



## **TOWN OF ARNPRIOR WATER FILTRATION PLANT (WFP)**

### **2008 WFP ANNUAL REPORT**

January 1, 2008 – December 31, 2008

#### **Introduction:**

Drinking Water System Number:	220000932
Drinking Water System Name:	Arnprior Water Filtration Plant
Drinking Water System Owner:	Town of Arnprior
Drinking Water System Category:	Large Municipal Residential

#### **System:**

This report has been prepared in accordance to Section 11 of Ontario Regulation 170/03. Regulation 170/03 sets requirements for public waterworks with regard to sampling and testing, levels of treatment, licensing of staff, and notification of authorities and the public about water quality. Free copies of this report and the Summary report prepared in accordance to Schedule 22 of Ontario Regulation 170/03, are available at the Arnprior Town Hall.

#### **Plant Description & Treatment Processes:**

Raw water is conveyed from the Madawaska River through a submerged wooden/rock crib type inlet structure through approximately 6 m of 600 mm diameter pipe to the raw water wet well in the Raw Water Pumping Station located on the shoreline of the River. The raw water passes through a bar screen into a wet well which feeds three (3) low lift pumps (lead/lag/stand-by arrangement). The mechanical bar screen is cleaned manually by the operator semi-annually. The discharges from the low lift pumps are combined into a 400 mm force main header pipe that conveys the raw water to a 400 mm force main transmission pipe to the WFP.

### Coagulation and Flocculation

Raw water from the Raw Water Pumping Station is conveyed to the flash mix chamber where coagulant (e.g. Alum, etc.) is introduced to destabilize the suspended solids. The water is conveyed to a contact basin where a floc is formed.

### Filters

Water flows to two multi media filters where the flocculated particles are removed in the filter bed. Water flows through the filters to the clean water reservoirs.

### Backwash

Filters are washed daily to remove the particulates they have collected over the previous 24 hours. Clean water from the clear well is pumped in reverse through the filter. Effluent water from the backwash process is directed to a backwash residual treatment system.

### Backwash Residual Treatment System

The Filter Backwash Residuals Handling System at the Arnprior WFP consists of one large concrete tank (Backwash Settling Tank) that provides for the settling of solids conveyed from the filter backwash troughs. From the Backwash Settling Tank, supernatant drains by gravity to the storm sewer and the settled sludge residuals are pumped to a sanitary sewer.

### Chloramination

Chlorine is added to the water as it enters the clear well, and acts as a disinfectant. Ammonia is then added just before it is pumped into the distribution system. The ammonia provides a more persistent disinfection in the distribution system, and allows for a lower chlorine dosage at the plant.

### Clear Well

Filtered water is stored in two 2,200 M3 clear wells before being pumped to the distribution system.

### High Lift Pumps and Elevated Reservoir

The water is pumped from the clear well into the distribution system and elevated reservoir using the high lift pumps. When the elevated reservoir level tops up, the pumps turn off and the town water pressure is supplied from the elevated reservoir.

## **Monetary expenses incurred during this reporting period:**

Under section 11 of Ontario Reg. 170/03, a description of any major expenses incurred during this reporting period must be included in the annual report. The details of major expenses for this drinking water system are listed below:

An Environmental Assessment for a plant expansion has been completed and an ongoing design and upgrade contract for a plant expansion has been awarded.

There is an ongoing lead sampling program for private, commercial and distribution system locations.

## Notifications submitted in accordance to the Safe Drinking Water Act:

Under Ontario Reg. 170/03, notifications were required for any instances where a sample result indicated that a parameter used to measure water quality exceeded a Maximum Acceptable Concentration (MAC). Once a notification is received from a laboratory or an observation of any other indicator of adverse water quality is made by operations personnel, corrective action as dictated by the regulations is initiated in an effort to confirm the initial result. If confirmed, further action may be recommended by the Medical Officer of Health. If not confirmed sampling will typically return to the normal schedule.

On June 18, 2008 a notification was made under schedule 16-3 of Ontario Reg. 170/03, indicating a combined chlorine level less than 0.25 mg/l in a sample taken at 332 Harrington St. Notifications were made to the Spills Action Center and to the local Ministry of Health. Local fire hydrants were flushed until a combined chlorine residual of at least 0.25 mg/l was achieved.

## Microbiological Testing done under Schedule 10 of Regulation 170/03 during this reporting period:

	Number of Samples	Range of E.Coli or Fecal Results (min # - max #)	Range of Total Coliform Results (min # - max #)	HPC Results (min # - max #)
Raw	52	0 - 35	0 - 840	
Treated	52	0	0	0 - 132
Distribution	312	0	0	0 - 4

