodium bisulphite) and feed system replaced dechlorination tablets which was first

used in 2021. The chemical feed system improved the reduction of *E. coli* levels by allowing better operational control of the dechlorination process. Only one high *E. coli* result occurred in May 2022 when first starting up and optimizing the new process. No *E.coli* exceedances occurred in 2023 demonstrating that the control measures were effective.

5 Efforts Made to Meet Effluent Objectives

The Effluent Design Objectives are those levels of performance which can be achieved by treatment processes treating normal strength municipal sewage under optimum conditions. A sewage treatment facility should be able to produce annual average effluent quality approximately equal to the Effluent Design Objectives, but should not exceed the Effluent Compliance Limits. The objectives are used to promote continuous improvement in the operations of the works and to trigger corrective action before environmental impairment occurs.

OCWA uses a number of best efforts to achieve the Effluent Objectives.

- Certified operational staff have a high level of process knowledge and regulatory proficiency.
- The mechanical elements in the facility are regularly inspected, well maintained and kept in good repair. OCWA uses a computerized maintenance management program which generates works orders to ensure maintenance of equipment is proactively performed.
- Raw wastewater and effluent samples are collected as required and analyzed by Testmark Laboratories, an accredited laboratory. OCWA reviews these results on a regular basis to confirm compliance with ECA objective and limits.
- In-house sampling and testing for selected operational parameters provides real-time results which are used to enhance process and operational performance.
- Operations, maintenance and emergency procedures are available to ensure facilities are operated in compliance with applicable legal instruments. Facility staff has access to a network of operational compliance and support experts at the region and corporate levels.
- A five year rolling recommended capital and major maintenance report is used to assist the Owner and OCWA with planning infrastructure needs for the short and long terms. A letter summarizing capital work recommendations a provided to the Owner each year for their approval.

The systems' ECA requires a summary of efforts made to achieve the design objectives in the Approval, including an assessment of the issues and recommendations for proactive actions if any are required under the following situations:

- when any of the design objectives is not achieved more than 50% of the time in a year, or if there is an increasing trend in deterioration of final effluent quality;

The Haileybury sewage treatment plant met the design objectives for all effluent parameters in 2023.

Table 12: Effluent Concentration Objectives

Parameter	Annual Average	Objective	Averaging Period	Exceedance
cBOD ₅ (mg/L)	1.7	15	Annual average	No
TSS (mg/L)	< 3.5	15	Annual average	No
TP (mg/L)	0.106	1.0	Annual average	No
TAN (mg/L)	< 0.257	10	Annual average	No
Parameter	Annual Results (min to max)	Objective	Averaging Period	Exceedance
pH	6.03 to 8.20	6.0 to 9.5	Inclusive	No
TRC (mg/L)	0.00 to 0.02	0.5	Single result ¹	No
<i>E.coli</i> (cfu/100 mL)	5 to 19	150	MGM ¹	No

"<" means values include results that were less than the laboratory's method detection limit.

cfu ≡ colony forming units.

NOTE 1: The *E. coli* objective of 150 cfu/100mL as a monthly geometric mean (MGM) and the TCR objective of 0.5 mg/L only comes into effect when chlorination is carried out between May 1st and October 31st each year.

6 Operating Problems & Corrective Actions

Operating problems encountered during 2023 are summarized below.

1. The Haileybury sewage treatment plant exceeded its peak design capacity on 10 occasions in 2023. Heavy snowmelt and /or rainfall caused the plant to exceed its allowable peak flow capacity of 7392 m³/day from April 11th to 15th , May 1st and 2nd , September 7th and October 8th and 9th .
2. A faulty aeration system caused process upset of the treatment process on April 18th. Adjustments were made to the aeration system, 30 minutes settling tests were performed to monitor the solids and the process improved by April 21st

Additional sampling was conducted for the above mentioned problems as required under Condition 9(2) of the system's ECA that requires daily effluent sampling on any day there is a situation outside normal operating conditions. Additional sampling results are included in the effluent monitoring.

3. Farr Drive SPS – One (1) overflow event occurred during periods of very heavy rain on July 9th due to an extreme rainfall event.

4. Brewster SPS – One (1) spill occurred from a manhole located near the Brewster sewage pumping station on April 6th. Mechanical pump failure resulted in the spill.

Refer to Section 10 for further details of these events.

7 Maintenance Procedures Performed on the Works

Routine maintenance schedules are entered in OCWA's computerized Workplace Management System (WMS). This is a comprehensive maintenance program that is based on a pro-active and preventive approach. This program includes but is not limited to running weekly, monthly, and annually checks as required or as recommended by manufacturer's instructions. All routine and preventative maintenance was conducted in 2023.

Significant maintenance that took place during 2023:

Haileybury Sewage Treatment Plant

- Installed two new blowers with on the waste return lines,
- Replaced broken drum transfer pump
- Cleaned grit channel and contact chambers

Farr Drive Sewage Pumping Station

- Installed and programmed new variable frequency drives (VFDs) on both pumps,
- Pump No. 2 failed. Pump was pulled and the impeller and volute were scarred and pitted. Pump was replaced
- Replaced faulty low level lock-out floats

Refer to Appendix D for a maintenance summary which includes preventative work, capital projects and emergency repairs.

8 Calibration & Maintenance of all Monitoring Equipment

Influent and effluent monitoring equipment is calibrated based on requirements of the system's ECA or manufactures recommendations. Flow meters are calibrated annually to ensure a required accuracy of +/- 15%. pH meters, DO meters and chlorine residual analyzers are calibrated to ensure an acceptable tolerance and accuracy as specified by the manufacturer.

Routine maintenance was conducted as scheduled by qualified Instrumentation Technicians during the reporting period. Refer to Table 15 for a summary of calibrations conducted in 2023

Table 13: Calibration Summary

Instrument	Calibration Dates	% Accuracy
Effluent Flow Meter – Train 1	April 26, 2023	99.3%
Effluent Flow Meter – Train 2	April 26, 2023	100%
On-line DO Analyzer – Train 1	April 26, 2023	92%
On-line DO Analyzer – Train 2	April 26, 2023	89%
Portable Chlorine Analyzer	January 17 & Jul 6, 2023	Within Tolerance
Portable pH Ultrapen	July 11 & October 18, 2023	99 to 100%
Portable pH/DO Analyzer	Jan. 16, Apr. 11, Jul. 6 and Oct. 5, 2023	92 to 98%

9 Sludge Generation and Disposal

A total sludge volume of 3033 m³ was removed from the Haileybury Sewage Treatment Plant in 2023 and hauled to the New Liskeard Lagoon for disposal which is approved under ECA No. 5103-CDFJWC. The New Liskeard Lagoon ECA allows a maximum sludge volume of 8800 m³/year that can be imported from the Haileybury STP to the lagoon for disposal. It is anticipated that the volume of sludge generated in 2024 will be similar to 2023 as no changes to population or process are expected.

All digested sludge is removed regularly on an as-needed basis by certified haulage trucks owned by the City of Temiskaming Shores (ECA No. A841393) or by Phippen Waste Management (ECA No. AB17724).

The sludge is tested on an annual basis and analyzed for the parameters listed in Appendix E - Sludge Quality.

Table 14: Summary of Hauled Sludge Volumes

Month	Volume of Sludge Hauled (m³)
January	299
March	462
April	394
May	204
June	82
July	218

Month	Volume of Sludge Hauled (m ³)
August	204
September	218
October	122
November	272
December	558
Total (m³)	3033

10 Abnormal Discharge Events

10.1 Overflow, Bypass and Spill Events

One (1) overflow event occurred during the 2023 reporting period at the Farr Drive sewage pumping station. The event took place on July 9th during periods of very heavy rain. The untreated wastewater was chlorinated and tested for BOD₅, TSS, TP, TKN and *E. coli*. as required under condition 3.0(3.4)(3.4.1b) of the ECA.

One (1) spill also occurred during the 2023 reporting period near the Brewster sewage pumping station (SPS) on April 6th. Mechanical pump failure resulted in a spill from a manhole located near SPS. When operators arrived on site, they found the wet well level approximately 5' below the pump station cover.

A sample of the spilled material was collected and tested for BOD₅, TSS, TP, TKN and *E.coli*. Rags were found in both pump impellers and after they were cleaned the pumps returned to normal operations. (SAC Ref No. 1-35TVW8).

Refer to Appendix F for a detailed report of the spill event.

The two events were reported to the Ministry of the Environment's Spills Action Center (SAC) as per the system's approval, to Environment Canada as required under the Federal Fisheries Act and to the local Health Unit. Table 15 summarizes the event and Appendix G provides a detailed record of the overflow event including sample results.

Table 15: Summary of Abnormal Discharge Events in 2023

Date	Location	Duration	Type	Cause	Adverse Impacts	Estimate Volume (m ³)
April 6	Brewster SPS	2.5 hours	Spill	Pump failure	None	Unknown

Date	Location	Duration	Type	Cause	Adverse Impacts	Estimate Volume (m ³)
September 7	Farr Dr. SPS	2.2 hours	Overflow	Extreme rainfall	None	2620

10.2 Situations Outside Normal Operating Conditions

Condition 9(2) of ECA 7579-BTFKMN indicates that in addition to the scheduled monitoring program, the Owner shall collect daily sample(s) of the Final Effluent on any day when there is any situation outside Normal Operating Conditions. The sample(s) are to be analyzed for all effluent parameters outlined in Compliance Limits condition that require composite samples (cBOD5, TSS and TP). Normal operating conditions means the condition when all the unit process(es), excluding preliminary treatment in a treatment train is operating within design capacity.

The Haileybury sewage treatment plant exceeded its peak design capacity for Train No. 1 and/or Train No. 2 on 10 occasions in 2023 during periods of heavy rainfall or snow melt.

On April 18th, a faulty aeration system caused a process upset of the treatment plant. Adjustments were made to the aeration system, 30 minutes settling tests were performed to monitor the solids and the process improved by April 21st

Additional sampling was conducted for the above mentioned problems as required under Condition 9(2) of the system’s ECA that requires daily effluent sampling on any day there is a situation outside normal operating conditions. Additional sampling results are included in the effluent monitoring.

Table 16: Peak Design Capacity Exceedances

Date	Train No. 1 Flow (peak = 3032 m ³ /d)	Train No. 2 Flow (peak = 4360 m ³ /d)	Combined Flow (peak = 7392 m ³ /d)
April 11	3678	6919	10616
April 12	3402	7985	11387
April 13	3362	7212	10574
April 14	3127	5697	8826
April 15	2822	4450	7272
May 1	2378	8399	10,777
May 2	2127	5447	7574
September 7	2173	5840	8013

Date	Train No. 1 Flow (peak = 3032 m ³ /d)	Train No. 2 Flow (peak = 4360 m ³ /d)	Combined Flow (peak = 7392 m ³ /d)
October 8	2846	4480	7326
October 9	3104	4628	7732

10.3 Efforts Made to Reduce System Overflows and Bypasses

The Haileybury Sewage Treatment Plant operated well below its annual average rated capacity of 2728 m³/day for the past several years. The system is also designed to treat a peak flow rate of 7392 m³/day. The plant exceeded its peak design capacity ten times in 2023 during periods of heavy rainfall or snow melt.

A review of historical data (2013 to 2023) indicates that all overflow events occurred at the Farr Drive Sewage Pumping Station and discharged to Lake Temiskaming. Five overflow events occurred from 2013 to 2023 during heavy rains and snow melt.

In an effort to reduce and/or eliminate overflow, bypass and spill events and to confirm with Procedure F-5-1, the following are in place.

