

CITY OF HAMILTON
FREELTON DRINKING WATER SYSTEM (DWS)
WATER QUALITY ANNUAL REPORT

2018

Ontario Regulation 170/03 Section 11

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Drinking Water System Number	Drinking Water System Name	Drinking Water System Owner	Drinking Water System Category	Period Being Reported
220004117	Freelton Drinking Water System FDF01, FDF03	City of Hamilton	Large Municipal Residential	January 1, 2018 to December 31, 2018

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

Is your annual report available to the public at no charge on a website on the Internet? www.hamilton.ca/waterquality ☒ YES NO

Location where Summary Report required under Ontario Regulation 170/03 Schedule 22 will be available for inspection: 700 Woodward Administration Building, Compliance Support Group

Complete for all other Categories

Number of Designated Facilities served: N/A

Did you provide a copy of your annual report to all Designated Facilities you serve? N/A

Number of Interested Authorities you report to: N/A

Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? N/A





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
None other than Freelon System	220004117



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

NO

NOT APPLICABLE



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

System users are notified through the local newspaper that the annual report is available online free of charge at www.hamilton.ca/waterquality.



An aerial photograph of a tall, cylindrical concrete water tower with a flat top, situated on a grassy hill. The background shows a dense forest of trees. A blue horizontal bar is at the top of the page, containing the title.

FREELTON DWS

The Freelton water supply system consists of two wells, one elevated water storage tank, treatment, sampling and analysis which services a population of approximately 790 people. The water source for the community of Freelton is ground water.

Water Wells:

- Freelton Well FDF01 is a 250mm diameter, approximately 21-metre-deep drilled ground water well.
- Freelton Well FDF03 is a 300mm diameter, approximately 50-metre-deep drilled ground water well.

Treatment:

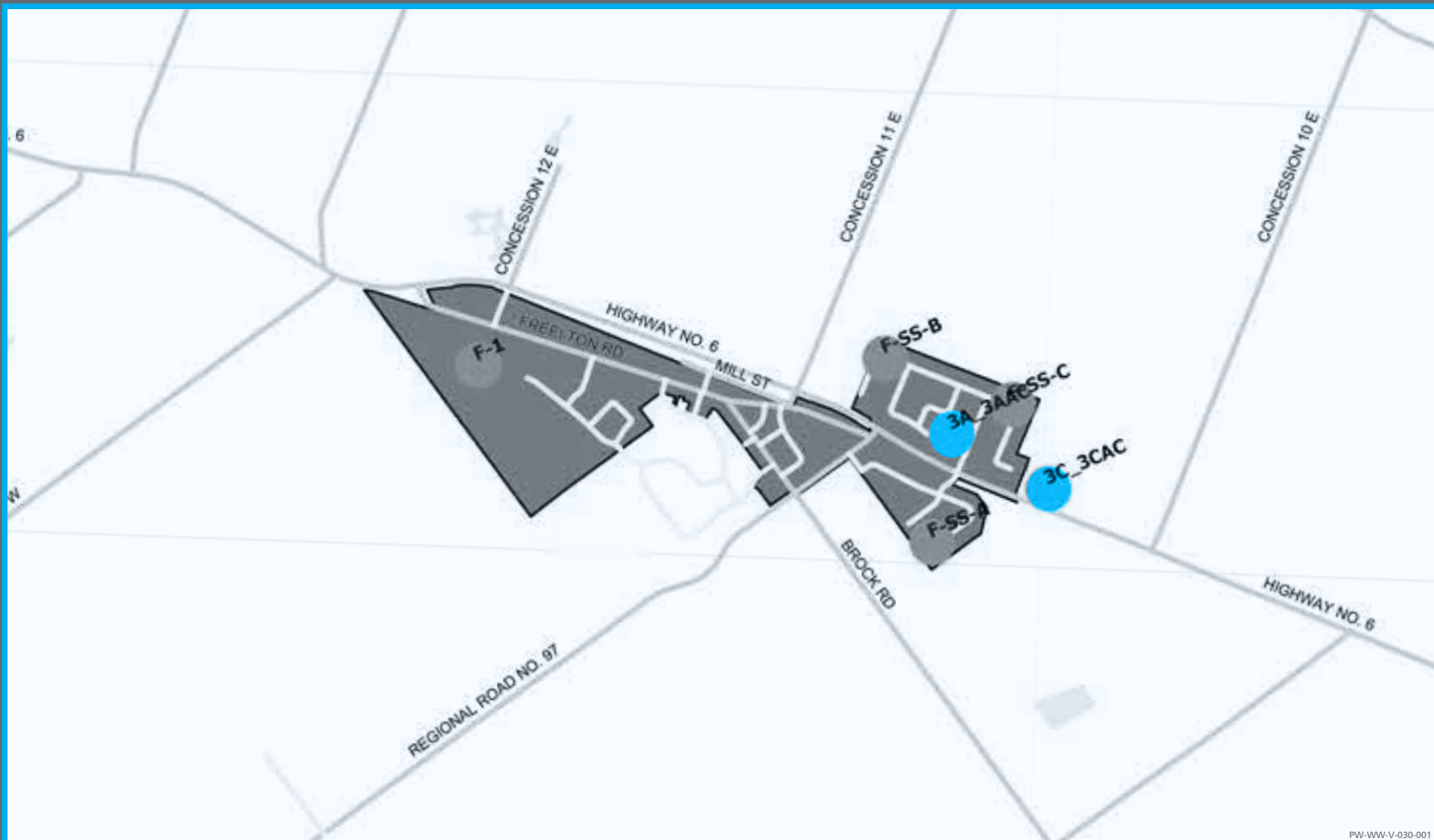
- Sodium hypochlorite (chlorine) is used for disinfection within a chlorine contact chamber to ensure disinfection of the water prior to entering the distribution system.
- Fluoridation is not carried out at any of the Freelton community wells.

