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Town of Arnprior 2025 – Water Filtration Plant Summary Report

February 25th, 2026

Please find below a discussion of the operational undertakings of the Town of Arnprior's Water Filtration Plant (WFP) for the 2025 calendar year. This report is provided to meet the Town's requirements to report annually on the operation of the WFP, as per Municipal Drinking Water License (MDWL) 170-101 Ver. 7 and Schedule 22 of O. Reg. 170/03 (Drinking Water Systems) and to provide residents of the Town of Arnprior with information on an important piece of the Town's municipal infrastructure.

1.0 Regulatory Reporting Requirements

Hereafter, for clarity all requirements of Schedule 22 of O. Reg. 170/03 are listed in blue italics below.

22-2. *(1) The owner of a drinking water system shall ensure that, not later than March 31 of each year after 2003, a report is prepared in accordance with subsections (2) and (3) for the preceding calendar year and is given to,*

(a) in the case of a drinking water system owned by a municipality, the members of the municipal council.

This report is to be presented to the Council of the Town of Arnprior during the regular meeting of Council on March 9th, 2026 reporting on the Arnprior Drinking Water System for the period covering January to December 2025.

(2) The report must,

(a) list the requirements of the Act, the regulations, the system's approval, drinking water works permit, municipal drinking water licence, and any orders applicable to the system that were not met at any time during the period covered by the report;

The Town of Arnprior's Drinking Water System Number is 220000932 and is operated under Municipal Drinking Water Licence (MDWL) 170-101, Ver. 7. The Drinking Water Works Permit (DWWP) number is 170-201 Ver. 3 and the current Permit to Take Water (PTTW) P-300-1179150700 Ver. 1.

2.0 Compliance with Terms and Conditions of the MDWL

The Town of Arnprior owns and operates the Water Filtration Plant and complies with the conditions of the DWWP, PTTW, and MDWL.

3.0 WFP Plant changes and Improvements

- Maintenance parts purchased for soda ash dosing pumps
- Annual chlorine gas safety maintenance completed by contractor including service, components, and equipment
- Online total chlorine analyzer purchased but not commissioned until 2026
- Chlorinator plumbing redone
- Inspection of Clearwell# 2 and Water Tower performed by submersible ROV
- Annual calibration of analyzers completed by contracted technician
- Filter# 1 complete refurbishment with new underdrains and media
- Gas sensor annual calibration by contracted technician
- Repair of Actiflo overload relays and purchase of timing relays
- Confined space entry/rescue training as well as mask fit testing

In accordance with Ontario Regulation 107/03, all required sampling and laboratory analysis of the raw and treated water is carried out in the plant laboratory, as well as a certified contracted laboratory, which includes annual, quarterly and weekly sampling requirements.

Flow meters are calibrated annually by an outside contractor for flow measurement of the water taken from the Madawaska River and to the distribution system.

Continuous water quality analyzers with alarm systems are installed for chlorine residual, turbidity of filtered water and fluoride residual.

All operators are certified to the appropriate level, with ongoing training taking place throughout the year.

4.0 Non-Compliance with Terms and Conditions of PTTW and MDWL

(2) The report must,

(b) for each requirement referred to in clause (a) that was not met, specify the duration of the failure and the measures that were taken to correct the failure.

MECP inspector Erin Markham performed a physical inspection on November 28th, 2025 and was provided a digital file of data requested afterwards. The Final 2025-26 Inspection Report for the Arnprior DWS was received on February 23rd 2026, a copy of which is attached as Document #4.

There were 2 items of concern that resulted in 4 non-compliances for this inspection. The result of the IRR was 86.8%. “Application of the Risk Methodology Used for Measuring Municipal Residential Drinking Water System Inspection Results” reads:

It is important to be aware that an inspection rating less than 100 per cent does not mean the drinking water from the system is unsafe. It shows areas where a system's operation can improve. The ministry works with owners and operators of systems to make sure they know what they need to do to achieve full compliance.

The first item addressed the absence of operator training regarding "Harmful Algae Bloom" inspections. While the risk of a harmful algae bloom is low as the Madawaska River has few upstream users and sufficient flow, there is a policy in the DWQMS that operators will be trained on moving forward. Operators have been performing weekly algae bloom inspections at the WFP low lift as per regulation and recording it in the facility logbook.

The second item of concern was an operational issue that occurred on October 15th, 2026. A contractor on-site while calibrating a flow meter failed to return the unit to proper service. This caused the ammonia system not to run when called for, effectively turning the system from chloraminated to free chlorine. The SCADA system was not programmed to catch this issue and as such the system operated this way until an operator noticed the error on the morning of October 16th during routine trend review.

