Ontario Drinking-Water Systems Regulation O. Reg. 170/03

ANNUAL REPORT

Drinking-Water System Number:	**220000978**
Drinking-Water System Name:	**Fort Frances Drinking Water System**
Drinking-Water System Owner:	Town of Fort Frances
Drinking-Water System Category:	Large Municipal Residential System
Period being reported:	January 01, 2020 to December 31, 2020

Complete if your Category is Large Municipal Residential or Small Municipal Residential

Does your Drinking-Water System serve more than 10,000 people? Yes [ ] No [x]

Is your annual report available to the public at no charge on a web site on the Internet? Yes [x] No [ ]

Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.

Water Treatment Plant
901 Colonization Road East
or
Public Works Department
900 Wright Avenue

Complete for all other Categories.

Number of Designated Facilities served:

Did you provide a copy of your annual report to all Designated Facilities you serve? Yes [ ] No [ ]

Number of Interested Authorities you report to:

Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? Yes [ ] No [ ]

Note: For the following tables below, additional rows or columns may be added or an appendix may be attached to the report

List all Drinking-Water Systems (if any), which receive all of their drinking water from your system:

Drinking Water System Name	Drinking Water System Number
Couchiching First Nation & Agency 1 Land between Fort Frances and Couchiching First Nation.	Unknown if designated as a Drinking Water System under Provincial Regulation 170/03.
Walleye Trailer Park	Within the Town of Fort Frances' System Number 220000978
Lakeview Trailer Park	Within the Town of Fort Frances' System Number 220000978
Friesen 5 - Apartment Units	Alberton Township – Private Supplied through Town of Fort Frances' System Number 220000978

Did you provide a copy of your annual report to all Drinking-Water System owners that are connected to you and to whom you provide all of its drinking water?

Yes [x] No [ ]

Indicate how you notified system users that your annual report is available, and is free of charge.

- **[x] Public access/notice via the web**
- **[x] Public access/notice via Government Office**
- **[ ] Public access/notice via a newspaper**
- **[ ] Public access/notice via Public Request**
- **[ ] Public access/notice via a Public Library**
- **[ ] Public access/notice via other method** _____

Describe your Drinking-Water System

INTAKE STRUCTURE:

Located approximately 190 metres southeast of the Water Treatment Plant.

INTAKE LINE:

600mm Polyethylene Pipe.

SCREEN CHAMBER:

Two stainless steel screens.

PUMPWELL:

Raw water enters pump well from screen chamber, gravity feed.

LOW LIFT PUMPS:

Three (3) vertical turbine low lift pumps each electrically driven. Two (2) by 30 hp motors with a rated capacity to deliver 100 L/s and one (1) variable speed drive (40 hp) capable of providing flows in the range of 40 to 150 L/s.

RAW WATER FLOW METERING SYSTEM:

This unit counts the litres of water as it passes through the unit.

IN LINE MIXER:

The mixer is equipped with four (4) chemical application injectors and the following chemicals can be added to the treatment process at this point:

1. Liquid Alum
2. Soda Ash
3. Carbon Slurry
4. Chlorine Solution (per-chlorination is practiced only under exceptional circumstances)

RAW WATER INFLUENT LINE:

This 450mm line carries the raw water to the clarifiers.

CLARIFIERS:

The raw water, after pre-treatment, enters primary mixing and reaction zone of each unit through the 450mm inlet pipe. Activated carbon, soda ash and polymer can be added to the process in this zone.

Recycled solids are drawn up into the bottom of the zone by the re-circulator impellor to be mixed with the incoming pre-treated water. The re-circulated solids provide additional particle surface area to absorb and entrap precipitates in the raw water. The solids settle to the bottom of the clarifier to form a sludge blanket. The pre-treated water then flows upward and into the effluent box.

FILTER INFLUENT FLUME:

Settled water from the effluent box is piped through two (2) 450 mm diameter pipes to the filter influent flume for distribution to the filters.

FILTERS:

Four (4) gravity filters are provided. Each filter consists of ecodyne filtration equipment installed within a square concrete tank. The dual-media gravity filters are to remove any particles in suspension that have carried over from the solids contact clarifiers.

The filter media on top of the underdrain system consists of a 500 mm thickness of anthracite over 400mm thickness of silica sand.

The filtered water then enters the chemical contact chamber.

CHEMICAL CONTACT CHAMBER:

This chamber is located between the two (2) reservoir storage cells and underneath the filters. Soda Ash solution, chlorine solution and hydrofluosilicic acid are added to the process in the chamber.