- Emergency backup generators are installed at the plant which also supplies power to the Farr Drive pumping station.
- A SCADA system is used to accurately monitor the sewage network and an alarm system is in place at key points in the process and at the sewage pumping station to alert operators of any issues; power failures, high levels, equipment failures, loss of communication and intrusion.
- Regular routine maintenance is performed to help reduce overflows/bypasses/spills events. For example: monthly generator tests to ensure the generator will start during a power failure and equipment will continue to operate normally, monthly alarm testing and equipment maintenance as outlined in the Maintenance Summary found in Appendix D.
- Repairs to the collection system are done promptly as issues occur.
- A program is in place to prevent roof leaders and sump pumps from being connected with sanitary new builds.
- To more accurately measure and monitor overflow volumes, a procedure has been developed to calculate overflow volumes from the Farr Drive station.

10.4 Summary of Alterations to the System to Reduce Overflows

One pump at the Farr Dr. SPS was replaced with more efficient unit to allow more volume to be directed to the sewage treatment plant which helps reduce overflow events during high flows.

10.5 Public Notification

The system has a Public Notification Procedure to notify the public and downstream users that may be adversely affected in the event of an overflow, bypass or spill at the plant. Signage will be posted at publicly accessible points located near all collection system overflow outfall locations before May 21, 2025 as required under ECA .

11 Complaints

No complaints were received during the reporting period.

12 Notice of Modifications on Sewage Works

A Sewage Modification form was completed by EXP Engineering Services for the installation of two new blowers on the return lines to improve wasting. Each blower is equipped with 5 hp motors. Blower No. 1 is rated at 35 CFM at 10 PSIG and Blower No. 2 is 60 FCM at 8 PSIG.

13 Proposed Alterations to the Works

Environmental Compliance Approval (ECA) No. 7579-BTFKMN (issued September 18, 2020) approves the installation of an Ultraviolet (UV) disinfection system to help reduce *E.coli* levels and eliminate total chlorine residual concentrations. The City of Temiskaming Shores applied for government funding in 2021 to alleviate the financial burden of the project, but was not successful. Until funding becomes available and a UV system is installed, a temporary dechlorination system using sodium bisulphite will be used.

APPENDIX A

2023 and 2024 Influent and Effluent Sampling Schedule

Haileybury Sewage Treatment System

Sampling Dates for 2023 and Sampling Schedule for 2024

2023 Schedule	2023 Sample Dates	2024 Sample Schedule
January 4, 2023	January 3, 2023*	January 2, 2024
January 11, 2023	January 11, 2023	January 9, 2024
January 18, 2023	January 18, 2023	January 16, 2024
January 25, 2023	January 25, 2023	January 23, 2024
February 1, 2023	February 1, 2023	January 30, 2024
February 8, 2023	February 8, 2023	February 6, 2024
February 15, 2023	February 15, 2023	February 13, 2024
February 22, 2023	February 22, 2023	February 20, 2024
March 1, 2023	March 1, 2023	February 27, 2024
March 8, 2023	March 8, 2023	March 5, 2024
March 15, 2023	March 15, 2023	March 12, 2024
March 22, 2023	March 22, 2023	March 19, 2024
March 29, 2023	March 29, 2023	March 26, 2024
April 5, 2023	April 5, 2023	April 2, 2024
April 12, 2023	April 12, 2023	April 9, 2024
April 19, 2023	April 19, 2023	April 16, 2024
April 26, 2023	April 26, 2023	April 23, 2024
May 3, 2023	May 3, 2023	April 30, 2024
May 10, 2023	May 10, 2023	May 7, 2024
May 17, 2023	May 17, 2023	May 14, 2024
May 24, 2023	May 24, 2023	May 21, 2024
May 31, 2023	May 31, 2023	May 28, 2024
June 7, 2023	June 7, 2023	June 4, 2024
June 14, 2023	June 14, 2023	June 11, 2024
June 21, 2023	June 21, 2023	June 18, 2024
June 28, 2023	June 28, 2023	June 25, 2024
July 5, 2023	July 5, 2023	July 2, 2024
July 12, 2023	July 12, 2023	July 9, 2024
July 19, 2023	July 19, 2023	July 16, 2024
July 26, 2023	July 26, 2023	July 23, 2024
August 2, 2023	August 2, 2023	July 30, 2024
August 9, 2023	August 9, 2023	August 6, 2024
August 16, 2023	August 16, 2023	August 13, 2024
August 23, 2023	August 23, 2023	August 20, 2024
August 30, 2023	August 30, 2023	August 27, 2024
September 6, 2023	September 6, 2023	September 3, 2024

Haileybury Sewage Treatment System

Sampling Dates for 2023 and Sampling Schedule for 2024

2023 Schedule	2023 Sample Dates	2024 Sample Schedule
September 13, 2023	September 13, 2023	September 10, 2024
September 20, 2023	September 20, 2023	September 17, 2024
September 27, 2023	September 27, 2023	September 24, 2024
October 4, 2023	October 4, 2023	October 1, 2024
October 11, 2023	October 11, 2023	October 8, 2024
October 18, 2023	October 18, 2023	October 15, 2024
October 25, 2023	October 25, 2023	October 22, 2024
November 1, 2023	November 1, 2023	October 29, 2024
November 8, 2023	November 8, 2023	November 5, 2024
November 15, 2023	November 15, 2023	November 12, 2024
November 22, 2023	November 22, 2023	November 19, 2024
November 29, 2023	November 29, 2023	November 26, 2024
December 6, 2023	December 6, 2023	December 3, 2024
December 13, 2023	December 13, 2023	December 10, 2024
December 20, 2023	December 20, 2023	December 17, 2024
December 27, 2023	December 27, 2023	December 24, 2024
		December 31, 2024

* Note: One sampling deviation occurred in at the beginning of 2023 when the first sample of the year was collected on a Tuesday (January 3rd) as per the 2022 sample schedule instead of Wednesday, January 4th. The 2023 sampling schedule started the following week on Wednesday, January 11th.

APPENDIX B

Monthly Process Data Reports

**Haileybury Sewage Treatment System
2023 Monthly Process Data Report**

INFLUENT	01/2023	02/2023	03/2023	04/2023	05/2023	06/2023	07/2023	08/2023	09/2023	10/2023	11/2023	12/2023	Total	Avg	Max	Min
Raw Sewage / Biochemical Oxygen Demand: BOD5 - mg/L																
Count Lab	4	4	5	4	5	4	4	5	4	4	5	4	52			
Max Lab	180	140	190	93	< 160	150	71	100	< 95	95	120	140			190	
Mean Lab	137.5	100.8	124.4	40.0	< 72.5	100.0	45.3	72.0	< 48.3	56.5	53.3	82.0	<	77.9		
Min Lab	100.0	28.0	42.0	15.0	< 30.0	25.0	34.0	43.0	< 30.0	19.0	2.7	49.0			<	2.7
Raw Sewage / Total Suspended Solids: TSS - mg/L																
Count Lab	4	4	5	4	5	4	4	5	4	4	5	4	52			
Max Lab	227	194	252	127	133	420	88	178	167	193	308	228			420	
Mean Lab	127	124	160	69	100	221	72	122	82	105	127	120		120		
Min Lab	37.5	24	71	11.5	43	36.5	47	85	35.5	8.5	16	63				8.5
Raw Sewage / Total Phosphorus: TP - mg/L																
Count Lab	4	4	5	4	5	4	4	5	4	4	5	4	52			
Max Lab	4.36	2.78	2.97	3.54	1.87	4.09	1.27	3.36	1.40	2.52	3.33	2.58			4.36	
Mean Lab	2.85	2.38	2.39	1.33	1.38	2.77	1.17	2.33	1.13	1.53	1.75	1.82		1.91		
Min Lab	1.89	2.04	1.70	0.316	0.626	1.24	0.941	0.774	0.491	0.544	0.952	1.14				0.316
Raw Sewage / Total Kjeldahl Nitrogen: TKN - mg/L																
Count Lab	4	4	5	4	5	4	4	5	4	4	5	4	52			
Max Lab	35.5	26.3	26.6	19.8	21.4	26.3	20.6	25.4	19.6	21.4	21.8	17.2			35.5	
Mean Lab	25.0	23.7	24.1	10.9	14.3	21.3	17.1	17.6	10.4	10.7	13.5	16.1		17.1		
Min Lab	16.8	21.1	22.1	3.8	5.9	12.9	15.2	7.4	2.9	4.1	7.0	14.0				2.9
EFFLUENT	01/2023	02/2023	03/2023	04/2023	05/2023	06/2023	07/2023	08/2023	09/2023	10/2023	11/2023	12/2023	Total	Avg	Max	Min
Final Effluent / CBOD5 (25 mg/L - Quarterly) - mg/L																
Count Lab	4	4	5	11	7	4	4	5	5	6	5	4	64			
Max Lab	1.8	2.4	1.6	5.6	2.7	1.7	1.4	1.4	4.1	2.1	1.8	2.5			5.6	
Mean Lab	1.45	1.45	1.28	2.95	1.93	1.48	1.08	0.94	1.70	1.23	1.38	1.80		1.71		
Min Lab	1.0	0.9	0.8	0.8	1.2	1.4	0.5	0.5	0.7	0.8	0.8	1.3				0.5
Loadings: cBOD5 - Final Effluent (kg/d)	2.13	1.84	1.64	13.2	4.96	2.15	1.96	1.57	3.61	3.8	2.92	2.55		3.51	13.2	1.57
Final Effluent / TSS (25 mg/L - Quarterly) - mg/L																
Count Lab	4	4	5	11	7	4	4	5	5	6	5	4	64			
Max Lab	< 20.0	< 3.0	< 4.5	17.0	< 7.5	< 1.5	5.0	< 1.5	< 15.5	< 22.5	< 7.0	< 1.7			22.5	
Mean Lab	< 5.9	< 1.8	< 2.0	7.0	< 2.8	< 1.1	2.3	< 1.1	< 4.9	< 5.7	< 2.2	< 1.3	<	3.5		
Min Lab	< 1.0	< 1.0	< 1.0	1.5	< 1.0	< 1.0	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<			1.0
Loadings: TSS - Final Effluent (kg/d)	< 8.62	< 2.22	< 2.56	31.1	< 7.17	< 1.64	4.09	< 1.83	< 10.4	< 17.5	< 4.65	< 1.84	<	11	31.1	< 1.64
Final Effluent / TP (1 mg/L - Annual) - mg/L																
Count Lab	4	4	5	11	7	4	4	5	5	6	5	4	64			
Max Lab	0.116	0.085	0.096	0.861	0.201	0.085	0.083	0.049	0.315	0.37	0.21	0.054			0.861	
Mean Lab	0.07	0.063	0.071	0.293	0.097	0.062	0.057	0.041	0.099	0.122	0.088	0.048		0.106		
Min Lab	0.044	0.053	0.054	0.059	0.058	0.039	0.036	0.032	0.037	0.030	0.043	0.037				0.030
Loadings: TP - Final Effluent (kg/d)	0.102	0.079	0.091	1.310	0.249	0.090	0.104	0.068	0.210	0.375	0.186	0.068		0.270	1.310	0.068
Final Effluent / TAN: NH3 + NH4+ as N - mg/L																
Count Lab	4	4	5	4	5	4	4	5	4	4	5	4	52			
Max Lab	0.07	4.64	0.13	2.7	0.99	0.46	< 0.12	0.07	0.05	0.08	0.07	1.13			4.64	
Mean Lab	0.033	1.185	0.09	0.813	0.424	0.15	< 0.045	0.038	0.033	0.038	0.044	0.308	<	0.257		
Min Lab	0.01	0.02	0.04	0.13	0.21	0.01	< 0.01	0.02	0.01	0.02	0.03	0.03				0.01
Final Effluent / Un-ionized Ammonia: NH3 - mg/L																
Count IH	4	4	5	4	5	4	4	5	4	4	5	4	52			
Total IH	0.000	0.008	0.001	0.006	0.006	0.004	0.003	0.003	0.004	0.000	0.000	0.001	0.038			
Max IH	0.000	0.008	0.000	0.005	0.003	0.003	0.002	0.002	0.003	0.000	0.000	0.001			0.008	
Mean IH	0.000	0.002	0.000	0.002	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.000		0.001		
Min IH	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000				0.000
Final Effluent / DO Field: Lab Upload - mg/L																
Max IH	10.0	10.0	10.0	9.8	10.3	9.1	8.7	8.7	9.3	9.8	10.4	10.1			10.4	
Mean IH	9.1	9.3	9.5	9.5	9.9	8.8	8.2	8.2	8.8	9.2	9.6	9.7		9.2		
Min IH	7.4	8.3	8.7	9.2	9.3	8.5	7.6	7.3	7.6	8.6	8.6	9.0				7.3
Final Effluent / pH Field: Lab Upload (6.0 - 9.5) - ---																
Max IH	7.48	7.50	7.19	7.20	7.16	7.53	8.20	7.80	8.10	7.20	6.90	6.29			8.20	
Mean IH	7.13	7.00	7.04	6.96	7.10	7.39	7.43	7.41	7.69	7.00	6.74	6.19		7.09		
Min IH	6.80	6.80	6.92	6.80	7.00	7.26	6.95	7.10	7.51	6.78	6.37	6.03				6.03
Final Effluent / Temperature Field: Lab Upload - °C																
Max IH	16.3	15.6	15.0	17.0	14.2	20.4	22.0	20.3	25.0	19.9	15.8	17.8			25.0	
Mean IH	13.9	14.8	11.0	15.0	11.2	17.5	19.8	18.3	18.9	17.0	12.9	14.0		15.2		
Min IH	10.9	13.0	9.0	13.1	8.0	14.8	18.5	16.4	16.3	14.6	9.8	11.8				8.0
Final Effluent / E. Coli (200 monthly geometric mean) - cfu/100mL																
Count Lab	4	4	5	4	5	4	4	5	4	4	5	4	52			
Max Lab	18000	75000	68000	360000	< 15	< 15	< 10	< 5	< 100	< 50	100000	31000			< 360000	
Mean Lab	7925	28575	51800	135950	< 8	< 8	< 6	< 5	< 35	< 16	29480	19375	<	22577		
Min Lab	2000	3300	30000	21800	< 5	< 5	< 5	< 5	< 5	< 5	4400	13800				5
GMD	5885	16340	49956	70118	7	7	6	5	19	9	15688	18342				
Final Effluent / Cl Residual: Total (0.5/0.02 mg/L) - mg/L																
Count IH	0	0	0	2	23	21	20	22	20	21	0	0	129			
Total IH				0.01	0.12	0.12	0.09	0.04	0.12	0.20			0.70			
Max IH				0.01	0.01	0.01	0.01	0.01	0.01	0.02					0.02	
Mean IH				0.01	0.01	0.01	0.01	0.00	0.01	0.01				0.01		
Min IH				0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00

