

Long Sault-Ingleside Regional Water Treatment Plant

Drinking Water Works Permit 186-202
Municipal Drinking Water Licence 186-102

Works No. 260066417

- 2019 Summary Report -

Prepared by:
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LONG SAULT-INGLESIDE REGIONAL WATER TREATMENT PLANT

2019 SUMMARY REPORT

Facility description:	Ultrafiltration (Zenon membrane filtration), booster station, elevated tank
Capacity:	9,500 m³/day
Service area:	Villages of Long Sault and Ingleside
Service population:	3500
In-service date:	2006
Raw water source:	St. Lawrence River
Disinfection method:	Sodium Hypochlorite
Operations manager:	Chris Eamon (613)-551-2720

This report is a summary of water quality information for the Long Sault-Ingleside Regional Water Treatment Plant, published in accordance with Schedule 22 of Ontario's Drinking Water Systems Regulation for the reporting period of January 1 to December 31. The Long Sault-Ingleside Regional Water Treatment Plant is categorized as a Large Municipal Residential Drinking Water System.

This report is prepared by Caneau Water and Sewage Operations Inc. on behalf of the Corporation of the Township of South Stormont. A copy of the Summary report is to be provided to the members of the municipal council no later than March 31, 2020.

"The report must list the requirements of the Act, the regulations, the system's approval and any order that the system failed to meet at any time during the period covered by the report and specify the duration of the failure; and for each failure referred to, describe the measures that were taken to correct the failure." – O. Reg. 170/03 s. 22(2)

"The report must also include the following information for the purpose of enabling the owner of the system to assess the rated capability of their system to meet existing and planned uses of the system:

1. A summary of the quantities and flow rates of the water supplied during the period covered by the report, including monthly average and maximum daily flows and daily instantaneous peak flow rates.
2. A comparison of the summary referred to in paragraph 1 to the rated capacity and flow rates approved in the system's approval."

O. Reg. 170/03 s. 22 (3)

System Description

The Long Sault-Ingleside Regional Water Treatment Plant is located on Moulinette Island, south of the town of Long Sault. The water treatment plant is a membrane filtration plant that began producing water in June 2005. The treatment process includes ultrafiltration (ZeeWeed membrane system manufactured by Zenon Environmental Inc) through one of three membrane cassettes which are housed in large concrete tanks, taste and odour removal through granular activated carbon (GAC) contactors, and primary disinfection provided by sodium hypochlorite, which is injected downstream of the GAC tanks. The water then passes through the chlorine

contact chamber and a baffled clearwell into a high lift pumping well, all of which are located beneath the water treatment plant. A 10 km transmission main joins the distribution systems in Long Sault and Ingleside. The original Ingleside Water Treatment Plant was converted into a booster station. The rated capacity is 9,500 m³/day. The distribution system now services a combined population in Long Sault and Ingleside of approximately 3,500.

Compliance with Terms and Conditions of the Municipal Drinking Water Licence

The Long Sault-Ingleside Regional Water Treatment Plant and distribution system was operated and maintained in accordance with O. Reg. 170/03 dated June 1, 2003 (last amendment – O. Reg. 185/18) and the Municipal Drinking Water Licence.

In accordance with Drinking Water Works Permit No. 186-202, condition 1.1, the drinking water system shall not be operated to exceed the rated capacity for the maximum flow rate into the treatment system of 9,500 m³/day. (See Appendix I for total flow, average daily flow and maximum daily flow.) The flows into the water treatment plant did not exceed the maximum flow rate at any time.

The Long Sault-Ingleside Regional Water Treatment Plant has a valid Permit to Take Water; number 4278-9XSHHK (issued June 24, 2015 and expiring June 30, 2025), authorizing the taking of no more than 9,500m³/day. The average water taking for the year was 5,193 m³/day, 55% of the authorized water taking. The maximum daily flow into the treatment system for the year was 7,303 m³/day (raw water).

The Long Sault-Ingleside Regional Water Treatment Plant chlorinates at the raw water intake when the water temperature is above 10 degrees Celsius, providing enhanced chlorine contact retention time and also to control zebra mussel populations in the intake pipes.

The works and related equipment and appurtenances used to achieve compliance are properly operated and maintained, including effective performance, adequate funding, adequate operator staffing and training, including training in all procedures and other requirements of the Certificate of Approval and the Act and regulations, adequate laboratory facilities, process controls and alarms, and the use of the process chemical that comes in contact with the water being treated is suitable for the process and appropriate for drinking water.