Water Storage:

An elevated water storage tank with an operating capacity of 2,840m³ is available for peak hour water demand equalization as well as fire and emergency storage.

Sampling & Analysis:

All wells are equipped with on-line chlorine residual analyzers and turbidity analyzers that continually monitor the treated water quality. Raw, treated and distribution water is sampled and analyzed weekly. In addition, chlorine residual in the distribution system is analyzed daily.



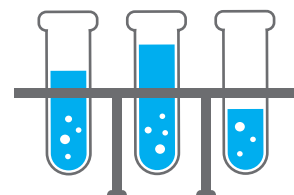
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FREELTON DRINKING WATER SYSTEM



List all water treatment chemicals used over this reporting period:

→ Sodium Hypochlorite



Were any significant expenses incurred to:

Install required equipment	YES	<input checked="" type="checkbox"/> NO
Repair required equipment	<input checked="" type="checkbox"/> YES	NO
Replace required equipment	<input checked="" type="checkbox"/> YES	NO

2018 FREELTON DRINKING WATER SYSTEM HIGHLIGHTS

Freelton Water Tower Upgrades \$1,580,000

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.

Notification Date (m-d-y)	Location of Adverse	Adverse Water Quality Incident	Resolution
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We are pleased to announce that there were no Adverse Water Quality Incidents for the period of January to December 2018.



Microbiological testing done under Schedule 10, 11, 12 and 17, 18 of Regulation 170/03, during this reporting period.

SAMPLE TYPE	NUMBER OF SAMPLES	RANGE OF E.COLI RESULTS (MIN #)-(MAX #) CFU/100ML	RANGE OF TOTAL COLIFORM RESULTS (MIN #)-(MAX #) CFU/100ML	NUMBER OF HPC SAMPLES	RANGE OF HPC RESULTS (MIN #)-(MAX #) CFU/1ML
RAW - FDF01	53	0	0	N/A	N/A
RAW - FDF03	52	0	0	N/A	N/A
TREATED - FDF01	53	0	0	53	0 to 3
TREATED - FDF03	52	0	0	52	0 to 1
DISTRIBUTION	200	0	0	200	0 to 3

N/A — Not Applicable

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

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

PARAMETER - SAMPLE TYPE	NUMBER OF GRAB SAMPLES	RANGE OF RESULTS (MIN #)-(MAX #)	UNIT OF MEASURE
TURBIDITY - RAW - FDF01	53	0.07 to 0.28	NTU
TURBIDITY - RAW - FDF03	52	0.07 to 0.75	NTU
FREE CHLORINE - TREATED - FDF01	8,760	1.25 to 2.81	mg/L
FREE CHLORINE - TREATED - FDF03	8,760	1.20 to 2.59	mg/L
FREE CHLORINE - DISTRIBUTION	365	1.09 to 2.33	mg/L

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

PARAMETER	SAMPLE DATE	RESULT VALUE	UNIT OF MEASURE
N/A	-	-	-

Summary of Inorganic parameters required by Regulation 170/03 and tested during this reporting period.