RESERVOIR CELLS:

Two (2) reservoir cells are provided, cell number 1 has capacity of approximately 2,565 m3 and cell number 2 has capacity of approximately 1,465 m3 (887,665 gallons).

TREATED WATER PUMP WELL:

The treated water pump well contains the filter backwash pump and high lift pumps; numbers 1, 2, and 3. It is located between the two reservoir cells.

HIGH LIFT PUMPS:

These four (4) units draw water from the treated water pump wells. They are of varying capacities and are controlled by the water tower level.

High Lift Pump Number 1: Rated to deliver 63.1 L/s. This pump is equipped with a variable speed drive 60 hp electric motor.

High Lift Pump Number 2: Rated to deliver 94.7 L/s. This pump is equipped with a 100 hp electric motor.

High Lift Pump Number 3: Rated to deliver 126.2 L/S. The pump is equipped with a 125 hp electric motor.

High Lift Pump Number 4: Rated to deliver 63.1 L/s. This pump is equipped with a variable speed drive 60 hp electric motor.

BACKWASH PUMP:

The backwash pump is used for back washing the filters. It draws water from the pump well. This unit is rated to deliver 300 L/s and is equipped with a 75 hp electric motor.

PLANT EFFLUENT DISCHARGE HEADER:

The plant effluent discharge header receives the flow from the high lift pumps and fire pump and directs it to the community's water distribution system.

There are two (2) analyzers - one for chlorine and one for fluoride which continually monitor the concentration of these two chemicals prior to entering the water distribution system.

EMERGENCY STANDBY GENERATOR:

The emergency standby generator is a 450kW unit capable of running all the operational needs of the treatment plant. It automatically comes on-line when there is a power outage and shuts down once the power is restored.

RATED CAPACITY OF THE PLANT:

Capacity: 17,000 m3/day or 3,744,493 gallons/day.

List all water treatment chemicals used over this reporting period

Poly Electrolyte (Coagulant Aid)	787.5 kgs.
Aluminum Sulphate (Main Coagulant)	67026.33 kgs.
Soda Ash (ph Adjustment)	69045.72 kgs.
Chlorine (Disinfection)	8474 kgs.
Fluoride (Dental Aid)	8331 kgs.

Were any significant expenses incurred to?

[x] Install required equipment
[ ] Repair required equipment
[x] Replace required equipment

Please provide a brief description and a breakdown of monetary expenses incurred

A) Water Main Replacement – Scott Street Between Colonization Road East and Reid Avenue (Contracted Works)

The removal and replacement of approximately 65m of existing 150 mm DI water main with new 150 mm PVC water main and 700m of existing 250mm DI water main with new 250mm PVC water main including services and appurtenances, Qty 6 hydrants, Qty 4 – 150mm valves and Qty 7 – 250mm valves – a cost of $703,539.88

B) Water Main Replacement – Colonization Road West Between Armstrong Place and East End of Riverview Cemetery (Contracted Works)

The removal and replacement of approximately 488m of existing 150 mm DI water main with new 150 mm PVC water main including services and appurtenances, Qty 4 hydrants and Qty 3 – 150mm valves – a cost of $487,226.90

C) Water Main Addition – Erin Crescent (Contracted Works)

The installation of approximately 340 metres of new 150 mm PVC water main including 27 new services and appurtenances, Qty 2 hydrants and Qty 1 – 150mm valves – a cost of $410,700.82

D) Water Distribution System – Replaced 7 Valves & 7 Hydrants (Contracted Works)

Valves: VAL312 (150mm); VAL057 (300mm); VAL115 (250mm); VAL124 (150mm); VAL384 (250mm); VAL393 (150mm); VAL111 (300mm)

Hydrants: HYD213; HYD141; HYD127; HYD110; HYD286; HYD276; HYD302

Cost: $148,149.49

D) Water Distribution System – Replaced 2 Valves & Removed 1 Valve (Town of Fort Frances Crew)

VAL433 (150mm) and VAL112 (300mm) replaced and removed VAL113 (250mm) from system.