NOTES:

- Enhanced effluent sampling was initiated on 10 occasions in 2023 when the system exceeded its peak design capacity of 7392 m3/day (April 11 to 15, May 1 & 2, September 7, October 8 & 9). Enhanced sampling is required by the system's approval during situations outside of normal operating conditions. The samples were tested for cBOD5, TSS and TP.
- The E. coli limit of 200 cfu/100mL as a monthly geometric mean (MGM) only comes into effect when chlorination is carried out between May 1st and October 31st each year.
- The Provincial total residual chlorine (TRC) limit of 0.5 mg/L (maximum at any time) only comes into effect when chlorination is carried out between May 1st and October 31st each year. A Federal regulatory limit of <= 0.02 mg/L for total chlorine residual in wastewater effluent came into effect on January 1, 2021.

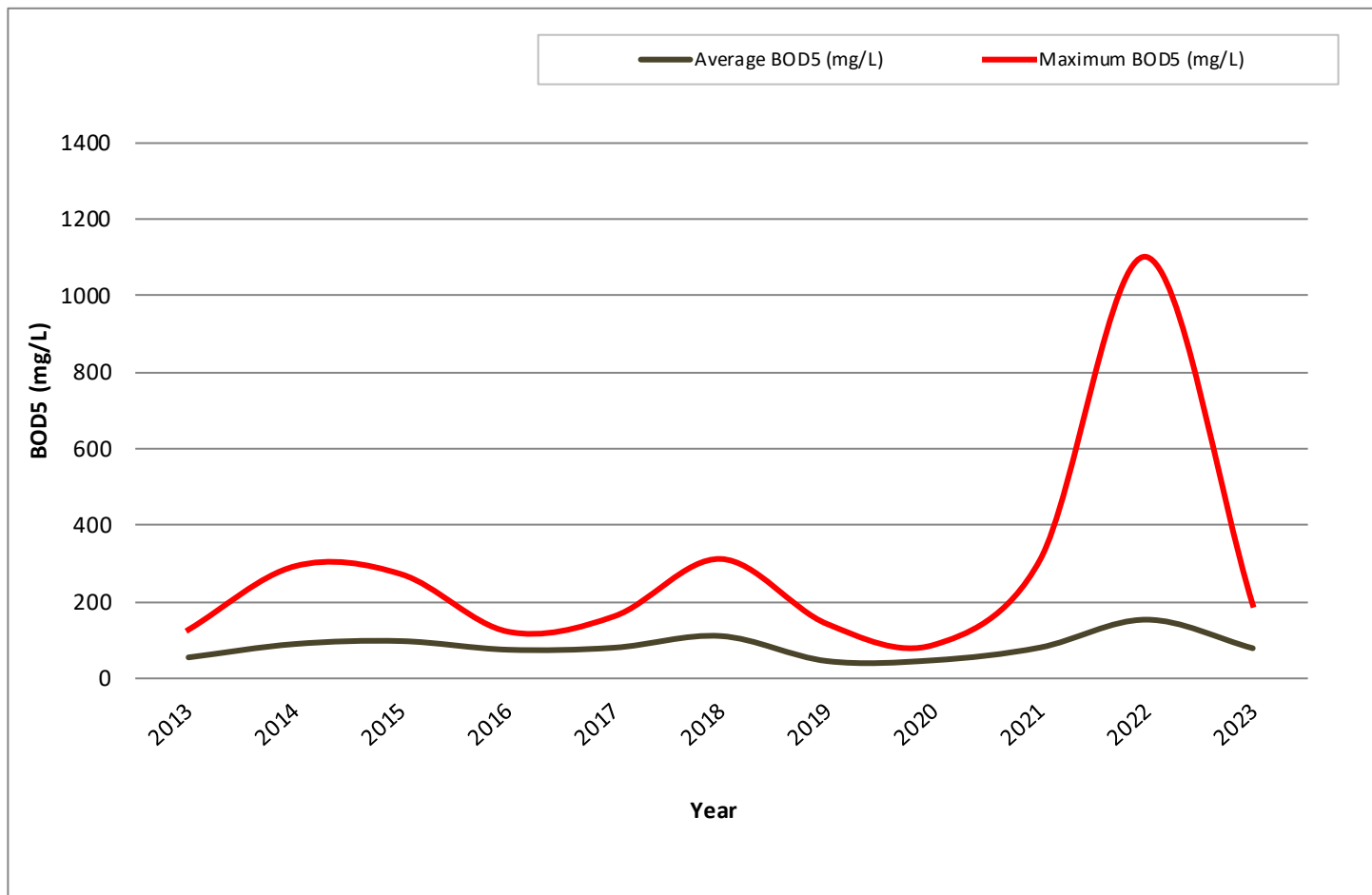
APPENDIX C

Historical Trends of Influent Characteristics

**Haileybury Sewage Treatment Plant
Influent Characteristics – Historical Results (2013 to 2023)**

BOD5 – Five Day Biochemical Oxygen Demand

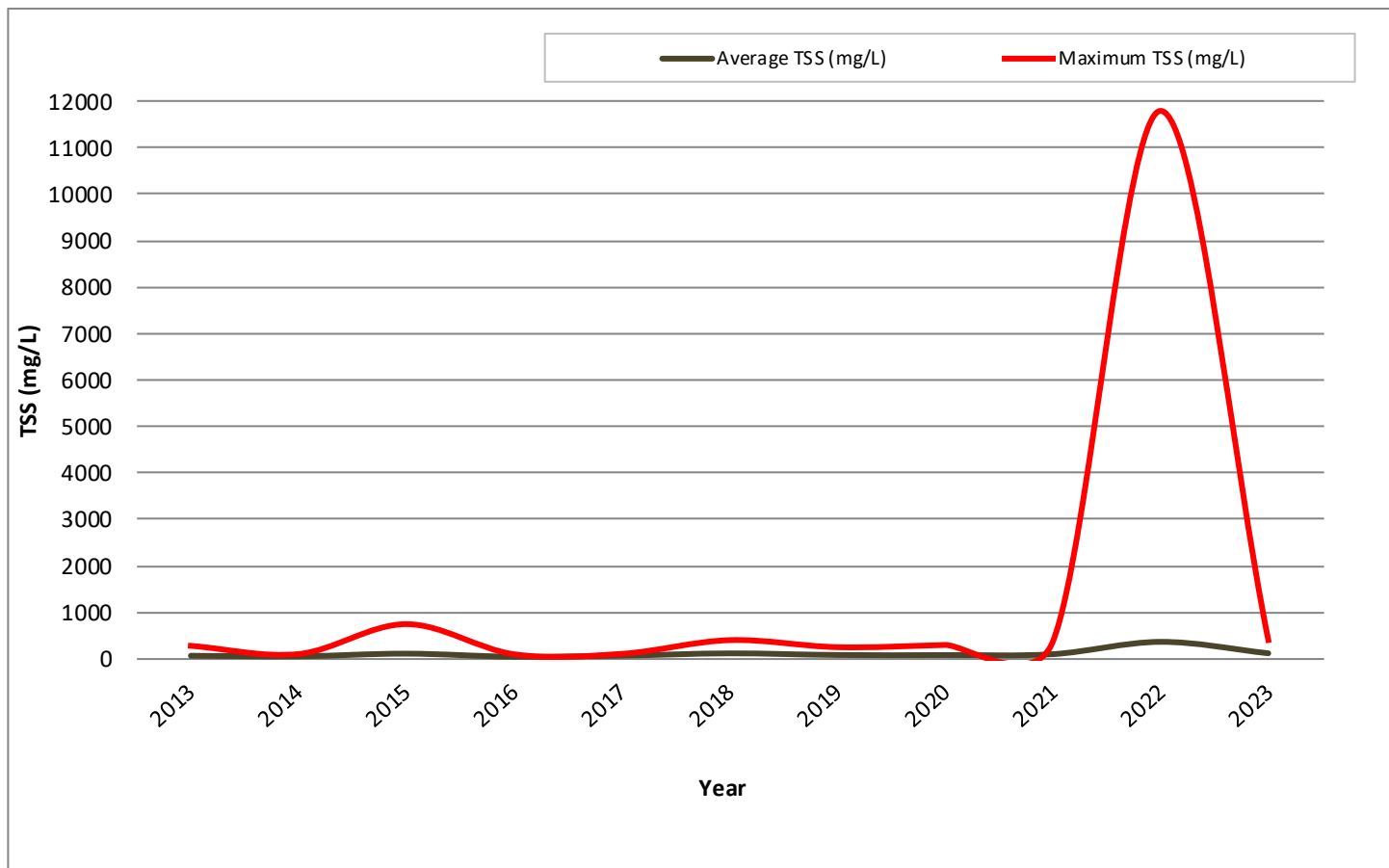
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Average BOD5 (mg/L)	54	89	97	74	79	110	44	46	80	153	78
Maximum BOD5 (mg/L)	125	291	270	120	160	310	140	85	307	1100	190