PARAMETER	SAMPLE DATE	RESULT VALUE	UNIT OF MEASURE	NO. OF AWQIs
FREELTON WELL FDF01 - TREATED				
ANTIMONY	2018-05-15 to 2018-10-16	<0.0001	mg/L	0
ARSENIC	2018-05-15 to 2018-10-16	<0.0001 to 0.0001	mg/L	0
BARIUM	2018-05-15 to 2018-10-16	0.0655 to 0.0690	mg/L	0
BORON	2018-05-15 to 2018-10-16	0.018 to 0.022	mg/L	0
CADMIUM	2018-05-15 to 2018-10-16	<0.0001	mg/L	0
CHROMIUM	2018-05-15 to 2018-10-16	<0.0001	mg/L	0
FLUORIDE	2018-05-15 to 2018-10-16	0.08 to 0.09	mg/L	0
MERCURY	2018-05-15 to 2018-10-16	<0.00005	mg/L	0
NITRATE AS N	2018-01-22 to 2018-10-16	1.50 to 2.11	mg/L	0
NITRITE AS N	2018-01-22 to 2018-10-16	<0.01	mg/L	0
SELENIUM	2018-05-15 to 2018-10-16	0.0002 to 0.0003	mg/L	0
SODIUM	2018-05-15 to 2018-10-16	50.2 to 53.3	mg/L	0
URANIUM	2018-05-15 to 2018-10-16	0.275 to 0.278	ug/L	0
FREELTON WELL FDF03 - TREATED				
ANTIMONY	2018-05-15 to 2018-10-16	<0.0001	mg/L	0
ARSENIC	2018-05-15 to 2018-10-16	0.0003 to 0.0008	mg/L	0
BARIUM	2018-05-15 to 2018-10-16	0.0679 to 0.0689	mg/L	0
BORON	2018-05-15 to 2018-10-16	0.014 to 0.017	mg/L	0
CADMIUM	2018-05-15 to 2018-10-16	<0.0001	mg/L	0
CHROMIUM	2018-05-15 to 2018-10-16	<0.0001	mg/L	0
FLUORIDE	2018-05-15 to 2018-10-16	0.14 to 0.18	mg/L	0
MERCURY	2018-05-15 to 2018-10-16	<0.00005	mg/L	0
NITRATE AS N	2018-01-22 to 2018-10-16	<0.01 to 0.65	mg/L	0
NITRITE AS N	2018-01-22 to 2018-10-16	<0.01	mg/L	0
SELENIUM	2018-05-15 to 2018-10-16	<0.0001	mg/L	0
SODIUM	2018-05-15 to 2018-10-16	34.7 to 36.5	mg/L	0
URANIUM	2018-05-15 to 2018-10-16	0.268 to 0.275	ug/L	0

Summary of lead testing under Schedule 15.1 during this reporting period.

LOCATION TYPE	NO. OF SAMPLES REQUIRED	NO. OF SAMPLES TAKEN	RANGE OF pH RESULTS (min #) – (max #) pH Units	RANGE OF ALKALINITY RESULTS (min #) – (max #) mg/L	RANGE OF LEAD RESULTS (min #) – (max #) mg/L	NO. OF LEAD AWQIs	NO. OF LEAD EXCEEDANCES
PLUMBING-NR	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PLUMBING-R	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DISTRIBUTION	4	4	7.56 to 7.87	276 to 295	N/A	N/A	N/A

NR - Non Residential R - Residential



Summary of Organic parameters required by Regulation 170/03 and tested during this reporting period.