Estimated Cost: $35,000

Provide details on the notices submitted in accordance with subsection 18(1) of the Safe Drinking-Water Act or section 16-4 of Schedule 16 of O.Reg.170/03 and reported to Spills Action Centre

Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
6/15/2020	Total Coliforms	Present	N/A	Campground opening. Resampled. No downstream sample available. DWA was already in place and remained in place until resample results returned with no adverse. Lifted DWA.	6/23/2020
7/21/2020	Total Coliforms	Present	N/A	New Scott St. watermain commissioning. Completed 2nd set of samples and added a third set of samples. 2nd and 3rd set had no adverse.	7/28/2020
9/9/2020	Total Coliforms	Present	N/A	Colonization Rd. West Construction cut and cap of main. DWA in place due to construction prior to adverse sample. Resample twice with no adverse. Lifted DWA.	9/29/2020
9/14/2020	Total Coliforms	Present	N/A	Colonization Rd. West Construction cut and cap of main. DWA in place due to construction prior to adverse sample. Resample twice with no adverse. Lifted DWA.	9/29/2020
12/7/2020	Total Coliforms	Present	N/A	Weekly distribution sample. Placed sample point on DWA. Resampled with no adverse. Lifted DWA.	12/16/2020

Microbiological testing done under the Schedule 10, 11 or 12 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 #)	Number of HPC Samples	Range of HPC Results (min #)-(max #)
Raw	53	E.C.: <1 - 14	1 - 291	N/A	N/A
Treated	55	0	0	53	0 – 44
Distribution	502	0	0	206	0 – 69

Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this Annual Report.

	Number of Grab Samples	Range of Results (min #)-(max #)
Turbidity	8760	0.01 to 0.59 NTU
Chlorine	8760	1.64 to 2.84 mg/L
Fluoride (If the DWS provides fluoridation)	8760	0.51 to 0.92 mg/L

NOTE: For continuous monitors use 8760 as the number of samples.

*NOTE: Record the unit of measure if it is **not** milligrams per litre.*

Summary of additional testing and sampling carried out in accordance with the requirement of an approval, order or other legal instrument.

Date of legal instrument issued	Parameter	Date Sampled	Result	Unit of Measure
June 01/07	Suspended Solids – Filter 3 (1st Cycle) (2nd Cycle) (3rd Cycle)	Mar 18/20	49.8 2.1 <2.0	mg/L mg/L mg/L
June 01/07	Suspended Solids – Filter 4 (1st Cycle) (2nd Cycle) (3rd Cycle)	June 23/20	34.9 <3.0 <3.0	mg/L mg/L mg/L
June 01/07	Suspended Solids – Filter 1 (1st Cycle) (2nd Cycle) (3rd Cycle)	Sep 22/20	21.2 3.0 <3.0	mg/L mg/L mg/L
June 01/07	Suspended Solids – Filter 1 (1st Cycle) (2nd Cycle) (3rd Cycle)	Dec 21/20	44.7 <3.0 <3.0	mg/L mg/L mg/L

Summary of Inorganic parameters tested during this reporting period or the most recent sample results

Parameter	Sample Date	Result Value	Unit of Measure	Standard (Max.)	Exceedance
Antimony	March 18, 2020	<0.6	µg/L	6	None
Arsenic	March 18, 2020	<1.0	µg/L	10	None
Barium	March 18, 2020	<10	µg/L	1000	None
Boron	March 18, 2020	<50	µg/L	5000	None
Cadmium	March 18, 2020	<0.10	µg/L	5	None
Chromium	March 18, 2020	<1.0	µg/L	50	None
***Lead**			µg/L	10	None
Mercury	March 18, 2020	<0.10	µg/L	1	None
Selenium	March 18, 2020	<1.0	µg/L	50	None
Sodium	March 18, 2020	18.2	mg/L	20	None
Uranium	March 18, 2020	<2.0	µg/L	20	None
Fluoride	November 23, 2020	0.76	mg/L	1.5	None
Nitrite	December 21, 2020	<0.010	mg/L	1.0	None
Nitrate	December 21, 2020	0.020	mg/L	10.0	None

See Note On Next Page

*only for drinking water systems testing under Schedule 15.2; this includes large municipal non-residential systems, small municipal non-residential systems, non-municipal seasonal residential systems, large non-municipal non-residential systems, and small non-municipal non-residential systems

Summary of lead testing under Schedule 15.1 during this reporting period

(applicable to the following drinking water systems; large municipal residential systems, small municipal residential systems, and non-municipal year-round residential systems)

Location Type	Number of Samples	Range of Lead Results (min#) – (max #)	Number of Exceedances
*Plumbing	8 (2 samples each at 4 locations)	<1.0	0
*Distribution	4	<1.0 – 6.6	0

Summary of Organic parameters sampled during this reporting period or the most recent sample results