## Operational Testing done under Schedule 7 of Regulation 170/03 during this reporting period:

Parameter	Number of Samples	Range of results (min # - max #)	Unit of Measure	Parameter Description
Turbidity (Raw Water)	365	0.89 - 7.8	NTU	Turbidity is a measure of particles in water.
Turbidity (Treated Water)	365	0.06 - 0.34	NTU	Turbidity is a measure of particles in water.
Free Chlorine Residual (Treatment Plant)	365	1.23 - 2.05	mg/l	Added for disinfection
Combined Chlorine (Distribution)	365	0.05 - 2.30	mg/l	Recommended level of 1.0 mg/l for proper disinfection. Min is 0.25 mg/l.
Filter #1 Effluent Turbidity	Continuous	0.01 - 0.43	NTU	Turbidity is a measure of particles in water.
Filter #2 Effluent Turbidity	Continuous	0.01 - 0.39	NTU	Turbidity is a measure of particles in water.
Fluoride (Treated Water)	365	0.20 - 0.73	mg/l	Added to prevent tooth decay

**Summary of Additional Testing and Sampling carried out in accordance with the requirements of the Certificate of Approval:**

Sample Location	Parameter	Number of Samples	Results Average	Unit of Measure	Parameter Description
Backwash Effluent	Total Suspended Solids	24	7	mg/l	A measure of the particles

**Summary of Raw Water Testing Analyzed by Accredited laboratories during this reporting period:**

Parameter	Number of Samples	Results Range	Unit of Measure	MAC Exceedance	Parameter Description
Organic Nitrogen	4	0.15 – 2.7	mg/l	no	Indicator of wastewater contaminants
Dissolved Organic Carbon	4	4.8 – 6.0	mg/l	no	Indicator of potential for chlorination by-product problems.
Total Organic Carbon	4	5.5 – 6.4	mg/l	no	Indicator of potential for chlorination by-product problems.
Benzo(a)pyrene	4	<0.005	µg/l	no	Formed from the incomplete burning of organic matter
Colour	4	18 – 27	TCU	no	Typically the result of organic matter in surface water
Ammonia (N) Total	1	0.01 – 0.04	mg/l	no	Occurs naturally from organic nitrogen containing compounds
Total Kjeldahl Nitrogen	1	0.19 – 0.27	mg/l	no	Indicator of organic contamination or the potential for taste and odour problems

**Summary of Treated Water Inorganic Parameters tested during this reporting period:**

Parameter	Number of Samples	Results Range	Unit of Measure	MAC Exceedance	Parameter Description
Alkalinity	4	30 – 48	mg/l	no	
Antimony	1	<0.0001	mg/l	no	Discharge from petroleum refineries, fire retardants
Arsenic	1	0.0004	mg/l	no	Naturally occurring in surface waters / min drainage
Barium	1	0.015	mg/l	no	Erosion of natural deposits. Discharge from metal refineries.
Boron	1	0.005	mg/l	no	Erosion of natural deposits, industrial waste effluents.
Cadmium	1	<0.00002	mg/l	no	Industrial discharge
Chromium	1	<0.002	mg/l	no	Industrial residues.
Hardness	4	30 – 51	mg/l	no	
Mercury	1	<0.00002	mg/l	no	Erosion of natural deposits, industrial discharges.

Nitrite	4	<0.1 - 1	mg/l	no	Present in water as a result of decay of plant or animal material.
Nitrate	4	0.1 – 0.2	mg/l	no	Present in water as a result of decay of plant or animal material.
Selenium	1	<0.0005	mg/l	no	Discharge from refineries, mines.
Sodium	1	7.9	mg/l	no	Occurs naturally
Uranium	1	<0.00005	mg/l	no	Erosion of natural deposits.

### Summary of Treated Water Organic Parameters tested during this reporting period:

Parameter	Number of Samples	Results Range	Unit of Measure	MAC Exceedance	Parameter Description
Alachlor	1	0.3	µg/l	No	Agricultural herbicide
Aldicarb	1	3	µg/l	No	Agricultural insecticide
Aldrin + Dieldrin	1	<0.02	µg/l	No	Residue from banned insecticide
Atrazine + N-dealkylated Metabolites	1	<0.5	µg/l	No	Agricultural herbicide
Azinphos-methyl	1	<1	µg/l	No	Insecticide
Bendiocarb	1	<3	µg/l	No	Insecticide
Benzene	1	<0.5	µg/l	No	Discharge from plastics manufacturing, leaking fuel tanks.
Benzo(a)pyrene	4	<0.005	µg/l	No	Formed from incomplete burning of organic matter.
Bromoxynil	1	<0.3	µg/l	No	Agricultural herbicide
Carbaryl	1	<3	µg/l	No	Agricultural, forestry and household insecticide
Carbofuran	1	<1	µg/l	No	Agricultural insecticide
Carbon Tetrachloride	1	<0.2	µg/l	No	Discharge from chemical and industrial activities.
Chlordane (Total)	1	<0.04	µg/l	No	Residue from banned insecticide
Chlorpyrifos	1	<0.5	µg/l	No	Agricultural household insecticide.
Cyanazine	1	<0.5	µg/l	No	Agricultural household insecticide.
Diazinon	1	<1	µg/l	No	
Dicamba	1	<5	µg/l	No	Agricultural herbicide
1,2-Dichlorobenzene	1	<0.1	µg/l	No	Discharge from chemical and industrial activities.
1,4-Dichlorobenzene	1	<0.2	µg/l	No	Discharge from chemical and industrial activities.
DDT + metabolites	1	<0.1	µg/l	No	Residue from banned insecticide