A flow meter measures the flow rate and daily quantity of water being taken from the source (intake) and conveyed to, and through, the water treatment plant. The raw and treated flows are recorded in Appendix I. The flow meters were calibrated November 20, 2019 by Endress and Hauser.

Free chlorine residual and turbidity in treated water is continuously monitored at the point of entrance to the distribution system. The Prominent chlorine analyzer is accurate to $\pm 2\%$ of the measured value. A low chlorine alarm calls out at a value that is above the required CT, and the high lift pumps will shut down if the chlorine reaches a level lower than the required CT, or the lowest free chlorine level of 0.20 mg/L, to prevent non-chlorinated water from being produced. A high chlorine alarm calls out at 3.00 mg/L. Operators try to keep the chlorine residual at an average of 1.00mg/L. The on-line chlorine analyzer is checked with the hand-held chlorine analyzer and adjusted as required. Calibration of the on-line chlorine analyzers was performed

by Endress and Hauser on November 20, 2019. The Hach turbidimeters are accurate to ± 0.1 NTU (Nephelometric Turbidity Unit). The turbidimeters are checked monthly using a hand-held turbidity analyzer and adjusted accordingly. The turbidity analyzers were calibrated on June 4, 2019 by Hach Canada. If the turbidity reaches 1.00 NTU (Nephelometric Turbidity Units) for a period of 14 minutes, 50 seconds, the affected Zenon train will shut down and alarm out to prevent turbid water from entering the contact chamber. (See Appendix I for maximum turbidity, and minimum, maximum and average chlorine residual.)

Operators keep a daily log book recording raw and treated flow meter readings, free and total chlorine residual (both continuous and grab samples), raw and treated turbidity, pH and temperature.

Samples are collected throughout the year from the treated water to determine whether or not the water is safe for human consumption (in accordance with Regulation 170/03, Schedule 10 and 13, Microbiological and Chemical Sampling and Testing). Bacteriological analysis is performed weekly - 1 sample each per week from the raw and treated water, 13 samples per month from the distribution system. Nitrates, THMs and HAAs are analyzed 4 times a year in the distribution system. Schedule 23 and 24 (treated water) are analyzed annually. Sodium and fluoride (treated water) are analyzed once every 60 months. (See Appendix II.) All samples are analyzed at Caduceon Environmental Labs in Nepean, Ontario. Caduceon and its subcontracted labs are accredited by the Standards Council of Canada. Written procedures have been established for the notification of the Medical Officer of Health and the Ministry of the Environment Spills Action Centre should a sample result indicate an exceedance has occurred. In the reporting year, a single adverse result was received at the WTP. Caneau provided notifications and resampled as required by O. Reg 179.

Under Ontario Regulation 170/03, Schedule 15, Section 15.1-5 (lead sampling), Long Sault-Ingleside Regional WTP and distribution system is eligible for reduced sampling and reduced frequency (every 3 years). Samples were collected in 2018/2019 and will be collected again in 2021/2022. pH and alkalinity are required to be collected twice per year.

Effluent discharged from the backwash wastewater facility is analyzed monthly for Total Suspended Solids (annualized average), Total Chlorine Residual, and pH. The results are summarized in Appendix II – 2019 Annual Report for the Ministry of the Environment, Conservation and Parks.

Free chlorine residual in the distribution system is monitored by 2 alarmed online analyzers with datalogging. The analyzers are checked, at minimum, every 72 hours. These analyzers will alarm out when the chlorine goes below 0.15 mg/L for a period greater than 15 minutes. The chlorine analyzers in the distribution system were calibrated on November 19 and 21, 2019 by Endress and Hauser.

All records and information relating to, or resulting from the monitoring, sampling and analyzing activities required by the Certificate of Approval are retained for a minimum of 5 years.

The Long Sault-Ingleside Regional Water Treatment Plant is classified Water Treatment 2 and Water Distribution 2 (Certificate Number 2232 and 2233). Operators hold valid licences applicable to this type of water treatment plant.

Following all maintenance or repairs to the water treatment facility, all affected areas are disinfected in accordance with the MOE's "Procedure for Disinfection of Drinking Water in Ontario" dated June 2006. All chemicals used in the treatment process and all materials contacting the water meet both the American Water Works Association (AWWA) quality criteria and the American National Standards Institute (ANSI) safety criteria. All chemicals have been registered by a testing institution accredited under the Standards Council of Canada Act or by ANSI.