**Haileybury Sewage Treatment Plant
Influent Characteristics – Historical Results (2013 to 2023)**

TSS – Total Suspended Solids

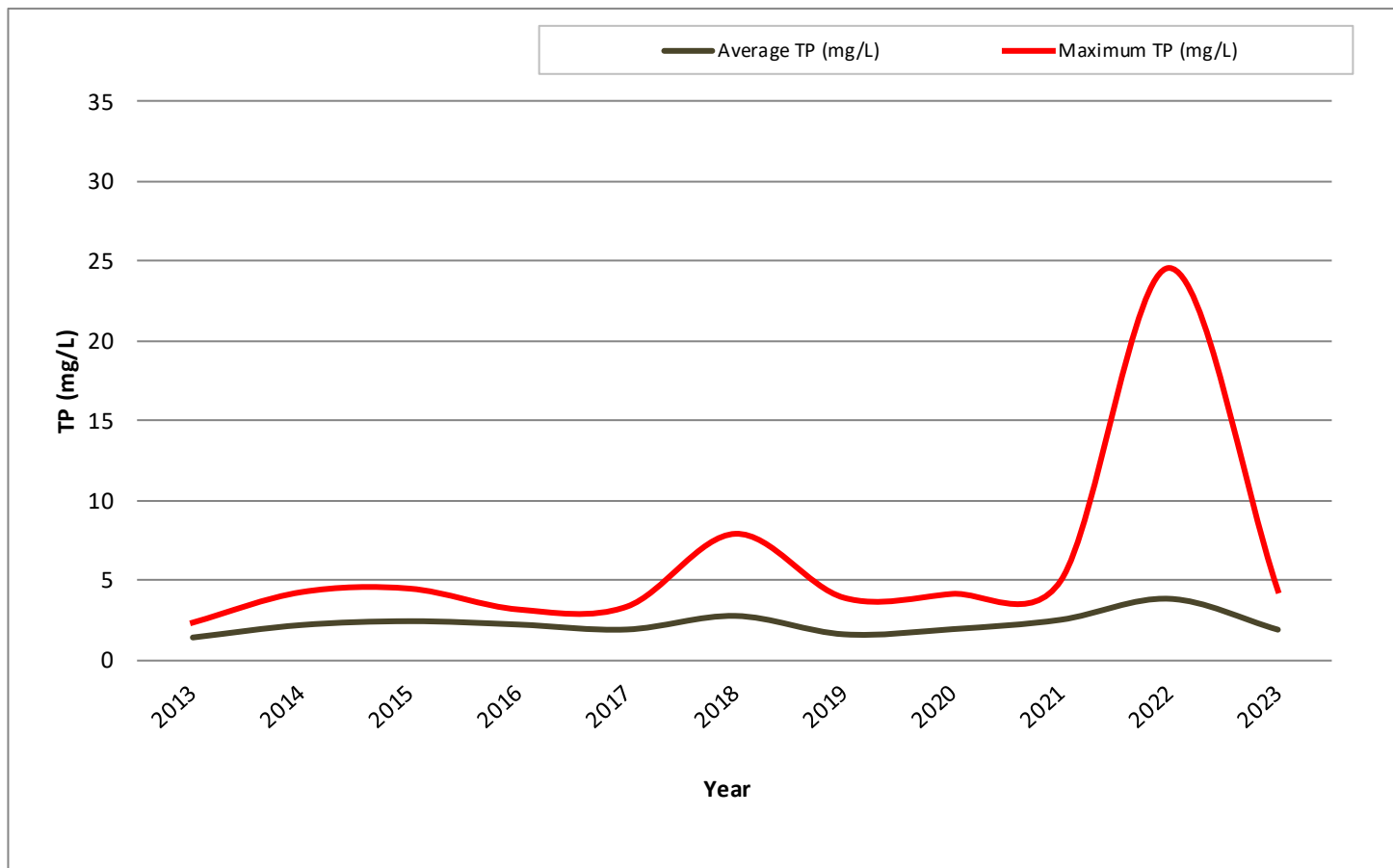
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Average TSS (mg/L)	67	56	112	46	70	118	83	82	101	363	120
Maximum TSS (mg/L)	293	116	760	112	121	416	264	312	383	11800	420



**Haileybury Sewage Treatment Plant
Influent Characteristics – Historical Results (2013 to 2023)**

TP - Total Phosphorus

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Average TP (mg/L)	1.4	2.2	2.4	2.2	1.9	2.8	1.6	1.9	2.5	3.8	1.9
Maximum TP (mg/L)	2.4	4	4.5	3.2	3.4	7.9	3.9	4.2	5.0	24.6	4.4



**Haileybury Sewage Treatment Plant
Influent Characteristics – Historical Results (2013 to 2023)**

TAN – Total Ammonia Nitrogen / TKN – Total Kjeldahl Nitrogen

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Average TAN/TKN (mg/L)	12	13	15	16	12	15	15	19	22	26	17
Maximum TAN/TKN (mg/L)	19	26	29	24	20	23	29	38	37	48	36



Haileybury Sewage Treatment Plant Influent Characteristics – Historical Results (2013 to 2023)

Note:

Sampling of the raw influent was done monthly under an old ECA (No. 5964-9DLRCS) until a new ECA (No. 1488-B8JL5F) was issued on March 27, 2019 requiring weekly sampling. Two additional ECAs were issued in 2020 (No. 2001-BLQRNC on February 18, 2020 and the current ECA No. 7579-BTFKMN on September 18, 2020).

Influent samples were collected and tested for TAN under the old ECA No. 5964-9DLRCS and replaced by TKN under the new ECAs.

APPENDIX D

Maintenance Summary

Workorder Summary Report

 Report Start Date: Jan 1, 2023 12:00 AM
 Report End Date: Dec 31, 2023 11:59 PM
 Location: 5726*
 Work Order Type: CALL,CAP,CORR,EMER,OPER,PM
 Work Order Class:

				WorkOrder		PM Schedule		Workorder Details					
WO #	Asset ID	Asset Description	Location Description	Type	Class	FEQ	Units	Work Order Description	Status	Schedule Start	Actual Start	Actual Finsh	WorkLog Detail
3150189	0000277316	ANALYZER PH PORTABLE	5726, Farr Pumping Station	PM	Inspection	3	MONTHS	Analyzer pH Portable Service (3m) 5726	CLOSE	1/1/23 12:00 AM	1/16/23 01:41 PM	1/16/23 01:41 PM	
3151216			5726, Farr Pumping Station	PM	Inspection	6	MONTHS	Analyzer Chlorine Farr Drive SPS Portable Inspection/Service (6m) 5726	CLOSE	1/1/23 12:00 AM	1/16/23 01:46 PM	1/16/23 01:46 PM	
3151731			5726, Haileybury STP	PM	Compliance	1	YEARS	Facility Emergency Plan Review (1y) 5726	CLOSE	1/1/23 12:00 AM	4/17/23 06:54 AM	4/17/23 06:54 AM	Facility Emergency Plan Review (1y) 5726 - Reviewed and updated FEP binder. New procedures developed electronically. Contact List updated. Facility Emergency Plan Review (1y) 5726 - Went to office to print off new procedures for the FEP binder, but printer started making black streaks on the pages. Will go back once the printer is repaired. Facility Emergency Plan Review (1y) 5726 - Printed off updated procedures and locate in binder
3151738			5726, Haileybury STP	OPER	Health and Safety	1	YEARS	OCWA Annual Workplace Inspection (1y) 5726	CLOSE	1/1/23 12:00 AM	1/4/23 12:03 PM	1/4/23 12:03 PM	Work Place inspection -Completed annual Work place inspection all good.
3151744			5726, Haileybury STP	PM	Health and Safety	1	YEARS	WHMIS/SDS/NSF Review and Update (1y) 5726	CLOSE	1/1/23 12:00 AM	1/26/23 03:49 PM	1/26/23 03:49 PM	Review/Update SDS Sheets - Review/update and print SDS sheets for all Haileybury STP sites
3155892	0000060172	TANK CONTACT CHAMBER 02	5726, Haileybury STP, Process, Disinfection	PM	Refurbish/ Replace/Repair	6	MONTHS	Gritt Channels and Contact Chamber Inspection (6m) 5726	CLOSE	1/1/23 12:00 AM	6/30/23 08:19 AM	6/30/23 08:19 AM	
3155911	0000076731	TANK STORAGE 01 WET WELL	5726, Lakeshore Pumping Station	PM	Refurbish/ Replace/Repair	6	MONTHS	Tank Wet Well Farr Drive Inspection (6m) 5726	CLOSE	1/1/23 12:00 AM	7/10/23 03:05 PM	7/10/23 03:05 PM	Completed by City -
3178958			5726, Farr Pumping Station	PM	Inspection	1	YEARS	ALARM PLANT FARR SPS ANNUAL TESTING (1Y) 5726	CLOSE	1/1/23 12:00 AM	4/29/23 12:07 PM	4/29/23 12:07 PM	
3178961			5726, Haileybury STP	PM	Inspection	1	YEARS	ALARM PLANT HAIL STP ANNUAL TESTING (1Y) 5726	COMP	1/1/23 12:00 AM	12/22/23 08:58 AM	12/22/23 08:58 AM	- Performed critical alarm testing and made sure the alarms were dialing out for on call purposes
3179432	0000076750	GENERATOR 25KW Portable Generator	5726, Lakeshore Pumping Station	PM	Refurbish/ Replace/Repair	1	MONTHS	Generator Inspect/Service 5726 (1m)	CLOSE	1/1/23 12:00 AM	1/17/23 01:02 PM	1/17/23 01:02 PM	ran - ran on self test record value

Workorder Summary Report

 Report Start Date: Jan 1, 2023 12:00 AM
 Report End Date: Dec 31, 2023 11:59 PM
 Location: 5726*
 Work Order Type: CALL,CAP,CORR,EMER,OPER,PM
 Work Order Class:

