

ARNPRIOR WATER FILTRATION PLANT

ANNUAL SUMMARY REPORT

2016

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Introduction

The following annual summary report has been prepared to summarize the raw and treated water characteristics as well as changes and improvements during 2016 at the Arnprior Water Filtration Plant. This report covers the period from January 1 to December 31, 2016.

Compliance with Terms and Conditions of the Certificate of Approval

The Town of Arnprior owns and operates the Water Filtration Plant (WFP), and complies with the terms and conditions of the Certificate of Approval issued to the WFP.

WFP Plant Changes and Improvements:

- Installed a new Wallace & Tiernan V10K Chlorinator
- Ongoing CCP project with the Phosphoric Acid portion of the project completed and have commenced the addition of Phosphoric Acid for corrosion control.
- Repaired some of the leaks and cracks in the original 1966 Clearwell, but more work to follow.

In accordance with Ontario Regulation 170/03, all required sampling and laboratory analysis of the raw and treated water is carried out in the plant laboratory and a certified contracted laboratory, which includes the quarterly sampling requirements.

Flow meters are calibrated annually by a third party, 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.

An operations manual is kept at the filtration plant and updated as required.

All chemicals used in the water treatment process meet AWWA and ANSI standards.

Non-Compliance with Terms and Conditions of the Certificate of Approval

None at this time.

Adverse Test Results and Other Problems

The following adverse test results were reported to the Ministry of Environment and Renfrew County and District Health Unit:

- Total Coliform of 1 TC/100ml in a sample result at 344 White Lake Rd. on 2016/05/12. Re-sampled at same location plus upstream and downstream on the water system with good results.

Water Production

The raw, treated, and backwash flows at the plant are measured using Endress + Hauser Electromag flow meters, these meters are calibrated annually by the manufacturer.

Raw Water Production

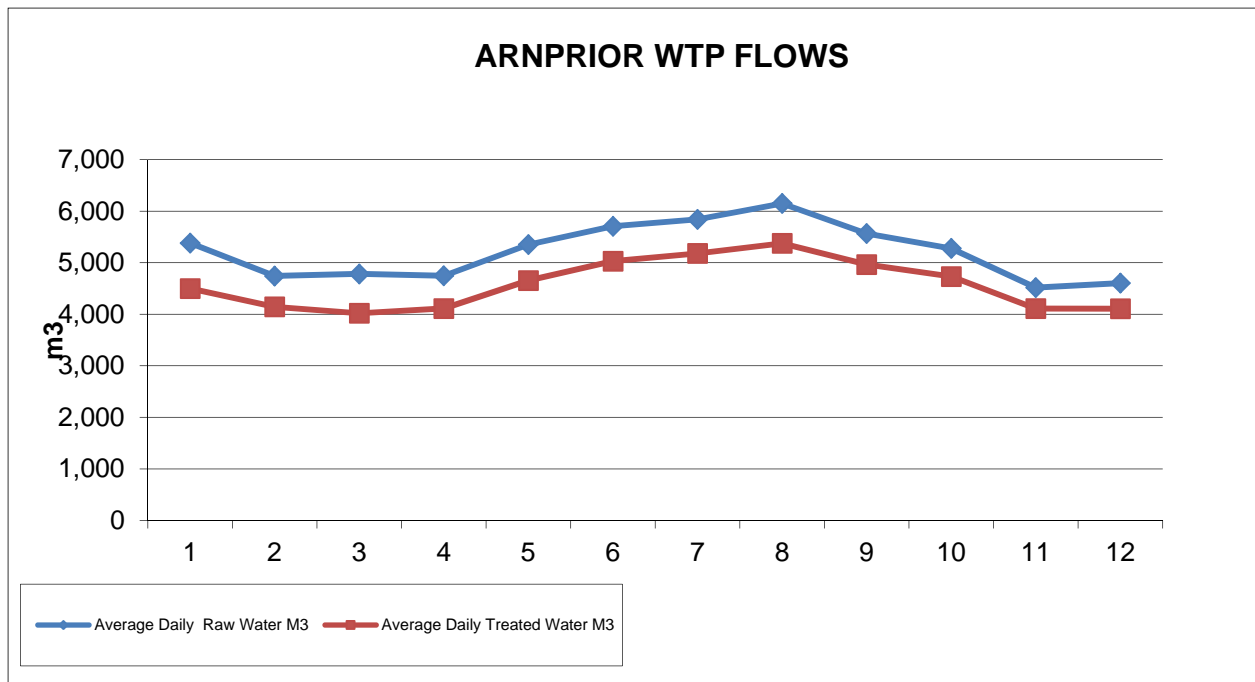
The average daily raw water flow was measured at 5,222 m³. The maximum daily flow recorded was 8,676 m³ on Oct 28, 2016. The total annual raw water flow for 2016 was 1,907,861 m³. This volume has decreased since 2015 which had a total flow of 1,958,358 m³, a decrease of 50,497 m³. The Town's current permit to take water from the Madawaska River is for 10,340 m³ per day.

Treated Water Production

The Certificate of Approval for the WFP in 2016 is 10,340 m³/day of raw water production. There were no flow rate exceedances in 2016, the average daily treated water flow was measured at 4,578 m³/day. The maximum daily treated water flow was 8,504 m³ on Oct 28, 2016. The total annual treated water flow for 2016 was 1,672,403 m³. This volume has decreased since 2015 which had a total flow of 1,686,421 m³, a decrease of 14,018 m³. The per capita use of treated water is 544 litres per day, which is above the typical Canadian average of 300 – 400 litres per day, and is attributed to industrial use.