A contingency plan has been implemented to ensure adequate equipment and material are available for dealing with emergencies, upset conditions, equipment breakdowns in the works and spill scenarios.

An operating manual incorporates the requirements of the Drinking Water Works Permit. The manual includes monitoring and reporting of the necessary and in-process parameters essential for control of the treatment process and for the assessment of the performance of the works. It also contains procedures that are required for adequate operation and maintenance of the monitoring equipment.

Drawings are prepared and kept up-to-date showing the new works as constructed (record drawings), including timely incorporation of all modifications made to the works throughout its operational life.

A Process and Instrumentation Diagram (PID) for the entire water treatment plant has been prepared and is kept up-to-date, including timely incorporation of all modifications that are made to the works.

All record drawings and diagrams and all existing record drawings which are currently in retention throughout the operational life of the water works are readily available for inspection by Ministry staff.

Procedures have been established and are followed for receiving, responding to, and recording complaints about any aspect of the works, including recording the steps that were taken to determine the cause of complaint and the corrective measures taken to alleviate the cause and prevent its reoccurrence.

Compliance with Regulatory Requirements and Actions Required

The 2019-2020 Compliance Inspection was completed on January 28, 2020 by the Ministry of the Environment, Conservation and Parks. The Compliance Inspection Report has not been received as of March 31, 2020. There are no known issues of regulatory non-compliance.

A copy of the report is available at the Township office.

MAINTENANCE

- January 10 – Marleau Mechanical on site to install new thermostat in Zenon room.

- January 16 – Capital Controls on site to clean up minor SCADA issues.
- January 22 – Township and Capital Controls on site at Ingleside booster station and main plant to set up new VPN network.
- February 4 – Quarterly samples collected at WTP and distribution points.
- February 8 – Surgeson Electric on site to inspect damaged variable frequency drive on high lift pump #2 – VFD and keypad require replacement – HLP #2 out of service.
- March 7 – Capital Controls on site to install remote PC.
- March 12 – Township on site to install antivirus program on remaining SCADA and attempting to get remote desktop working.
- March 12 – Marleau HVAC on site to repair leak on back pulse tank – while on site, they measured for a new sink and sampling taps in main office.
- March 13 – Surgeson Electric on site to disconnect chlorine transfer pump #2.
- March 15 – Marleau HVAC on site to replace thermostat in office.
- March 19 – Marleau HVAC on site to measure for upcoming work on Thursday.
- March 21 – Eastern Welding on site to install supports on backpulse tank pressure gauge assembly and CIP tank heater.
- March 27 – Marleau HVAC on site to install new sample sink and faucets in main office.
- April 23 – Fence Depot on site to quote new gate on pond fence.
- May 1 – Marleau HVAC on site to perform regular maintenance on HVAC equipment.
- May 6 – Annual samples collected, quarterly samples collected at WTP and distribution points.
- May 7 – Eastern Welding on site to formulate plan to repair leak on permeate pipe weld.
- May 8 – Genrep on site to perform semi-annual inspections and to gather more info for block heater – original order was the wrong part.
- May 9 – Marleau HVAC on site to perform annual flow meter testing.
- May 9 – Eastern Welding on site with scaffolding contractor to prep for repair of permeate pipe.
- May 14 – Eastern Welding on site to take final measurements for repair job.
- May 15 – Innovation Contracting on site to install scaffolding for Eastern Welding.
- May 15 – Bergeron Electric on site with ladder truck to replace 3 burnt lamps in membrane room.
- May 16 – Eastern Welding on site to begin prep work for repair work (to begin tonight).
- May 16 – Sunbelt Equipment Rentals on site to deliver forklift for Eastern Welding.
- May 16 – Eastern Welding on site at 7pm. Installed temporary hoses from permeate pumps to GAC tanks. Drained 14” permeate header. Ran into issues while trying to run permeate pumps, low setpoint alarm causing trains to shut down and not able to maintain adequate flow through GAC tank #1 and 2. Suez Water changed low flow setpoint. Trains #1 & 2 now making water but only capable of 15L/s. Established GAC tank #1 & 2 in rough shape and require cleaning to produce more water. Therefore, Eastern Welding patched the crack instead of replacing the entire section of pipe to allow time to clean GAC tanks in order to produce sufficient water during shutdown. Weld repair complete – plant running normally and will commence cleaning GAC tanks all next week.
- May 21 – Surgeson Electric on site to replace flow control switch on train #2.
- June 4/5 – Hach on site for annual calibrations.
- June 6 – Fence Depot on site to install new gate on pond fence.
- June 12 – Township IT on site to install new passwords on computers.