ANALYTE	Sample Date	Result	Units	Detectable Limit	Standard (Max)	Exceedance
1,1-dichloroethylene (vinylidene chloride)	3/18/2020	<0.50	ug/L	0.5	14	None
1,2-Dichlorobenzene	3/18/2020	<0.50	ug/L	0.5	200	None
1,2-Dichloroethane	3/18/2020	<0.50	ug/L	0.5	5	None
1,4-Dichlorobenzene	3/18/2020	<0.50	ug/L	0.5	5	None
2,3,4,6-Tetrachlorophenol	3/18/2020	<0.50	ug/L	0.5	100	None
2,4,6-Trichlorophenol	3/18/2020	<0.50	ug/L	0.5	5	None
2,4-Dichlorophenol	3/18/2020	<0.30	ug/L	0.3	900	None
Alachlor	3/18/2020	<0.10	ug/L	0.1	5	None
Atrazine + N-dealkylated metabolites	3/18/2020	<0.20	ug/L	0.2	5	None
Azinphos-methyl	3/18/2020	<0.10	ug/L	0.1	20	None
Benzene	3/18/2020	<0.50	ug/L	0.5	1	None
Benzo(a)pyrene	3/18/2020	<0.0050	ug/L	0.005	0.01	None
Bromoxynil	3/18/2020	<0.20	ug/L	0.2	5	None
Carbaryl	3/18/2020	<0.20	ug/L	0.2	90	None
Carbofuran	3/18/2020	<0.20	ug/L	0.2	90	None
Carbon tetrachloride	3/18/2020	<0.20	ug/L	0.2	2	None
Chlorpyrifos	3/18/2020	<0.10	ug/L	0.1	90	None
Diazinon	3/18/2020	<0.10	ug/L	0.1	20	None
Dicamba	3/18/2020	<0.20	ug/L	0.2	120	None
Dichloromethane	3/18/2020	<5.0	ug/L	5	50	None
Diclofop-methyl	3/18/2020	<0.20	ug/L	0.2	9	None
Dimethoate	3/18/2020	<0.10	ug/L	0.1	20	None
Diquat	3/18/2020	<1.0	ug/L	1	70	None
Diuron	3/18/2020	<1.0	ug/L	1	150	None
Ethylbenzene	3/18/2020	<0.50	ug/L	0.5	140	None
Glyphosate	3/18/2020	<5.0	ug/L	5	280	None
Malathion	3/18/2020	<0.10	ug/L	0.1	190	None

ANALYTE	Sample Date	Result	Units	Detectable Limit	Standard (Max)	Exceedance
Metolachlor	3/18/2020	<0.10	ug/L	0.1	50	None
Metribuzin	3/18/2020	<0.10	ug/L	0.1	80	None
Monochlorobenzene	3/18/2020	<0.50	ug/L	0.5	80	None
Paraquat	3/18/2020	<1.0	ug/L	1	10	None
Phorate	3/18/2020	<0.10	ug/L	0.1	2	None
Picloram	3/18/2020	<0.20	ug/L	0.2	190	None
Prometryne	3/18/2020	<0.10	ug/L	0.1	1	None
Simazine	3/18/2020	<0.10	ug/L	0.1	10	None
Terbufos	3/18/2020	<0.20	ug/L	0.2	1	None
Tetrachloroethylene (perchloroethylene)	3/18/2020	<0.50	ug/L	0.5	10	None
Toluene	3/18/2020	<0.50	ug/L	0.5	60	None
Total PCBs	3/18/2020	<0.035	ug/L	0.035	3	None
Triallate	3/18/2020	<0.10	ug/L	0.1	230	None
Trichloroethylene	3/18/2020	<0.50	ug/L	0.5	5	None
Trifluralin	3/18/2020	<0.10	ug/L	0.1	45	None
Vinyl chloride	3/18/2020	<0.20	ug/L	0.2	1	None
Xylenes (Total)	3/18/2020	<1.5	ug/L	1.5	90	None
Haloacetic acids (2020 Average) (HAA)	12/21/2020	70.3	ug/L	5.4	80	None
Trihalomethanes (2020 Average) (THM)	12/21/2020	92	ug/L	4.0	100	None

List any Inorganic or Organic parameter(s) that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards.

Parameter	Result Value	Unit of Measure	Date of Sample
Sodium	18.2 (STD. – 20)	mg/L	March 18, 2020
HAA	70.3 (STD – 80)	µg/L	December 21, 2020
THM	92 (STD – 100)	µg/L	December 21, 2020
Fluoride	0.76 (STD – 1.5)	Mg/L	November 23, 2020