PARAMETER	SAMPLE DATE	RESULT VALUE	UNIT OF MEASURE	NO. OF AWQIs
FREELTON WELL FDF01 - TREATED				
1,1-DICHLOROETHYLENE	2018-05-15 to 2018-10-16	<0.2	ug/L	0
1,2-DICHLOROBENZENE	2018-05-15 to 2018-10-16	<0.2	ug/L	0
1,2-DICHLOROETHANE	2018-05-15 to 2018-10-16	<0.2	ug/L	0
1,4-DICHLOROBENZENE	2018-05-15 to 2018-10-16	<0.2	ug/L	0
BENZENE	2018-05-15 to 2018-10-16	<0.2	ug/L	0
CARBON TETRACHLORIDE	2018-05-15 to 2018-10-16	<0.2	ug/L	0
CHLOROBENZENE	2018-05-15 to 2018-10-16	<0.3	ug/L	0
DICHLOROMETHANE	2018-05-15 to 2018-10-16	<0.5	ug/L	0
ETHYLBENZENE	2018-05-15 to 2018-10-16	<0.2	ug/L	0
TETRACHLOROETHYLENE	2018-05-15 to 2018-10-16	<0.2	ug/L	0
TOLUENE	2018-05-15 to 2018-10-16	<0.2	ug/L	0
TRICHLOROETHYLENE	2018-05-15 to 2018-10-16	<0.2	ug/L	0
VINYL CHLORIDE	2018-05-15 to 2018-10-16	<0.2	ug/L	0
XYLENE	2018-05-15 to 2018-10-16	<0.3	ug/L	0
2,3,4,6-TETRACHLOROPHENOL	2018-05-15	<0.2	ug/L	0
2,4,6-TRICHLOROPHENOL	2018-05-15	<0.25	ug/L	0
2,4-DICHLOROPHENOXY ACETIC ACID (2,4-D)	2018-05-15	<0.19	ug/L	0
2,4-DICHLOROPHENOL	2018-05-15	<0.15	ug/L	0
ALACHLOR	2018-05-15	<0.02	ug/L	0
ATRAZINE + DESETHYL-ATRAZINE METABOLITES	2018-05-15	<0.01	ug/L	0
AZINPHOS-METHYL	2018-05-15	<0.05	ug/L	0
BENZO[A]PYRENE	2018-05-15	<0.004	ug/L	0
BROMOXYNIL	2018-05-15	<0.33	ug/L	0
CARBARYL	2018-05-15	<0.05	ug/L	0
CARBOFURAN	2018-05-15	<0.01	ug/L	0

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Summary of Organic parameters required by Regulation 170/03 and tested during this reporting period. (continued)...

PARAMETER	SAMPLE DATE	RESULT VALUE	UNIT OF MEASURE	NO. OF AWQIs
CHLORPYRIFOS	2018-05-15	<0.02	ug/L	0
DIAZINON	2018-05-15	<0.02	ug/L	0
DICAMBA	2018-05-15	<0.20	ug/L	0
DICLOFOP-METHYL	2018-05-15	<0.40	ug/L	0
DIMETHOATE	2018-05-15	<0.03	ug/L	0
DIQUAT	2018-05-15	<1	ug/L	0
DIURON	2018-05-15	<0.03	ug/L	0
GLYPHOSATE	2018-05-15	<1	ug/L	0
MALATHION	2018-05-15	<0.02	ug/L	0
MCPA (2-METHYL-4-CHLOROPHENOXYACETIC ACID)	2018-05-15	<0.00012	mg/L	0
METOLACHLOR	2018-05-15	<0.01	ug/L	0
METRIBUZIN (SENCOR)	2018-05-15	<0.02	ug/L	0
PARAQUAT	2018-05-15	<1	ug/L	0
POLYCHLORINATED BIPHENYLS (PCB)	2018-05-15	<0.05	ug/L	0
PENTACHLOROPHENOL	2018-05-15	<0.15	ug/L	0
PHORATE	2018-05-15	<0.01	ug/L	0
PICLORAM	2018-05-15	<1	ug/L	0
PROMETRYNE	2018-05-15	<0.03	ug/L	0
SIMAZINE	2018-05-15	<0.01	ug/L	0
TERBUFOS	2018-05-15	<0.01	ug/L	0
TRIALATE	2018-05-15	<0.01	ug/L	0
TRIFLURALIN	2018-05-15	<0.02	ug/L	0

FREELTON WELL FDF03 - TREATED

1,1-DICHLOROETHYLENE	2018-05-15 to 2018-10-16	<0.2	ug/L	0
1,2-DICHLOROBENZENE	2018-05-15 to 2018-10-16	<0.2	ug/L	0
1,2-DICHLOROETHANE	2018-05-15 to 2018-10-16	<0.2	ug/L	0
1,4-DICHLOROBENZENE	2018-05-15 to 2018-10-16	<0.2	ug/L	0
BENZENE	2018-05-15 to 2018-10-16	<0.2	ug/L	0
CARBON TETRACHLORIDE	2018-05-15 to 2018-10-16	<0.2	ug/L	0
CHLOROBENZENE	2018-05-15 to 2018-10-16	<0.3	ug/L	0

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Summary of Organic parameters required by Regulation 170/03 and tested during this reporting period. (continued)...