The flow meter's functionality was immediately restored and normal plant operation resumed. Later that morning a low total chlorine residual was seen at the analyzer located at the WPCC for 3 hours and 21 minutes until chloraminated water reached the facility. Free chlorine over 0.05 mg/l was tested at the facility during this period.

The MECP has recommended several measures be put in place to ensure that Town of Arnprior Waterworks staff have multiple barriers against this situation occurring again. These will be implemented by the Waterworks department over the coming months and include:

- The creation of a procedure to assist operators in making certain equipment that has been worked on by staff or contractors is properly returned to service.
- SCADA programming implemented specifically for the flow meter that was worked on. This will alarm out to the on-call operator in the event the plant is running without the flow meter in service.
- The modification of an existing DWQMS standard operating procedure for handling low chlorine residuals at the facility or in the distribution system.

All Waterworks staff will be trained on all procedures and SCADA changes with proof of training provided to the MECP.

5.0 Adverse Test Results and Other Operational Problems

- Concerns about Phosphoric Acid not being “Food Grade”, is in fact NSF certified and safe for use in municipal drinking water
- Ammonia pumps not operating after Clearwell #2 influent flow meter calibration
- Total Cl^2 analyzer not working properly requiring the distribution unit at the WPCC to be temporarily relocated to the WFP
- High lead adverse in distribution system during hydrant sample. Flushed and retested.
- Water main break during construction work causing low distribution pressure

6.0 Water Production Flow Measurement

The raw water and backwash flows at the plant are measured by Endress + Hauser electromagnetic flow meters. These flow meters are calibrated annually by an outside contractor.

7.0 Raw Water Production

(3) The report must also include the following information for the purpose of enabling the owner of the system to assess the capability of the system to meet existing and planned uses of the system:

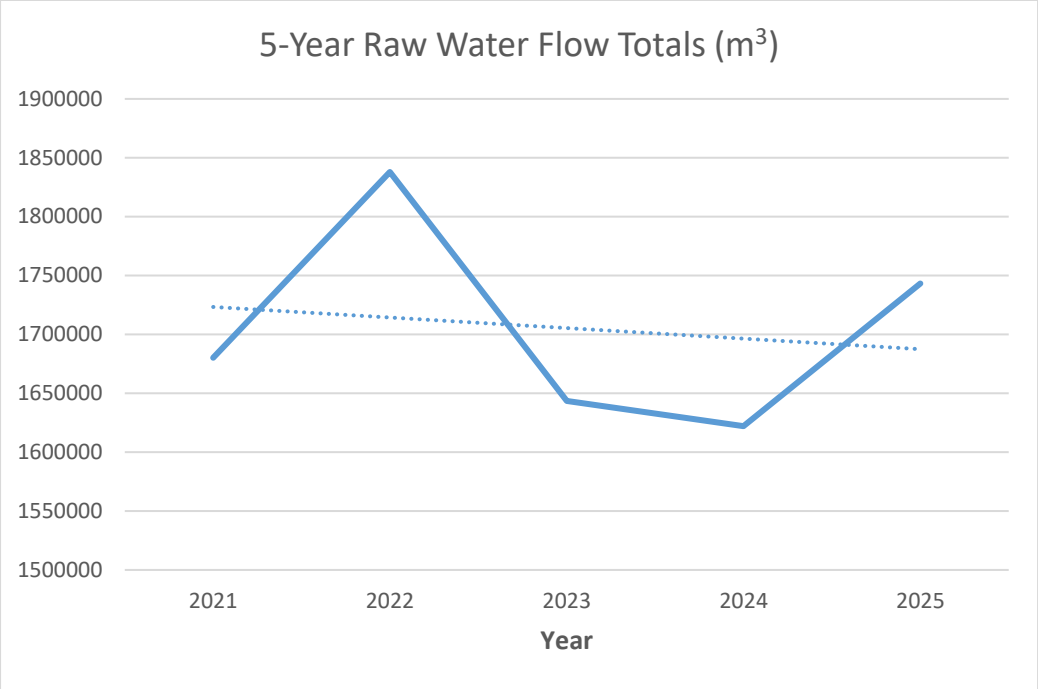
1. A summary of the quantities and flow rates of the water supplied during the period covered by the report, including monthly average and maximum daily flows.

2. A comparison of the summary referred to in paragraph 1 to the rated capacity and flow rates approved in the system’s approval, drinking water works permit or municipal drinking water licence.

The average daily raw water flow was measured at 4,759 m^3. The maximum daily flow recorded was 6,862 m^3 on August 21st, 2025. The maximum daily raw water flow permitted under the Town’s current PTTW from the Madawaska River is 10,340 m^3/day.

