

TOWN OF SMITHS FALLS



SMITHS FALLS

RISE AT THE FALLS



SMITHS FALLS DRINKING WATER SYSTEM

2017 ANNUAL REPORT
Revision 1

Smiths Falls Drinking Water System
2017 Annual Report R1

Drinking-Water System Number:	220001307
Drinking-Water System Name:	Smiths Falls Drinking Water System
Drinking-Water System Owner:	Corporation of the Town of Smiths Falls
Drinking-Water System Category:	Large Municipal Drinking Water System
Period being reported:	January 1 st to December 31 st , 2017

<p><u>Complete if your Category is Large Municipal Residential or Small Municipal Residential</u></p> <p>Does your Drinking-Water System serve more than 10,000 people? Yes [] No [<input checked="" type="checkbox"/>]</p> <p>Is your annual report available to the public at no charge on a web site on the Internet? Yes [<input checked="" type="checkbox"/>] No []</p> <p>Location where Annual Report required under O. Reg. 170/03 Schedule 11 will be available to the public.</p> <p>www.smithsfalls.ca</p> <p>Smiths Falls Town Hall Complex 77 Beckwith St. N Smiths Falls, ON K7A 4T6</p>	<p><u>Complete for all other Categories.</u></p> <p>Number of Designated Facilities served: N/A</p> <p>Did you provide a copy of your annual report to all Designated Facilities you serve? N/A</p> <p>Number of Interested Authorities you report to: N/A</p> <p>Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? N/A</p>
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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
Atironto Subdivision – Montague Township	260006828

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 []

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

[] Public access/notice via the web

[] Public access/notice via a newspaper

Smiths Falls Drinking Water System 2017 Annual Report R1

Describe your Drinking-Water System

The Smiths Falls Drinking Water System is comprised of the Water Treatment Plant (WTP) and Distribution system which together provides a supply of potable water to the residents and businesses of the Town of Smiths Falls.

The WTP is a Class IV high rate dissolved air floatation (AquaDAF ®) surface water plant having an approved design capacity of 14,000 m³/d with a future expansion to 18,000 m³/d. Raw water for the treatment process is drawn from the Rideau River (surface water). The intake structure is located upstream of the WTP approximately 170m. The intake consists of a concrete structure and a 762 millimeter diameter concrete pipe connecting the intake to the diversion chamber where the raw water is directed into the WTP.

Low lift pumps pump water to the AquaDAF ® which is a high rate dissolved air floatation clarifier. Here a coagulant & polymer are mixed together to aid in particle removal. Dissolved air will float these particles to form a blanket of sludge which is discharged to the collection system.

Clarified water flows to 3 dual granular activate carbon (GAC) & sand filters where further particle removal will take place.

Process involved include: UV disinfection; chlorination with chlorine gas; corrosion control; fluoridation; residue management and de-chlorination.

The Distribution system is a Class I subsystem, consisting of 62.23 kilometers (km) of mains, 1096 valves, 332 hydrants and 3010 house services. With a 49.2 meter (m) high water tower that contains 945.75 cubic meters (m³) of storage.

List all water treatment chemicals used over this reporting period

CHEMICAL NAME	USE	SUPPLIER
PAS-8	Coagulant	Kemira
Magnafloc LT22s	Polymer	Northland Chemical
Chlorine Gas	Disinfection	Brenntag
Sodium Hydroxide	Corrosion Control	CCC Chemicals
Fluorosilicic Acid	Fluoride	ControlChem
Calcium Thiosulfate	De-chlorination	Clartech

Were any significant expenses incurred to?