1,2-dichloroethane	1	<0.1	µg/l	No	Discharge from chemical and industrial activities.
1,1-Dichloroethylene	1	<0.1	µg/l	No	Discharge from chemical and industrial activities.
Dichloromethane	1	<0.3	µg/l	No	Discharge from pharmaceutical and chemical factories.
2,4-Dichlorophenol	1	<0.1	µg/l	No	Industrial contamination, reaction with chlorine.
Dichlorophenoxy acetic acid (2,4-D)	1	<5	µg/l	No	Agricultural, residential herbicide
Diclofop-methyl	1	<0.5	µg/l	No	Agricultural herbicide
Dimethoate	1	<1	µg/l	No	Agricultural, forestry and household insecticide
Dinoseb	1	<0.5	µg/l	No	Herbicide residue
Diquat	1	<5	µg/l	No	Agricultural herbicide
Diuron	1	<5	µg/l	No	Agricultural herbicide
Glyphosate	1	<25	µg/l	No	Agricultural, forestry and household insecticide
Heptachlor + Heptachlor Epoxide	1	<0.1	µg/l	No	Residue from banned insecticide
Lindane (Total)	1	<0.1	µg/l	No	Agricultural insecticide
Malathion	1	<5	µg/l	No	Fruit and vegetable pest control herbicide
Methoxychlor	1	<0.1	µg/l	No	Agricultural livestock and residential insecticide
Metolachlor	1	<3	µg/l	No	Agricultural herbicide
Metribuzin	1	<3	µg/l	No	Agricultural herbicide
Monochlorobenzene	1	<0.2	µg/l	No	Discharge from chemical and industrial activities.
Paraquat	1	<1	µg/l	No	Agricultural insecticide
Parathion	1	<3	µg/l	No	Agricultural insecticide
Pentachlorophenol	1	<0.1	µg/l	No	Pesticide or wood preservative residue
Phorate	1	<0.3	µg/l	No	Agricultural insecticide
Picloram	1	<5	µg/l	No	Industrial herbicide
Polychlorinated Biphenyls (PCB)	1	<0.05	µg/l	No	Residue from various industrial uses.
Prometryne	1	<0.1	µg/l	No	Agricultural herbicide
Simazine	1	<0.5	µg/l	No	Agricultural herbicide
Temephos	1	<10	µg/l	No	
Terbufos	1	<0.4	µg/l	No	Agricultural insecticide

Tetrachloroethylene (perchloroethylene)	1	<0.2	µg/l	No	Leaching from PVC pipes, discharge from factories, dry cleaners.
2,3,4,6-Tetrachlorophenol	1	<0.1	µg/l	No	Pesticide manufacturing
Total Trihalomethane (Treatment Plant)	4	100	µg/l	No	By-product of chlorination
Triallate	1	<10	µg/l	No	Agricultural herbicide
Trichloroethylene	1	<0.1	µg/l	No	Discharge from metal degreasing sites and dry cleaners
2,4,6-Trichlorophenol	1	<0.1	µg/l	No	Pesticide manufacturing
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)	1	<10	µg/l	No	Industrial herbicide residue
Trifluralin	1	<0.5	µg/l	No	Agricultural herbicide
Vinyl Chloride	1	<0.2	µg/l	No	Leaching from PVC pipes, discharge from plastics factories

**Summary of Additional Treated Water testing Analyzed by Accredited Laboratories during this reporting period:**

Parameter	Number of samples	Results Range	Unit of Measure	MAC Exceedance	Parameter Description
Alkalinity	4	30 - 48	Mg/l	no	Measure of the resistance of the water to the effects of acids.
Hardness	4	30 - 51	Mg/l	no	Naturally occurring dissolved calcium and magnesium.
Colour	4	1 – 6 (Treated)	Mg/l	No	Typically the result of organic matter in surface water

**Summary of Distribution System Water Testing Analyzed by Accredited laboratory during this reporting period:**

Parameter	Number of samples	Results Range	Unit of Measure	MAC Exceedance	Parameter Description
Chloroform	4	25.8 – 50.5	µg/l	No	By-product of chlorination
Bromodichloromethane	4	0.4 – 2.4	µg/l	No	By-product of chlorination
Dibromochloromethanes	4	<0.1	µg/l	No	By-product of chlorination
Bromoform	4	<0.1	µg/l	No	By-product of chlorination
Total Trihalomethanes	4	26.9 – 52.5	µg/l	No	By-product of chlorination
Lead	4	<0.02	µg/l	No	Internal corrosion of household plumbing.

**Conclusion:**

This report is available at the Arnprior Town Hall, and will be advertised in the local newspaper, as well as the Town's website. This report will also be presented to council for adoption, and forwarded to the Ontario Ministry of the Environment.

For inquiries regarding this report, please contact Mike Trumble at 623-4231 Ext. 246.

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