The total annual raw water flow for 2025 was 1,743,165 m^3. This volume has increased slightly since 2024 which had a total flow of 1,622,110 m^3, an increase of 7.5 %.

Please see following chart showing annual raw water flows for the years 2021 to 2025.

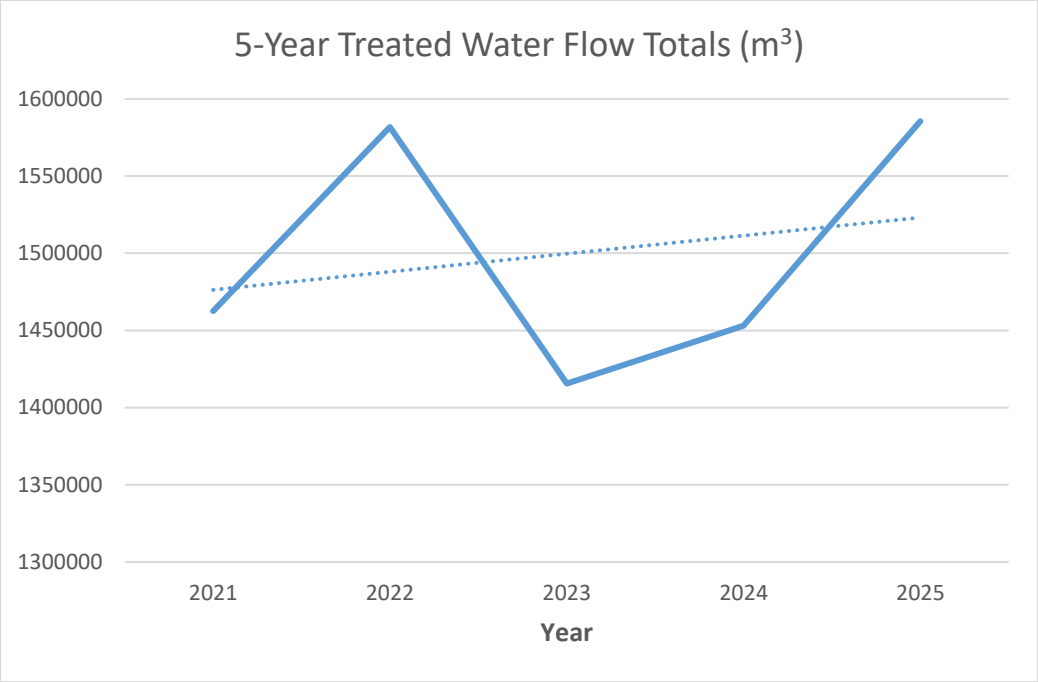


8.0 Treated Water Production

The maximum daily volume of water permitted to be treated by the Town at the WFP under the MDWL in 2025 was 10,340 m^3/day. There were no flow exceedances in 2025 and the average daily treated water flow was measured at 4,340 m^3/day. The maximum daily treated water flow was 6,315 m^3 on August 16th, 2025.

The total annual treated water flow for 2025 was 1,585,527 m^3. This volume has increased slightly as compared to 2024 which had a total flow of 1,453,021 m^3, an increase of 9.1%.

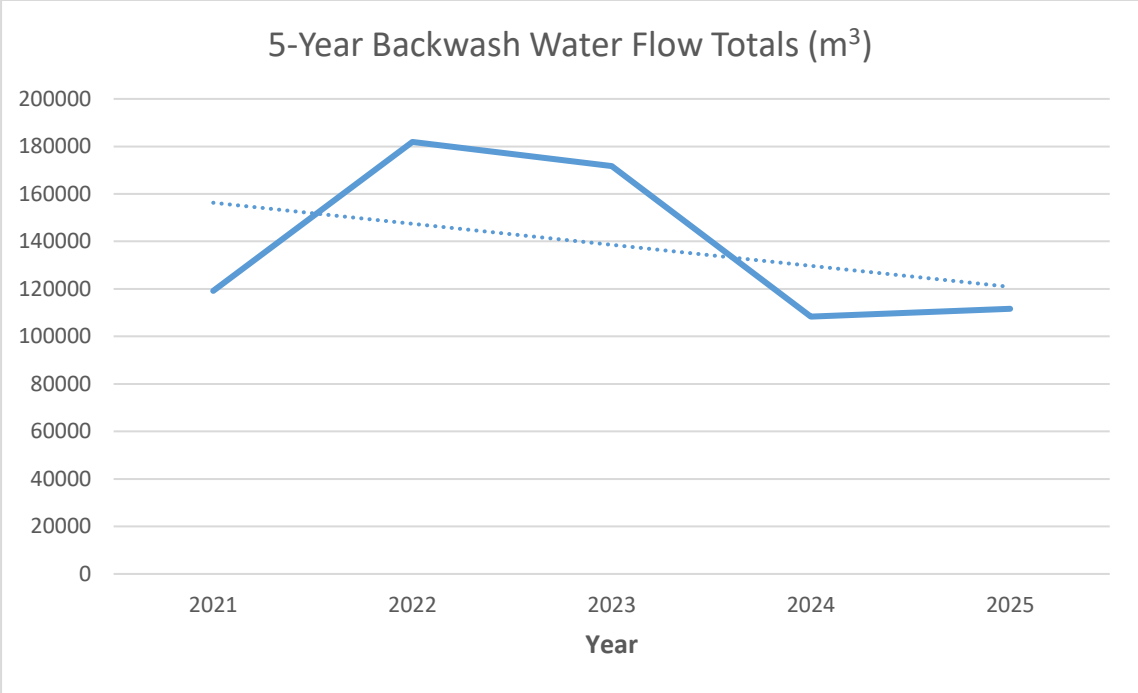
Please see following chart showing annual treated water flows for the years 2021 to 2025.