- Install required equipment
- Repair required equipment
- Replace required equipment

Smiths Falls Drinking Water System 2017 Annual Report R1

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

- Transformer & transfer switch inspection at WTP - \$9,469.40
- Infrared thermal scan of control panels and transformer at WTP - \$1,952.64
- SCADA system upgrade at WTP - \$100,860
- Granular activated carbon change out at WTP - \$207,851
- Elevated water tower repairs - \$5,610.45
- Lorne St. watermain replacement of 455m of 200mm ductile iron from Queen St. to railway crossing - \$407,467
- Water Tower EA – engineering underway by J.L Richards (includes calibration and updates to hydraulic model of Distribution network - \$46,597.41
- Catherine St. – engineering underway by Ainley Group (future reconstruction of 2 residential blocks future watermain replacements \$26,930.45

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
Jan. 5, 2017 AWQI #132162	Filter turbidity	1.00	mg/L	Maintenance being performed on polymer system which caused a process upset with the AquaDAF. Floc carryover to the filters causing the filter effluent turbidity to go above 1 NTU. Polymer system back online, filters backwashed, bacti samples collected	January 7, 2017, resolution notification January 12, 2017
Jul. 31, 2017 AWQI #134818	Low free chlorine FAC (plumbing)	<0.05	mg/L	Low FAC at plumbing, Distribution system FAC was checked, Allen/Ross hydrant FAC = 0.75mg/L, Allen/Marguerite hydrant FAC = 0.72mg/L	July 31, 2017, resolution notification Aug. 1, 2017
Aug. 1, 2017 AWQI #134846	Total coliform	1	count/100 mL	Jul 31, 2017 Giles/Centre bacti sample collected at 09:25 had total coliform of 1 count/100mL, free chlorine at time of sampling was 0.29 mg/L, 3 re-samples collected and results were 0 for total coliform	Aug. 4, 2017, resolution notification Aug. 4, 2017

Microbiological testing completed under Schedule 10, 11 or 12 of Regulation 170/03 during this reporting period.

	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/100mL)
Raw	52	1 - 60	20 – 3,740	N/A	N/A
Treated	54	0 – 0	0 - 0	54	<10 - >2,000
<u>Distribution</u> - Routine	324	0 – 0	0 - 1	324	<10 - >2,000
<u>Distribution</u> Water main Repairs/new installations/service repairs	28 (non-regulatory)	0 – 0	0 – 0	28	<10 – 120

Smiths Falls Drinking Water System
2017 Annual Report R1

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

Parameter Tested - (Online Analyzers)	Number of Grab Samples	Range of Results		
		Minimum	Average	Maximum
Turbidity - Raw Water (NTU) AIT 102	Continuous Monitoring ¹	0.250	1.264	50.00
Turbidity - Raw Water (NTU)	364 (bench test)	0.294	1.091	9.51
Turbidity - Filter #1 (NTU) AIT 111	Continuous Monitoring ²	0.000	0.035	5.00
Turbidity - Filter #1 (NTU)	57 (bench test)	0.034	0.109	0.274
Turbidity – Filter #2 (NTU) AIT 121	Continuous Monitoring ²	0.000	0.034	5.00
Turbidity – Filter #2 (NTU)	56 (bench test)	0.060	0.113	0.264
Turbidity – Filter #3 (NTU) AIT 131	Continuous Monitoring ²	0.000	0.045	5.00
Turbidity – Filter #3 (NTU)	55 (bench test)	0.036	0.103	0.297
Turbidity – Finished Water (NTU) AIT 184	Continuous Monitoring ³	0.000	0.053	5.00
Turbidity – Finished Water (NTU)	249 (bench test)	0.041	0.116	2.10
Chlorine Total – Zebra Mussel (operation May to October mg/L) AIT 103	Continuous Monitoring ⁷ Total Chlorine	0.000	0.029	5.00
Chlorine Total – Zebra Mussel (operation May to October mg/L)	156 (bench test) ⁸	0.02	0.12	0.23
Chlorine Free – Pre Reservoir (mg/L) AIT 165	Continuous Monitoring ⁵ Free Chlorine	0.00	1.85	4.74
Chlorine Free – Pre Reservoir (mg/L)	57 (bench test)	0.70	1.69	2.43
Chlorine Free – Post Reservoir (mg/L) AIT 180	Continuous Monitoring ⁵ Free Chlorine	0.00	1.24	5.00
Chlorine Free – Post Reservoir (mg/L)	57 (bench test)	0.40	1.23	1.74
Chlorine Free – Finished Water (mg/L) AIT 185	Continuous Monitoring ⁵ Free Chlorine	0.00	1.54	3.40
Chlorine Free – Finished Water (mg/L)	253 (bench test)	0.68	1.50	2.31
Chlorine Total – Finished Water (mg/L) AIT 186	Continuous Monitoring ⁶ Total Chlorine	0.00	1.80	5.00
Chlorine Total – Finished Water (mg/L)	253 (bench test)	1.21	1.81	2.72
Chlorine – Distribution System (180 Queen St WPCP mg/L)	188 (bench test)	0.16	0.70	1.75
Fluoride – Finished Water (mg/L) AIT 187	Continuous Monitoring ⁴	0.00	0.59	2.00
Fluoride – Finished Water (mg/L)	307 (bench test)	0.05	0.53	1.25
UV Transmittance (%) AIT 160	Continuous Monitoring ⁹	70.0	92.09	100.0
UV Transmittance (%)	241 (bench test)	80.2	88.78	101.4