Backwash Water Consumption

The average daily backwash water flow was 356 m³; the total annual backwash water flow was 129,628. 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 pumped to the Madawaska River. The WFP Certificate of Approval stipulates a maximum Total Suspended Solids (TSS) of 25 mg/l in the supernatant and in 2016 the average TSS was 2.8 mg/l.



Flow Rate Exccendance

The WFP Certificate of Approval states a treatment process maximum of 10,340 m3 per day.

Water Quality

The Town of Arnprior carries out all the sampling and analysis of the raw and treated water as per the Ontario Drinking Water Standard guidelines. Certain parameters are done at different frequencies such as daily, weekly, monthly, and annually.

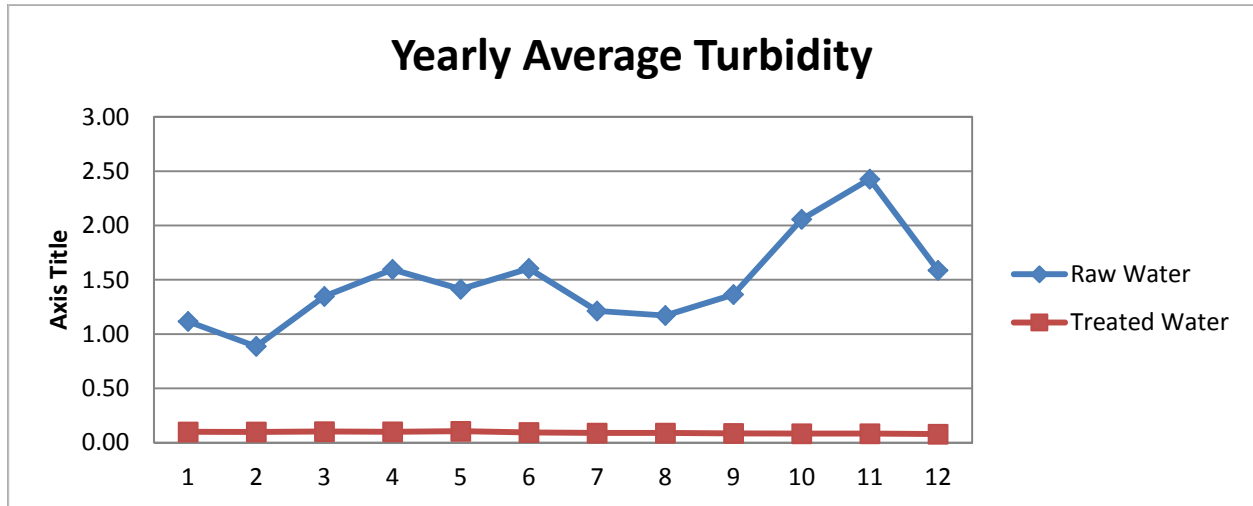
Zebra Mussel

Zebra mussels are evident at the Low Lift Pumphouse, at this time are manageable with routine cleaning of the intake screens.

Turbidity

The Madawaska River is an excellent source of potable water, with stable water turbidity. The chart shows the raw water turbidity along with the treated water turbidity.

The MAC for filtered water is 0.3 NTU for 95% of the time, without exceeding 1.0 NTU. The 2016 average treated water turbidity was 0.09 NTU.



Quarterly and Annual Water Sampling

Sampling and testing were carried out at various frequencies for Volatile Organic Compounds (VOCs), Inorganic compounds, Pesticides, and PCB. These samples are taken by plant operators and are sent to a certified contracted laboratory. The analytical results revealed that all samples collected were within acceptable concentrations under the Ontario Drinking Water Standard.

Hardness

The recommended operational guideline for hardness is 80mg/L to 100mg/L expressed as Calcium Carbonate (CaCO_3). This provides an acceptable balance between corrosion and incrustation. Hardness is caused by the presence of certain dissolved chemical compounds with calcium and magnesium being primary elements. The amount of hardness varies significantly depending on the source. The Arnprior raw water has an average hardness of 42 mg/L which would be considered soft water.

Alkalinity

Alkalinity is a measure of the capacity of water to neutralize acids and is also known as the buffering capacity. The recommended operational range for alkalinity in coagulant treated drinking water is 30mg/L to 500mg/L as CaCO₃. The Arnprior raw water has an average alkalinity of 40mg/L.

Fluoride

Hydrofluorosilicic acid is added to the treated water to attain an average fluoride residual in 2016 of 0.62mg/L with a MAC of 1.5mg/L. The fluoride residual is monitored with an online analyzer and laboratory analysis.

Water Treatment Chemicals

The WFP uses Gas Chlorine, Polymer, Ammonium Sulphate (Chloramination), Polyaluminum Chloride(Coagulant), Sodium Carbonate (Soda Ash) Phosphoric Acid (CCP Program) and Hydrofluorosilicic Acid (fluoride).

Conclusion

This report is available at the Arnprior Town Hall, 105 Elgin Street West, at the 3rd floor public works space. This report will also be presented to Members of Council for adoption.

For any further information on this report please call Michael Trumble at 613-623-4231 ext. 1834.

Respectfully,

Michael Trumble

Waterworks Supervisor