9.0 Backwash Water Production

The average daily backwash water flow was 306 m^3 as compared to 297 m^3 in 2024. The total annual backwash water flow was 111,676 m^3. The backwash water is treated in a residuals treatment system where the solids are removed and pumped to the Water Pollution Control Centre (WPCC) for treatment and the clear supernatant is directed to the Madawaska River. The WFP MDWL stipulates a maximum 12 month average permitted concentration of Total Suspended Solids (TSS) of 25 mg/L in the supernatant, and in 2025 the average was 4.6 mg/L. The MDWL also stipulates a maximum 12 month average Total Cl^2 concentration of 0.02 mg/L in the supernatant, in 2025 the average was 0.013 mg/L.

Please see following chart showing annual total backwash water flows for the years 2021 to 2025.



10.0 Water Quality

The Town of Arnprior carries out all the sampling and analysis of the raw and treated water as per the requirements of the MDWL and O. Reg. 170/03, schedules 10, 13, 23 and 24. s. Certain parameters are done at different frequencies such as daily weekly, quarterly and annually.

11.0 Zebra Mussels

Zebra mussels are evident at the Low Lift Pumphouse. At this time, they are manageable with semi-annual cleaning of the intake screens.

12.0 Turbidity

The Madawaska River is an excellent source of raw water with stable water turbidity. The performance criterion for filtered water is a turbidity of less than or equal to 0.30 Nephelometric Turbidity Units (NTU) in 95% of the measurements each month without exceeding 1.0 NTU. The filtered water average turbidity in 2025 as measured by the Town of Arnprior's benchtop analyzer was 0.075 NTU.

13.0 Quarterly and Annual Water Sampling

Sampling and testing were carried out at various frequencies for Volatile Organic Compounds, Inorganic compounds, Pesticides and PCB as per Schedule 23 and 24 of O. Reg. 170/03. These samples are taken by operators and sent to a certified laboratory. The

analytical results revealed that all samples were within acceptable concentrations under the Ontario Drinking Water Standards.

14.0 Hardness

The recommended operational guideline for hardness is 80 mg/L expressed as Calcium Carbonate. This provides an acceptable balance between corrosion control and incrustation. Hardness is caused by the presence of certain dissolved chemical compounds with calcium and magnesium being the primary elements. The amount of hardness varies significantly depending on the source. The Arnprior raw water source has an average hardness of 45.0 mg/L, which would be considered soft water.

15.0 Alkalinity

Alkalinity is a measure of the capacity of water to neutralize acids and is known as the buffering capacity. The recommended operational range for alkalinity in treated drinking water is 30 mg/l to 500 mg/l as Calcium Carbonate. The Arnprior raw water has an average alkalinity of 42 mg/L and the treated water an average of 46 mg/L.

16.0 Fluoride

Hydrofluorosilicic acid is added to the treated water to attain an average fluoride residual in 2025 of 0.68 mg/L with a Maximum Acceptable Concentration of 1.5 mg/L. An ideal target range of 0.60 mg/L to 0.80 mg/L is requested by the RCDHU. The fluoride residual is monitored with an online analyzer and in-house laboratory analysis.

17.0 Water Treatment Chemicals

The WFP uses Chlorine gas, polymer, Ammonium Sulphate (Chloramination), Polyaluminum Chloride (Coagulant), Sodium Carbonate (Soda Ash), Phosphoric Acid (Corrosion Control), and Hydrofluorosilicic Acid (Fluoride).

Completed by Ben Ritchie
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