- June 17 – Township on site to install anti-virus software on computers.
- June 18 – Ranguard on site to replace defective motion sensor.
- July 3 – Gen Rep on site to replace block heater on generator.
- July 4/5 – Eastern Welding on site to complete repair on permeate header.
- July 9 – EVB on site for VFD and GAC tender meetings.
- July 12 – Eastern Welding on site to take measurements for permeate pipe supports.
- July 15 – Surgeson on site to inspect waterfall pump control.
- July 15 – Light deflectors installed on exterior lights near garage in attempt to resolve resident complaints.
- July 17 – Surgeson on site to install auto selector for water fountain pumps and TC Electric on site for final connections.
- July 17 – Eastern Welding on site to install permeate pipe supports.
- August 1 - Township of South Stormont IT on site to begin prep work to switch over to new antivirus program.
- August 9 – Marleau Mechanical on site to change out expansion joint on permeate pump #3.
- August 17 – Capital Controls on site to troubleshoot Ingleside Tower level sensor issue.
- August 18 – Capital Controls on site to continue work on Ingleside Tower level sensor issue.
- August 28 – Capital Steam on site to clean building exterior.
- August 29 – Marleau Mecanical on site to replace the last two expansion joints on permeate pumps #1 & #2.
- September 3 – Capital Steam Clean on site to conduct high pressure steam cleaning on exterior of plant and to remove spider webs.
- September 5 – Capital Controls on site for final repairs and recalibration of Ingleside Booster and Tower communication line relating to August 17, 2019 storm damage.
- September 9 – Marleau HVAC on site to repair broken exhaust fan in Cl2 room.
- September 26 – Continental Carbon on site to sample GAC #1 carbon as an input to their disposal process.
- September 26 – Bergeron Electric on site to conduct annual fire alarm testing and servicing at WTP and at Ingleside Booster Station.
- October 2 – Capital Controls on site with Rockwell Automation to set up and commission VFD drive #2 but further issues were found with the communication between the new drive technology and the plants existing PLC cards.
- October 2 – Three burnt 600V fuses in high lift pump cabinet #2 were replaced as part of the capital project.
- October 7 – Capital Controls on site to continue correcting the new drives PLC communication issues between our plants existing PLC and our SCADA system plant control.
- October 10 – Capital Controls on site to continue repairing issues with the newly installed drive to allow the communicating issues between our plants existing PLC cards and the newly installed drive, Capital Controls figure a work around to allow the newly installed drives PLC card to be able to communicate with plants existing PLC card and allow our SCADA systems plant control.
- October 11 – Bergeron Electric on site to replace defective exterior and interior light fixtures.
- October 15 – Gen Rep on site for annual load test/transfer test.
- October 17 – Capital Controls on site to replace faulty RAID drive.
- October 21 – Gen Rep on site to try and repair the generator Cummings control panel issue.

- October 21 – An emergency backup generator was ordered and installed until the existing generator can be repaired by Cummins.
- October 22 – Cummins on site to diagnose controller panel issue.
- October 22 – Marleau HVAC on site for annual unit heater maintenance.
- October 24 – Marleau Mechanical on site for annual unit heater inspections.
- October 29 – Continental Carbon on site for capital project to remove and replace carbon GAC #1.
- October 30 – Continental Carbon on site to observe backwash of GAC #1 with the plant operator.
- October 30 – Marleau Mechanical on site to complete unit heater repairs and unit heater startups.
- October 31 – Cummins and Bergeron on site to disconnect and reconnect generator. Cummings tested generator under load with transfer switch – all normal.
- November 2- Genrep on site to pick up the rest of the equipment used during the emergency generator installation.
- November 5 – Marleau on site to troubleshoot pond recirculation pump alarm. Float was discovered to be faulty and will require replacement.
- November 18 - Quarterly samples collected at WTP and distribution points.
- November 20 – Endress & Hauser on site for annual flow and Cl2 analyzer calibrations.
- December 12 – Suez Water, Eastern Welding and Bergeron Electric on site to go over scope of work for capital project (ejector upgrade).
- December 17 – Cornwall Door System on site to repair overload on motor.

APPENDIX I
Flow Data

APPENDIX II
2019 Annual Report
Ministry of the Environment, Conservation and Parks