				WorkOrder		PM Schedule		Workorder Details					
WO #	Asset ID	Asset Description	Location Description	Type	Class	FEQ	Units	Work Order Description	Status	Schedule Start	Actual Start	Actual Finsh	WorkLog Detail
3179886	0000293147	PORTABLE DO METER	5726, Haileybury STP, Facility	PM	Inspection	3	MONTHS	Analyzer Dissolved Oxygen/pH Portable Calibration/Inspection (3m) 5726	CLOSE	1/1/23 12:00 AM	1/16/23 01:35 PM	1/16/23 01:35 PM	-Cleaned and calibrated pH probe for analyzer using 4.01 pH and 7.00 pH buffer solutions as per manufactures instructions. Renewed storage solution. Calibrated DO with distilled water at 100% saturation.
3180598	0000277374	ENGINE DIESEL	5726, Haileybury STP, Facility, Power Generation	PM	Refurbish/ Replace/Repair	1	YEARS	Diesel Generator Genset Inspection/ Functional Test (1Y) 5726	CLOSE	1/1/23 12:00 AM	4/24/23 01:56 PM	4/24/23 01:56 PM	Completed by Contractor -
3200153			5726, Haileybury STP	OPER	Inspection	1	YEARS	Daily O&M Activities Wastewater Treatment (1y) 5726	COMP	1/1/23 12:00 AM	1/2/24 01:47 PM	1/2/24 01:47 PM	- Take sewage samples from Lakeshore pumping station overflow up to the lab in KL - Calibrate new pH pen at Farr pumping station. - Raised probe from mixed liquor and cleaned. Clean membrane off with distilled water and dry. Place bag over probe with saturated water vapor and let stabilize. Perform Air Calibration according to manufactures instruction.
3200158	0000277374	ENGINE DIESEL	5726, Haileybury STP, Facility, Power Generation	PM	Refurbish/ Replace/Repair	1	MONTHS	Diesel Generator Genset Inspection/ Functional Test (1m) 5726	CLOSE	1/1/23 12:00 AM	1/23/23 02:25 PM	1/23/23 02:25 PM	ran - ran on self test record value on sheet
3200174			5726, Haileybury STP	PM	Inspection	1	MONTHS	TPM Inspection/Maintenance (1m) 5726	CLOSE	1/1/23 12:00 AM	1/27/23 01:13 PM	1/27/23 01:13 PM	check - check all good
3200194	0000060125	BLOWER CENTRIFUGAL 02	5726, Haileybury STP, Process, Secondary Treatment	PM	Refurbish/ Replace/Repair	1	YEARS	Blower Centrifugal 02 Inspection/ Service (1y) 5726	CLOSE	1/1/23 12:00 AM	3/31/23 03:05 PM	3/31/23 03:05 PM	check - check oil and change filter
3205515			5726, Haileybury STP	CAP	Refurbish/ Replace/Repair	0		Haileybury STP Chemicals 5726	COMP		1/5/24 10:08 AM	1/5/24 10:08 AM	
3205761			5726, Haileybury STP	CAP	Refurbish/ Replace/Repair	0		Hail STP Blower Install 5726	CLOSE		2/15/23 03:03 PM	2/15/23 03:03 PM	Install Blowers - Install Blowers

Workorder Summary Report

 Report Start Date: Jan 1, 2023 12:00 AM
 Report End Date: Dec 31, 2023 11:59 PM
 Location: 5726*
 Work Order Type: CALL,CAP,CORR,EMER,OPER,PM
 Work Order Class:

				WorkOrder		PM Schedule		Workorder Details					
WO #	Asset ID	Asset Description	Location Description	Type	Class	FEQ	Units	Work Order Description	Status	Schedule Start	Actual Start	Actual Finsh	WorkLog Detail
3227678	0000076750	GENERATOR 25KW Portable Generator	5726, Lakeshore Pumping Station	PM	Refurbish/ Replace/Repair	1	MONTHS	Generator Inspect/Service 5726 (1m)	CLOSE	2/1/23 12:00 AM	2/8/23 08:04 AM	2/8/23 08:04 AM	ran - ran and record value on sheet
3242961	0000277374	ENGINE DIESEL	5726, Haileybury STP, Facility, Power Generation	PM	Refurbish/ Replace/Repair	1	MONTHS	Diesel Generator Genset Inspection/ Functional Test (1m) 5726	CLOSE	2/1/23 12:00 AM	2/8/23 08:12 AM	2/8/23 08:12 AM	ran - ran and record value on sheet
3242977			5726, Haileybury STP	PM	Inspection	1	MONTHS	TPM Inspection/Maintenance (1m) 5726	CLOSE	2/1/23 12:00 AM	2/24/23 11:58 AM	2/24/23 11:58 AM	check - check all good
3245776			5726, Haileybury STP	CAP	Refurbish/ Replace/Repair	0		LOF Engineering for Blowers 5726	CLOSE		5/31/23 09:20 AM	5/31/23 09:20 AM	LOF -
3270610	0000076750	GENERATOR 25KW Portable Generator	5726, Lakeshore Pumping Station	PM	Refurbish/ Replace/Repair	1	MONTHS	Generator Inspect/Service 5726 (1m)	CLOSE	3/1/23 12:00 AM	3/31/23 03:51 PM	3/31/23 03:51 PM	Generator Inspect/Service 5726 (1m) - Completed genset test: checked oil, fuel, block heater and coolant. no faults displayed recorded running values on sheet
3286846	0000277374	ENGINE DIESEL	5726, Haileybury STP, Facility, Power Generation	PM	Refurbish/ Replace/Repair	1	MONTHS	Diesel Generator Genset Inspection/ Functional Test (1m) 5726	CLOSE	3/1/23 12:00 AM	3/20/23 08:43 AM	3/20/23 08:43 AM	Diesel Generator Genset Inspection/ Functional Test (1m) 5726 - Completed genset test: checked oil, fuel, coolant and block heater recorded running values on sheet no faults displayed
3286863			5726, Haileybury STP	PM	Inspection	1	MONTHS	TPM Inspection/Maintenance (1m) 5726	CLOSE	3/1/23 12:00 AM	4/4/23 08:08 AM	4/4/23 08:08 AM	TPM Inspection/Maintenance (1m) 5726 - Completed monthly TPM: visually checked return blowers, aeration/digester blower. ok checked trends for pumps run times
3289482			5726, Farr Pumping Station	EMER	Refurbish/ Replace/Repair	0		Pumps Farr Dr. PS No Operation 5726	CLOSE		3/13/23 04:05 PM	3/13/23 04:05 PM	- Called to troubleshoot no pump operation. Found green and faulty wiring on the low level lockout relay circuit. Pulled relay for tonight and will look at tomorrow.
3291662			5726, Haileybury STP, Process, Sludge Treatment & Handling	EMER	Refurbish/ Replace/Repair	0		Switch Digester Pump No.2 Fault 5726	CLOSE		3/29/23 07:55 AM	3/29/23 07:55 AM	

Workorder Summary Report

 Report Start Date: Jan 1, 2023 12:00 AM
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 Location: 5726*
 Work Order Type: CALL,CAP,CORR,EMER,OPER,PM
 Work Order Class:

				WorkOrder		PM Schedule		Workorder Details					
WO #	Asset ID	Asset Description	Location Description	Type	Class	FEQ	Units	Work Order Description	Status	Schedule Start	Actual Start	Actual Finsh	WorkLog Detail
3297176	0000060067	SAMPLER EFFLUENT FINAL 01 MONTHLY COMPOSITE	5726, Haileybury STP, Facility	PM	Refurbish/ Replace/Repair	1	YEARS	Sampler Effluent Final Inspection (1y) 5726	CLOSE	4/1/23 12:00 AM	10/23/23 07:59 PM	10/23/23 07:59 PM	- Inspect sampler operation. Replace peristaltic pump line. Take a sample to verify proper operation. Suction line and heat trace are functioning properly.
3297185	0000060194	SAMPLER RAW MONTHLY COMPOSITE	5726, Haileybury STP, Process, Process Controls	PM	Refurbish/ Replace/Repair	1	YEARS	Sampler Raw Inspection (1y) 5726	CLOSE	4/1/23 12:00 AM	10/20/23 07:13 PM	10/20/23 07:13 PM	
3297194	0000076735	TANK STORAGE 02 WET WELL	5726, Farr Pumping Station	PM	Refurbish/ Replace/Repair	6	MONTHS	Tank Wet Well 02 Inspection (6m) 5726	CLOSE	4/1/23 12:00 AM	7/10/23 03:03 PM	7/10/23 03:03 PM	Completed by City -
3297197	0000277382	METER FLOW 01 EFFLUENT	5726, Haileybury STP, Process, Process Controls	PM	Calibration	1	YEARS	METER FLOW STP #1 EFFLUENT CALIB./ VERIFICATION (1Y) 5726	CLOSE	4/1/23 12:00 AM	4/27/23 08:11 PM	4/27/23 08:11 PM	- Verified calibration by taking a physical measurements. Compared FIT readings levels with a physical tape measure reading from transducer face to liquid level to verify head measurement. Temperature was at 5 deg C.
3297202	0000277383	METER FLOW 02 EFFLUENT	5726, Haileybury STP, Process, Process Controls	PM	Calibration	1	YEARS	METER FLOW STP #2 EFFLUENT CALIB./ VERIFICATION (1Y) 5726	CLOSE	4/1/23 12:00 AM	4/27/23 08:19 PM	4/27/23 08:19 PM	- Verified calibration by taking a physical measurements from benchmark to water level and comparing to a distance shot on the level transmitter.
3314713	0000277386	DATALOGGER STP	5726, Haileybury STP, Process, Process Controls	PM	Calibration	1	YEARS	DATALOGGER CALIBRATION VERIFICATION (1Y) 5726	CLOSE	4/1/23 12:00 AM	4/27/23 08:30 PM	4/27/23 08:30 PM	- Verified calibration of all channels by comparing Datalogger display value to the mA input value generated by loop calibrator at 0, 25%, 50%, 75% and 100%.

Workorder Summary Report

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 Location: 5726*
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 Work Order Class:

				WorkOrder		PM Schedule		Workorder Details					
WO #	Asset ID	Asset Description	Location Description	Type	Class	FEQ	Units	Work Order Description	Status	Schedule Start	Actual Start	Actual Finsh	WorkLog Detail
3314886	0000293304	RECORDER DATALOGGER SPS	5726, Farr Pumping Station	PM	Calibration	1	YEARS	DATALOGGER FARR SPS CALIBRATION / VERIF (1Y) 5726	CLOSE	4/1/23 12:00 AM	4/17/23 02:00 PM	4/17/23 02:00 PM	- Verified calibration of channel by comparing Datalogger display value to the mA input value generated by loop calibrator at 0, 25%, 50%, 75% and 100%.
3317052	0000076750	GENERATOR 25KW Portable Generator	5726, Lakeshore Pumping Station	PM	Refurbish/ Replace/Repair	1	MONTHS	Generator Inspect/Service 5726 (1m)	CLOSE	4/1/23 12:00 AM	4/14/23 02:28 PM	4/14/23 02:28 PM	ran - ran manual and record value
3317449	0000293147	PORTABLE DO METER	5726, Haileybury STP, Facility	PM	Inspection	3	MONTHS	Analyzer Dissolved Oxygen/pH Portable Calibration/Inspection (3m) 5726	CLOSE	4/1/23 12:00 AM	4/13/23 08:44 AM	4/13/23 08:44 AM	-Cleaned and calibrated pH probe for analyzer using 4.01 pH and 7.00 pH buffer solutions as per manufactures instructions. Renewed storage solution.
3317468	0000293627	TRANSMITTER PRESSURE AIR HEADER	5726, Haileybury STP, Process, Piping and Valves	PM	Refurbish/ Replace/Repair	1	YEARS	Transmitter Pressure Air Header Calibration (1Y) 5726	CLOSE	4/1/23 12:00 AM	4/17/23 02:06 PM	4/17/23 02:06 PM	- Put plant blower in manual at 8.0 psi and verified calibration of transmitter by applying pressure to input and measuring mA output as per manufactures instructions. No calibration was necessary, verified calibration on HMI.
3318846	0000277379	TRANSMITTER LEVEL WETWELL	5726, Lakeshore Pumping Station	PM	Calibration	1	YEARS	METER LEVEL LAKESHORE SPS OPERATION / VERIF. (1Y) 5726	CLOSE	4/1/23 12:00 AM	10/3/23 03:54 PM	10/3/23 03:54 PM	- Tested loss of echo relay on level controller. Icon displays on HMI after a five minute delay. OK. Replace UPS as old one no longer worked. Heater is working in panel. Tested alarms although there is no communication so none call out. They do show up on HMI. See attached sheet. Pump relays on level controller are no longer hooked up, plc does it all.
3337177	0000277374	ENGINE DIESEL	5726, Haileybury STP, Facility, Power Generation	PM	Refurbish/ Replace/Repair	1	MONTHS	Diesel Generator Genset Inspection/ Functional Test (1m) 5726	CLOSE	4/1/23 12:00 AM	4/14/23 02:47 PM	4/14/23 02:47 PM	ran - ran on manual