PARAMETER	SAMPLE DATE	RESULT VALUE	UNIT OF MEASURE	NO. OF AWQIs
DICHLOROMETHANE	2018-05-15 to 2018-10-16	<0.5	ug/L	0
ETHYLBENZENE	2018-05-15 to 2018-10-16	<0.2	ug/L	0
TETRACHLOROETHYLENE	2018-05-15 to 2018-10-16	<0.2	ug/L	0
TOLUENE	2018-05-15 to 2018-10-16	<0.2	ug/L	0
TRICHLOROETHYLENE	2018-05-15 to 2018-10-16	<0.2	ug/L	0
VINYL CHLORIDE	2018-05-15 to 2018-10-16	<0.2	ug/L	0
XYLENE	2018-05-15 to 2018-10-16	<0.3	ug/L	0
2,3,4,6-TETRACHLOROPHENOL	2018-05-15	<0.2	ug/L	0
2,4,6-TRICHLOROPHENOL	2018-05-15	<0.25	ug/L	0
2,4-DICHLOROPHENOXY ACETIC ACID (2,4-D)	2018-05-15	<0.19	ug/L	0
2,4-DICHLOROPHENOL	2018-05-15	<0.15	ug/L	0
ALACHLOR	2018-05-15	<0.02	ug/L	0
ATRAZINE + DESETHYL-ATRAZINE METABOLITES	2018-05-15	<0.01	ug/L	0
AZINPHOS-METHYL	2018-05-15	<0.05	ug/L	0
BENZO[A]PYRENE	2018-05-15	<0.004	ug/L	0
BROMOXYNIL	2018-05-15	<0.33	ug/L	0
CARBARYL	2018-05-15	<0.05	ug/L	0
CARBOFURAN	2018-05-15	<0.01	ug/L	0
CHLORPYRIFOS	2018-05-15	<0.02	ug/L	0
DIAZINON	2018-05-15	<0.02	ug/L	0
DICAMBA	2018-05-15	<0.20	ug/L	0
DICLOFOP-METHYL	2018-05-15	<0.40	ug/L	0
DIMETHOATE	2018-05-15	<0.03	ug/L	0
DIQUAT	2018-05-15	<1	ug/L	0
DIURON	2018-05-15	<0.03	ug/L	0
GLYPHOSATE	2018-05-15	<1	ug/L	0
MALATHION	2018-05-15	<0.02	ug/L	0
MCPA (2-METHYL-4-CHLOROPHENOXYACETIC ACID)	2018-05-15	<0.00012	mg/L	0
METOLACHLOR	2018-05-15	<0.01	ug/L	0
METRIBUZIN (SENCOR)	2018-05-15	<0.02	ug/L	0

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Summary of Organic parameters required by Regulation 170/03 and tested during this reporting period. (continued)...

PARAMETER	SAMPLE DATE	RESULT VALUE	UNIT OF MEASURE	NO. OF AWQIs
PARAQUAT	2018-05-15	<1	ug/L	0
POLYCHLORINATED BIPHENYLS (PCB)	2018-05-15	<0.05	ug/L	0
PENTACHLOROPHENOL	2018-05-15	<0.15	ug/L	0
PHORATE	2018-05-15	<0.01	ug/L	0
PICLORAM	2018-05-15	<1	ug/L	0
PROMETRYNE	2018-05-15	<0.03	ug/L	0
SIMAZINE	2018-05-15	<0.01	ug/L	0
TERBUFOS	2018-05-15	<0.01	ug/L	0
TRIALATE	2018-05-15	<0.01	ug/L	0
TRIFLURALIN	2018-05-15	<0.02	ug/L	0

DISTRIBUTION

TOTAL TRIHALOMETHANES*	Running annual average for the last four quarters	11.1	ug/L	0
HALOACETIC ACIDS	2018-01-22 to 2018-10-16	<5.3	ug/L	N/A

* The Maximum Acceptable Concentration for Trihalomethanes in the distribution is based on a running average of the results from all sampling events in the past four quarters. This running average can be found in the result value column.

List any Inorganic or Organic parameter(s) that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards (O.Reg. 169/03).

PARAMETER	SAMPLE DATE	RESULT VALUE	UNIT OF MEASURE
N/A	-	-	-

(Only if DWS category is large municipal residential, small municipal residential, large municipal non residential, non municipal year round residential, large non municipal non residential)

DEFINITIONS:

AWQI: Adverse Water Quality Incident
mg/L: milligrams per litre
ug/L: micrograms per litre

CFU: Colony Forming Unit
mL: millilitre

HPC: Heterotrophic Plate Count
N/A: Not Applicable