Workorder Summary Report

 Report Start Date: Jan 1, 2023 12:00 AM
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 Location: 5726*
 Work Order Type: CALL,CAP,CORR,EMER,OPER,PM
 Work Order Class:

				WorkOrder		PM Schedule		Workorder Details					
WO #	Asset ID	Asset Description	Location Description	Type	Class	FEQ	Units	Work Order Description	Status	Schedule Start	Actual Start	Actual Finsh	WorkLog Detail
3337193	0000293306	METER LEVEL WET WELL	5726, Farr Pumping Station	PM	Calibration	1	YEARS	METER LEVEL FARR SPS OPERATION / VERIF. (1Y) 5726	CLOSE	4/1/23 12:00 AM	4/29/23 09:54 AM	4/29/23 09:54 AM	-Removed probe cap and cleaned membrane surface. Re measured distance from tie wrap to probe element. This equals 4810 mm. Verified calibration by measuring from tie wrap to liquid surface and subtracting values to get a liquid level of 1615 mm.
3337198			5726, Haileybury STP	PM	Inspection	1	MONTHS	TPM Inspection/Maintenance (1m) 5726	CLOSE	4/1/23 12:00 AM	5/4/23 02:53 PM	5/4/23 02:53 PM	check - check all good
3338027			5726, Farr Pumping Station	CAP	Refurbish/ Replace/Repair	0		Replace Faulty Low Level Lock Out Float 5726	CLOSE		5/30/23 01:34 PM	5/30/23 01:34 PM	- Set up for confined space entry. Remove old float wire and install new float at lowest point for pump lockout, around 0.5m. Wire up float to existing circuit and test operation. Pumps shut down at just below 0.5 m but there is no indication programmed in to shop up on banner or HMI. Plc input light number 12 does come on while lockout is activated. Test high level float operation while down there. OK. Button everything up, clean up and take trailer back to lagoon. Replace Faulty Low Level Lock Out Float 5726 - Assist with float replacement.
3339321			5726, Haileybury STP	CAP	Refurbish/ Replace/Repair	0		Overflow and Plugged Pumps at Brewster 5726	CLOSE		4/18/23 10:52 AM	4/18/23 10:52 AM	Overflow and Plugged Pumps at Brewster 5726 - Helped with spill reporting. Reviewed CLI ECA to ensure all requirements were met. Prepared draft spill report for MECP which is required 15 days of the event. Overflow and Plugged Pumps at Brewster 5726 - Finalized spill report and submitted to MECP, Owner and others as required.

Workorder Summary Report

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 Work Order Class:

				WorkOrder		PM Schedule		Workorder Details					
WO #	Asset ID	Asset Description	Location Description	Type	Class	FEQ	Units	Work Order Description	Status	Schedule Start	Actual Start	Actual Finsh	WorkLog Detail
3340411			5726, Haileybury STP	CAP	Refurbish/Replace/Repair	0		Hail STP LOF Engineering Cost 5726	CLOSE		5/5/23 01:47 PM	5/5/23 01:47 PM	EXP completed LOF -
3346262	0000076739	PUMP PERISTALTIC HYPO #1	5726, Haileybury STP, Process, Disinfection	PM	Refurbish/Replace/Repair	1	YEARS	Pump Peristaltic Hypo 01 Inspection/Service (1y) 5726	CLOSE	5/1/23 12:00 AM	6/30/23 08:29 AM	6/30/23 08:29 AM	check - check pumping ok
3346268	0000076740	PUMP PERISTALTIC HYPO #2	5726, Haileybury STP, Process, Disinfection	PM	Refurbish/Replace/Repair	1	YEARS	Pump Peristaltic Hypo 02 Inspection/Service (1y) 5726	CLOSE	5/1/23 12:00 AM	6/30/23 08:30 AM	6/30/23 08:30 AM	check - check pumping ok
3364992	0000076750	GENERATOR 25KW Portable Generator	5726, Lakeshore Pumping Station	PM	Refurbish/Replace/Repair	1	MONTHS	Generator Inspect/Service 5726 (1m)	CLOSE	5/1/23 12:00 AM	6/6/23 07:36 AM	6/6/23 07:36 AM	Generator Inspect/Service 5726 (1m) - Checked fuel, oil, coolant. and block heater recorded running values on sheet
3382476	0000277374	ENGINE DIESEL	5726, Haileybury STP, Facility, Power Generation	PM	Refurbish/Replace/Repair	1	MONTHS	Diesel Generator Genset Inspection/Functional Test (1m) 5726	CLOSE	5/1/23 12:00 AM	5/8/23 02:59 PM	5/8/23 02:59 PM	Diesel Generator Genset Inspection/Functional Test (1m) 5726 - Completed genset test: checked oil, fuel, coolant and block heater no faults displayed recording running values on sheet
3382492			5726, Haileybury STP	PM	Inspection	1	MONTHS	TPM Inspection/Maintenance (1m) 5726	CLOSE	5/1/23 12:00 AM	5/29/23 02:50 PM	5/29/23 02:50 PM	TPM Inspection/Maintenance (1m) 5726 - Throughout the month: visually checked blower for faults. none checked pressure at 8.1 checked exhaust fan. ok greased. ok RAS Blowers. ok
3382512	0000060189	TANK PROCESS 01 CLARIFIER	5726, Haileybury STP, Process, Secondary Treatment	PM	Refurbish/Replace/Repair	1	YEARS	Tank Clarifier #1 Inspection/Service (1y) 5726	CLOSE	5/1/23 12:00 AM	5/31/23 10:03 AM	5/31/23 10:03 AM	Clarifier check -Clarifier operating properly, weir ring in good shape,

Workorder Summary Report

 Report Start Date: Jan 1, 2023 12:00 AM
 Report End Date: Dec 31, 2023 11:59 PM
 Location: 5726*
 Work Order Type: CALL,CAP,CORR,EMER,OPER,PM
 Work Order Class:

				WorkOrder		PM Schedule		Workorder Details					
WO #	Asset ID	Asset Description	Location Description	Type	Class	FEQ	Units	Work Order Description	Status	Schedule Start	Actual Start	Actual Finsh	WorkLog Detail
3382526	0000060167	TANK PROCESS 02 CLARIFIER	5726, Haileybury STP, Process, Secondary Treatment	PM	Refurbish/ Replace/Repair	1	YEARS	Tank Clarifier #2 Inspection/Service (1y) 5726	CLOSE	5/1/23 12:00 AM	5/31/23 10:06 AM	5/31/23 10:06 AM	Clarifier Check -Clarifier running well, weir in good shape, scum box plugged issue with the discharge pipe
3382540	0000060174	GRINDER COMMINUTOR 02	5726, Haileybury STP, Process, Headworks	PM	Refurbish/ Replace/Repair	1	YEARS	Grinder Clean/Inspection (1y) 5726	CLOSE	5/1/23 12:00 AM	6/7/23 02:30 PM	6/7/23 02:30 PM	Grinder Inspection - Grinder looks to be operating well teeth look to be inline, motor sounds good and no strange noises coming from the unit
3412356	0000076750	GENERATOR 25KW Portable Generator	5726, Lakeshore Pumping Station	PM	Refurbish/ Replace/Repair	1	MONTHS	Generator Inspect/Service 5726 (1m)	CLOSE	6/1/23 12:00 AM	6/27/23 10:03 AM	6/27/23 10:03 AM	Ran Genset - Ran Genset and added air to tires as 2 were low
3429871	0000277374	ENGINE DIESEL	5726, Haileybury STP, Facility, Power Generation	PM	Refurbish/ Replace/Repair	1	MONTHS	Diesel Generator Genset Inspection/ Functional Test (1m) 5726	CLOSE	6/1/23 12:00 AM	6/16/23 03:34 PM	6/16/23 03:34 PM	Diesel Generator Genset Inspection/ Functional Test (1m) 5726 - Completed genset test: checked fuel, coolant, oil, and block heater. Ok no faults displayed. recorded running values on sheet.
3429888			5726, Haileybury STP	PM	Inspection	1	MONTHS	TPM Inspection/Maintenance (1m) 5726	CLOSE	6/1/23 12:00 AM	6/16/23 03:47 PM	6/16/23 03:47 PM	TPM Inspection/Maintenance - Completed TPM: Plant 1 clarifier rake drive: checked oil and topped up with gear oil. Plant 2 clarifier rake drive: ok Checked blowers. ok checked on plc Farr Drive wetwell pumps
3435609			5726, Haileybury STP	CALL	TRAINING	0		lost com. haileybury STP 5726	CLOSE		6/26/23 05:10 PM	6/26/23 05:40 PM	lost com. - lost com at hai. STP reset radio
3441203	0000060172	TANK CONTACT CHAMBER 02	5726, Haileybury STP, Process, Disinfection	PM	Refurbish/ Replace/Repair	6	MONTHS	Gritt Channels and Contact Chamber Inspection (6m) 5726	CLOSE	7/1/23 12:00 AM	7/10/23 02:59 PM	7/10/23 02:59 PM	Completed by City -

Workorder Summary Report

 Report Start Date: Jan 1, 2023 12:00 AM
 Report End Date: Dec 31, 2023 11:59 PM
 Location: 5726*
 Work Order Type: CALL,CAP,CORR,EMER,OPER,PM
 Work Order Class:

				WorkOrder		PM Schedule		Workorder Details					
WO #	Asset ID	Asset Description	Location Description	Type	Class	FEQ	Units	Work Order Description	Status	Schedule Start	Actual Start	Actual Finsh	WorkLog Detail
3441222	0000076731	TANK STORAGE 01 WET WELL	5726, Lakeshore Pumping Station	PM	Refurbish/ Replace/Repair	6	MONTHS	Tank Wet Well Farr Drive Inspection (6m) 5726	CLOSE	7/1/23 12:00 AM	10/30/23 03:09 PM	10/30/23 03:09 PM	Check wet well - No major grease build up
3459551	0000076750	GENERATOR 25KW Portable Generator	5726, Lakeshore Pumping Station	PM	Refurbish/ Replace/Repair	1	MONTHS	Portable Generator Inspect/Service 5726 (1m)	CLOSE	7/1/23 12:00 AM	7/27/23 08:22 AM	7/27/23 08:22 AM	ran - ran and record value on sheet
3459970	0000293147	PORTABLE DO METER	5726, Haileybury STP, Facility	PM	Inspection	3	MONTHS	Analyzer Dissolved Oxygen/pH Portable Calibration/Inspection (3m) 5726	CLOSE	7/1/23 12:00 AM	7/7/23 01:14 PM	7/7/23 01:14 PM	-Cleaned and calibrated pH probe for analyzer using 4.01 pH and 7.00 pH buffer solutions as per manufactures instructions. Renewed storage solution.
3471817	0000293700	ANALYZER PH Ultrapen Farr Pumping St.	5726, Farr Pumping Station	PM	Calibration	3	MONTHS	Analyzer pH Ultrapen Calibration (3m) 5726	CLOSE	7/1/23 12:00 AM	7/12/23 08:28 AM	7/12/23 08:28 AM	- Calibrated pen at 4.00 and 7.00 pH with Hach user made pH pillow packet buffers.
3478346	0000277374	ENGINE DIESEL	5726, Haileybury STP, Facility, Power Generation	PM	Refurbish/ Replace/Repair	1	MONTHS	Diesel Generator Genset Inspection/ Functional Test (1m) 5726	CLOSE	7/1/23 12:00 AM	7/27/23 08:31 AM	7/27/23 08:31 AM	ran - ran and record value on sheet
3478362			5726, Haileybury STP	PM	Refurbish/ Replace/Repair	1	YEARS	Diesel Generator Genset Inspection/ Functional Test (1y) 5726	CLOSE	7/1/23 12:00 AM	8/30/23 01:40 PM	8/30/23 01:40 PM	Completed by Contractor -
3478374			5726, Haileybury STP	PM	Inspection	1	MONTHS	TPM Inspection/Maintenance (1m) 5726	CLOSE	7/1/23 12:00 AM	7/28/23 01:40 PM	7/28/23 01:40 PM	check - check all good
3482294			5726, Haileybury STP	CAP	Refurbish/ Replace/Repair	0		Replace Broken Drum Pump 5726	COMP		11/21/23 11:42 AM	11/21/23 11:42 AM	Order Pump Shaft -
3151732			5726, Haileybury STP	PM	Compliance	1	YEARS	OG35SP FEP Site Contingency Plan Review (1y) 5726	CLOSE	1/1/23 12:00 AM	9/29/23 02:49 PM	9/29/23 02:49 PM	OG35SP FEP Site Contingency Plan Review (1y) 5726 - Annual review and test complete for Security Breach and Loss of Service
3505492	0000076750	GENERATOR 25KW Portable Generator	5726, Lakeshore Pumping Station	PM	Refurbish/ Replace/Repair	1	MONTHS	Portable Generator Inspect/Service 5726 (1m)	CLOSE	8/1/23 12:00 AM	8/2/23 03:36 PM	8/2/23 03:36 PM	ran - ran and record value on sheet
3521868	0000277374	ENGINE DIESEL	5726, Haileybury STP, Facility, Power Generation	PM	Refurbish/ Replace/Repair	1	MONTHS	Diesel Generator Genset Inspection/ Functional Test (1m) 5726	CLOSE	8/1/23 12:00 AM	8/2/23 03:35 PM	8/2/23 03:35 PM	ran - ran and record value on sheet
3521884			5726, Haileybury STP	PM	Inspection	1	MONTHS	TPM Inspection/Maintenance (1m) 5726	CLOSE	8/1/23 12:00 AM	8/29/23 07:13 AM	8/29/23 07:13 AM	check - check all good

Workorder Summary Report

 Report Start Date: Jan 1, 2023 12:00 AM
 Report End Date: Dec 31, 2023 11:59 PM
 Location: 5726*
 Work Order Type: CALL,CAP,CORR,EMER,OPER,PM
 Work Order Class:

				WorkOrder		PM Schedule		Workorder Details					
WO #	Asset ID	Asset Description	Location Description	Type	Class	FEQ	Units	Work Order Description	Status	Schedule Start	Actual Start	Actual Finsh	WorkLog Detail
3525446			5726, Haileybury STP	CAP	Refurbish/Replace/Repair	0		WW Surveillance Sampling 5726	CLOSE		8/16/23 12:47 PM	8/16/23 12:47 PM	
3526445			5726, Farr Pumping Station	CAP	Refurbish/Replace/Repair	0		Remove and Replace Faulty Pump at Farr Drive 5726	CLOSE		11/16/23 02:42 PM	11/16/23 02:42 PM	Remove old pump -
3526727			5726, Haileybury STP, Process, Headworks	CORR	Refurbish/Replace/Repair	0		Sampler Raw Haileybury STP Pump Fault 5726	CLOSE		8/24/23 08:06 AM	8/24/23 08:06 AM	- Troubleshoot peristaltic pump failure. Found unit setting a trouble code for pump failure due to a leak in suction line. Replace pump hose with new one. Replace suction line and clean strainer. Reset sampler and perform a manual test to confirm operation. Will have to go back over tomorrow to redo suction line insulation for winter operation.
3551094	0000076750	GENERATOR 25KW Portable Generator	5726, Lakeshore Pumping Station	PM	Refurbish/Replace/Repair	1	MONTHS	Portable Generator Inspect/Service 5726 (1m)	CLOSE	9/1/23 12:00 AM	9/28/23 01:39 PM	9/28/23 01:39 PM	Monthly Portable Generator/ Inspection Testing -Checked for fuel,coolant and fuel level, Checked block heater operation. Ran for 15 minutes and recorded operational data on monthly checklist.
3570234	0000277374	ENGINE DIESEL	5726, Haileybury STP, Facility, Power Generation	PM	Refurbish/Replace/Repair	1	MONTHS	Diesel Generator Genset Inspection/ Functional Test (1m) 5726	CLOSE	9/1/23 12:00 AM	9/28/23 08:02 AM	9/28/23 08:02 AM	Diesel Generator Genset Inspection/ Functional Test (1m) 5726 - Completed genset test: checked fuel, coolant, block heater and oil. ok No faulted displayed however generator would not start last week during self test or manual test. The city mechanic investigating yesterday and determined the generator loss its prime. Once primed, I was able to complete genset test. Recorded running values on sheet.

Workorder Summary Report

 Report Start Date: Jan 1, 2023 12:00 AM
 Report End Date: Dec 31, 2023 11:59 PM
 Location: 5726*
 Work Order Type: CALL,CAP,CORR,EMER,OPER,PM
 Work Order Class:

				WorkOrder		PM Schedule		Workorder Details					
WO #	Asset ID	Asset Description	Location Description	Type	Class	FEQ	Units	Work Order Description	Status	Schedule Start	Actual Start	Actual Finsh	WorkLog Detail
3570250			5726, Haileybury STP	PM	Inspection	1	MONTHS	TPM Inspection/Maintenance (1m) 5726	CLOSE	9/1/23 12:00 AM	10/3/23 03:52 PM	10/3/23 03:52 PM	TPM Inspection/Maintenance (1m) 5726 - Completed TPM, checked rake, return blower
3571596			5726, Farr Pumping Station	CALL	Refurbish/ Replace/Repair	0		Farr drive sps overflow due to heavy rain 5726	CLOSE		9/7/23 01:00 AM	9/7/23 07:30 AM	Farr drive sps overflow due to heavy rain 5726 - heavy rain sample and chlorinated also station sps and help Cassy with overflow in new liskeard
3580993	0000076735	TANK STORAGE 02 WET WELL	5726, Farr Pumping Station	PM	Refurbish/ Replace/Repair	6	MONTHS	Tank Wet Well 02 Inspection (6m) 5726	COMP	10/1/23 12:00 AM	12/14/23 02:10 PM	12/14/23 02:10 PM	Check wet well - No obvious structural damage or major grease build up all ok
3599970	0000076750	GENERATOR 25KW Portable Generator	5726, Lakeshore Pumping Station	PM	Refurbish/ Replace/Repair	1	MONTHS	Portable Generator Inspect/Service 5726 (1m)	CLOSE	10/1/23 12:00 AM	11/3/23 03:32 PM	11/3/23 03:32 PM	Portable Generator Inspect/Service 5726 (1m) - Completed genset test: checked fuel, coolant, block heater and oil no faults displayed recorded running values on sheet
3600362	0000293147	PORTABLE DO METER	5726, Haileybury STP, Facility	PM	Inspection	3	MONTHS	Analyzer Dissolved Oxygen/pH Portable Calibration/Inspection (3m) 5726	CLOSE	10/1/23 12:00 AM	10/6/23 08:44 AM	10/6/23 08:44 AM	- Cleaned and calibrated pH probe for analyzer using 4.01 pH and 7.00 pH buffer solutions as per manufactures instructions.
3612055	0000293700	ANALYZER PH Ultrapen Farr Pumping St.	5726, Farr Pumping Station	PM	Calibration	3	MONTHS	Analyzer pH Ultrapen Calibration (3m) 5726	CLOSE	10/1/23 12:00 AM	10/19/23 07:51 AM	10/19/23 07:51 AM	
3619849	0000277374	ENGINE DIESEL	5726, Haileybury STP, Facility, Power Generation	PM	Refurbish/ Replace/Repair	1	MONTHS	Diesel Generator Genset Inspection/ Functional Test (1m) 5726	CLOSE	10/1/23 12:00 AM	10/20/23 08:46 AM	10/20/23 08:46 AM	
3619865			5726, Haileybury STP	PM	Inspection	1	MONTHS	TPM Inspection/Maintenance (1m) 5726	CLOSE	10/1/23 12:00 AM	11/6/23 09:16 AM	11/6/23 09:16 AM	

Workorder Summary Report

 Report Start Date: Jan 1, 2023 12:00 AM
 Report End Date: Dec 31, 2023 11:59 PM
 Location: 5726*
 Work Order Type: CALL,CAP,CORR,EMER,OPER,PM
 Work Order Class:

				WorkOrder		PM Schedule		Workorder Details					
WO #	Asset ID	Asset Description	Location Description	Type	Class	FEQ	Units	Work Order Description	Status	Schedule Start	Actual Start	Actual Finsh	WorkLog Detail
3645576	0000076750	GENERATOR 25KW Portable Generator	5726, Lakeshore Pumping Station	PM	Refurbish/ Replace/Repair	1	MONTHS	Portable Generator Inspect/Service 5726 (1m)	COMP	11/1/23 12:00 AM	11/30/23 03:13 PM	11/30/23 03:13 PM	Portable Generator Inspect/Service 5726 (1m) - Performed genset test Performed circle check before and during running Checked oil/fuel/block heater Wrote down running values on check sheet No faults displayed
3661139	0000277374	ENGINE DIESEL	5726, Haileybury STP, Facility, Power Generation	PM	Refurbish/ Replace/Repair	1	MONTHS	Diesel Generator Genset Inspection/ Functional Test (1m) 5726	CLOSE	11/1/23 12:00 AM	11/6/23 08:42 AM	11/6/23 08:42 AM	Diesel Generator Genset Inspection/ Functional Test (1m) 5726 - Completed genset test: checked fuel, coolant, block heater and oil. ok no faults displayed recorded running values on sheet
3661155			5726, Haileybury STP	PM	Inspection	1	MONTHS	TPM Inspection/Maintenance (1m) 5726	COMP	11/1/23 12:00 AM	11/30/23 03:14 PM	11/30/23 03:14 PM	TPM Inspection/Maintenance (1m) 5726 - Completed TPM throughout the month: - Manually shut off and turned on "return" using SCADA. ok - Visually checked rake. ok -checked blower. ok -cleaned bar screen. -checked pump trends at Farr SPS. ok
3664064			5726, Haileybury STP	CAP	Compliance	0		Electra Effluent Flow Verification for EXP 5726	COMP		12/20/23 02:39 PM	12/20/23 02:39 PM	
3687098	0000076750	GENERATOR 25KW Portable Generator	5726, Lakeshore Pumping Station	PM	Refurbish/ Replace/Repair	1	MONTHS	Portable Generator Inspect/Service 5726 (1m)	COMP	12/1/23 12:00 AM	12/28/23 10:44 AM	12/28/23 10:44 AM	ran - ran on manual and record value on sheet

Workorder Summary Report

 Report Start Date: Jan 1, 2023 12:00 AM
 Report End Date: Dec 31, 2023 11:59 PM
 Location: 5726*
 Work Order Type: CALL,CAP,CORR,EMER,OPER,PM
 Work Order Class:

				WorkOrder		PM Schedule		Workorder Details					
WO #	Asset ID	Asset Description	Location Description	Type	Class	FEQ	Units	Work Order Description	Status	Schedule Start	Actual Start	Actual Finsh	WorkLog Detail
3702563	0000277374	ENGINE DIESEL	5726, Haileybury STP, Facility, Power Generation	PM	Refurbish/ Replace/Repair	1	MONTHS	Diesel Generator Genset Inspection/ Functional Test (1m) 5726	COMP	12/1/23 12:00 AM	12/21/23 03:47 PM	12/21/23 03:47 PM	Diesel Generator Genset Inspection/ Functional Test (1m) 5726 - Visual check for any noticeable issues. Checked fluid levels Checked for leaks Filled out check sheet
3702579			5726, Haileybury STP	PM	Inspection	1	MONTHS	TPM Inspection/Maintenance (1m) 5726	COMP	12/1/23 12:00 AM	1/1/24 07:12 PM	1/1/24 07:12 PM	TPM Inspection/Maintenance (1m) 5726 - Visually checked rake. ok Return and wasting. ok Grinder. ok

APPENDIX E

Sludge Quality

**Haileybury Sewage Treatment System
2023 Sludge Quality Summary**

SLUDGE VOLUME	01/2023	02/2023	03/2023	04/2023	05/2023	06/2023	07/2023	08/2023	09/2023	10/2023	11/2023	12/2023	Total	Avg	Max	Min
BsqH Biosolids Sludge Quality / Hauled Vol. - m ³																
Count IH	2	0	5	7	5	2	5	4	4	4	6	8	46			
Max IH	190.4		163.2	81.6	54.4	40.8	68.0	68.0	68.0	40.8	54.4	122.4			190.4	
Mean IH	149.6		92.5	56.3	40.8	40.8	43.5	51.0	54.4	30.6	45.3	69.7		58.3		
Min IH	108.8		40.8	40.8	27.2	40.8	27.2	27.2	40.8	13.6	13.6	27.2				13.6
Total IH	299		462	394	204	82	218	204	218	122	272	558	3033			

PLANT NO. 1	01/2023	02/2023	03/2023	04/2023	05/2023	06/2023	07/2023	08/2023	09/2023	10/2023	11/2023	12/2023	Total	Avg	Max	Min
Bskq1 - STP #1 / Arsenic: As - mg/L																
Count Lab	0	0	0	0	0	0	0	0	0	1	0	0	1			
Mean Lab										0.03				0.03		
Bskq1 - STP #1 / Cadmium: Cd - mg/L																
Count Lab	0	0	0	0	0	0	0	0	0	1	0	0	1			
Mean Lab										0.008				0.008		
Bskq1 - STP #1 / Chromium: Cr - mg/L																
Count Lab	0	0	0	0	0	0	0	0	0	1	0	0	1			
Mean Lab										< 0.01				< 0.01		
Bskq1 - STP #1 / Cobalt: Co - mg/L																
Count Lab	0	0	0	0	0	0	0	0	0	1	0	0	1			
Mean Lab										0.037				0.037		
Bskq1 - STP #1 / Copper: Cu - mg/L																
Count Lab	0	0	0	0	0	0	0	0	0	1	0	0	1			
Mean Lab										1.1				1.1		
Bskq1 - STP #1 / Lead: Pb - mg/L																
Count Lab	0	0	0	0	0	0	0	0	0	1	0	0	1			
Mean Lab										0.008				0.008		
Bskq1 - STP #1 / Mercury: Hg - mg/L																
Count Lab	0	0	0	0	0	0	0	0	0	1	0	0	1			
Mean Lab										< 0.001				< 0.001		
Bskq1 - STP #1 / Molybdenum: Mo - mg/L																
Count Lab	0	0	0	0	0	0	0	0	0	1	0	0	1			
Mean Lab										< 0.01				< 0.01		
Bskq1 - STP #1 / Nickel: Ni - mg/L																
Count Lab	0	0	0	0	0	0	0	0	0	1	0	0	1			
Mean Lab										0.16				0.16		
Bskq1 - STP #1 / Nitrate as N: NO3-N - mg/L																
Count Lab	0	0	0	0	0	0	0	0	0	1	0	0	1			
Mean Lab										100				100		
Bskq1 - STP #1 / Potassium: K - mg/L																
Count Lab	0	0	0	0	0	0	0	0	0	1	0	0	1			
Mean Lab										53				53		
Bskq1 - STP #1 / Selenium: Se - mg/L																
Count Lab	0	0	0	0	0	0	0	0	0	1	0	0	1			
Mean Lab										< 0.002				< 0.002		
Bskq1 - STP #1 / TAN: NH3 + NH4+ as N - mg/L																
Count Lab	0	0	0	0	0	0	0	0	0	1	0	0	1			
Mean Lab										0.98				0.98		
Bskq1 - STP #1 / Total Phosphorus: TP - mg/L																
Count Lab	0	0	0	0	0	0	0	0	0	1	0	0	1			
Mean Lab										21.1				21.1		
Bskq1 - STP #1 / Total Solids: TS - mg/L																
Count Lab	0	0	0	0	0	0	0	0	0	1	0	0	1			
Mean Lab										23500				23500		
Bskq1 - STP #1 / Zinc: Zn - mg/L																
Count Lab	0	0	0	0	0	0	0	0	0	1	0	0	1			
Mean Lab										3.81				3.81		

PLANT NO. 2	01/2023	02/2023	03/2023	04/2023	05/2023	06/2023	07/2023	08/2023	09/2023	10/2023	11/2023	12/2023	Total	Avg	Max	Min
Bskq2 - STP #2 / Arsenic: As - mg/L																
Count Lab	0	0	0	0	0	0	0	0	0	1	0	0	1			
Mean Lab										0.03				0.03		
Bskq2 - STP #2 / Cadmium: Cd - mg/L																
Count Lab	0	0	0	0	0	0	0	0	0	1	0	0	1			
Mean Lab										0.007				0.007		
Bskq2 - STP #2 / Chromium: Cr - mg/L																
Count Lab	0	0	0	0	0	0	0	0	0	1	0	0	1			
Mean Lab										< 0.01				< 0.01		
Bskq2 - STP #2 / Cobalt: Co - mg/L																
Count Lab	0	0	0	0	0	0	0	0	0	1	0	0	1			
Mean Lab										0.038				0.038		
Bskq2 - STP #2 / Copper: Cu - mg/L																
Count Lab	0	0	0	0	0	0	0	0	0	1	0	0	1			
Mean Lab										1.09				1.09		
Bskq2 - STP #2 / Lead: Pb - mg/L																
Count Lab	0	0	0	0	0	0	0	0	0	1	0	0	1			
Mean Lab										0.009				0.009		
Bskq2 - STP #2 / Mercury: Hg - mg/L																
Count Lab	0	0	0	0	0	0	0	0	0	1	0	0	1			
Mean Lab										< 0.001				< 0.001		
Bskq2 - STP #2 / Molybdenum: Mo - mg/L																
Count Lab	0	0	0	0	0	0	0	0	0	1	0	0	1			
Mean Lab										< 0.01				< 0.01		
Bskq2 - STP #2 / Nickel: Ni - mg/L																
Count Lab	0	0	0	0	0	0	0	0	0	1	0	0	1			
Mean Lab										0.15				0.15		
Bskq2 - STP #2 / Nitrate as N: NO3-N - mg/L																
Count Lab	0	0	0	0	0	0	0	0	0	1	0	0	1			
Mean Lab										49.1				49.1		
Bskq2 - STP #2 / Potassium: K - mg/L																
Count Lab	0	0	0	0	0	0	0	0	0	1	0	0	1			
Mean Lab										65				65		
Bskq2 - STP #2 / Selenium: Se - mg/L																
Count Lab	0	0	0	0	0	0	0	0	0	1	0	0	1			
Mean Lab										< 0.002				< 0.002		
Bskq2 - STP #2 / Total Ammonia Nitrogen: NH3 + NH4+ as N - mg/L																
Count Lab	0	0	0	0	0	0	0	0	0	1	0	0	1			
Mean Lab										1.48				1.48		
Bskq2 - STP #2 / Total Phosphorus: TP - mg/L																
Count Lab	0	0	0	0	0	0	0	0	0	1	0	0	1			
Mean Lab										27.8				27.8		
Bskq2 - STP #2 / Total Solids: TS - mg/L																
Count Lab	0	0	0	0	0	0	0	0	0	1	0	0	1			
Mean Lab										22800				22800		
Bskq2 - STP #2 / Zinc: Zn - mg/L																
Count Lab	0	0	0	0	0	0	0	0	0	1	0	0	1			
Mean Lab																

APPENDIX F

Incident Report

SPILL REPORT

April 14, 2023

Re: SAC Event No. # 1-35TVW8

System: Haileybury Sewage Collection System
Location: Brewster-Lakeshore Sewage Pumping Station
Legal Instrument: CLI ECA No. 218-W601
Type of Event: Spill
Date of Event: April 6, 2023
Time of Event: 1400 to 1630 hours (duration: 2 hours and 30 minutes)

Details/Cause of the Event:

The City of Temiskaming Shores notified OCWA of a sewage spilling out of a manhole located near the Brewster-Lakeshore sewage pumping station. Mechanical pump failure resulted in the spill.

When operators arrived on site, they found the wet well level approximately 5' below the pump station cover. They proceeded to open the control panel to find that both pumps were tripped.

Corrective Actions:

Operators reset and re-started the pumps. Pump No. 2 restarted and remained running, but Pump No. 1 continued to trip. An electrician was called on-site to help troubleshoot the issue. The pumps were pulled to determine why they were drawing a heavy current. Rags were found in the impeller of both pumps. The pumps were put back into operation after they were cleaned. The electrician verified their operation.

The spilled material was sampled and brought to an accredited laboratory (Testmark Laboratories) to test for the following parameters; BOD, TSS, TP, TKN and *E.coli* (laboratory results attached).

Reporting:

The event was verbally reported to the local Health Unit and the Ministry's Spills Action Center (SAC). A written Environmental Incident Report was sent to the local Public Health Inspector, SAC, Environment Canada and the Owner (report attached).

Clean-up and Recovery Measures:

The spilled material mixed with the heavy snowmelt on the ground and road and seeped into the surrounding ground making it difficult to estimate the volume. None of the spilled material entered a water body.

Preventative Measures:

1. A beacon light at the station was connected and will be checked daily by City and OCWA staff.
2. The City will install a radio system to allow for alarms.
3. Regular on-site inspection of pump operations will occur until alarms are operational.

APPENDIX G

Summary of Abnormal Discharge Events

**Haileybury Sewage Collection System
Summary of Abnormal Discharge Events**

Facility Works Number: **110000310**
 Facility Owner: **City of Temiskaming Shores**
 Facility Classification: **Class 2 Wastewater Treatment**
 Receiver: **Lake Temiskaming**
 Service Population: **4200**
 Total Design Capacity: **2728.0 m3/day**
 Period Being Reported: **01/2023 12/2023**

Date	Pump Station	Start Time (hh:mm)	Stop Time (hh:mm)	Duration (hr)	Type	Volume (m3)	Disinfection Provided	Reason	Concentrations					Loadings			
									BOD5 (mg/L)	TSS (mg/L)	TP (mg/L)	TKN (mg/L)	E.Coli (cfu/100mL)	BOD5 (kg)	TSS (kg)	TP (kg)	TKN (kg)
06-Apr-23	Lakeshore - Brewster	14:00	16:30	2.5	Spill	unknown	No	Mechanical pump failure due to rags in pump impeller	110	59	4.83	39.7	6500000	N/A	N/A	N/A	N/A
07-Sep-23	Farr Drive	00:35	02:46	2.2	Overflow	2620.4	Yes	Extreme rainfall	12.6	68	0.286	0.9	140,000	33.00	178.00	0.75	2.40