Notes for above table operational testing completed under Schedule 7, 8 or 9:

1. High raw water turbidity spikes occur when the low lift pumps (LLP) starts and stop, maintenance, calibration and flushing of lines.
2. High filter turbidities results of filter backwash, process upset or calibration.
3. High finished water turbidities results of high lift pumps (HLP) starting or calibration.
4. High fluoride readings occur on HLP starts, maintenance or calibration while chemical system was off. Issues with analyzer during the later part of 2017 all probes replaced along with controller.

Smiths Falls Drinking Water System 2017 Annual Report R1

5. Low free chlorine residual (pre-reservoir, post reservoir and finished water) result of generator backup power testing, maintenance or calibration.
6. Low total chlorine residual (finished water) result of generator backup power testing, maintenance or calibration.
7. High total chlorine residuals (for zebra mussel control) can be due the sampling alternates between intake and LLP header.
8. Bench tests for total chlorine (zebra mussel) are sampled from the raw water stainless steel sample tap located in pump gallery or raw water sample tap in lab
9. Low UV transmittance result of generator backup power testing, maintenance, calibration or OptiView failure.

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 (ug/L)	Quarterly Average (ug/L)	Rolling Annual Average Quarter (ug/L)		
Municipal Drinking Water License #164-101 issue #5	TTHM	January 3, 2017	38.4	35.8	50.4		
		February 6, 2017	35.0				
		March 6, 2017	34.0				
				April 3, 2017	40.0	52.3	49.8
				May 1, 2017	49.0		
				June 5, 2017	68.0		
				July 4, 2017	100.0	93.0	55.8
				August 8, 2017	99.0		
				September 5, 2017	80.0		
				October 2, 2017	73.0	53.3	58.6
				November 6, 2017	47.0		
				December 4, 2017	40.0		

Notes: Maximum Allowable Concentration (MAC) for THM is based on a four quarter rolling annual average of 0.100 mg/L or 100.0 ug/L

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 –Monthly Average (mg/L)	Result –Monthly Grab Average Total Chlorine (mg/L)
Municipal Drinking Water License #164-101 issue #5 (section 4.2 table 7)	TSS (grab sample)	January 18, 2017	2.11	0.03
		February 15, 2017	4.53	0.01
		March 14, 2017	3.00	0.02
		April 12, 2017	3.67	0.02
		May 16, 2017	3.33	0.01
		June 13, 2017	4.53	0.01
		July 11, 2017	8.86	0.03
		August 10, 2017	2.89	0.01
		September 11, 2017	3.07	0.00
		October 12, 2017	4.95	0.02
		November 17, 2017	3.86	0.03
		December 21, 2017	5.16	0.02
			Yearly average	4.16

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

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	April 3, 2017	0.04	µg/L	No
Arsenic	April 3, 2017	<0.02	µg/L	No
Barium	April 3, 2017	40.8	µg/L	No
Boron	April 3, 2017	14.0	µg/L	No

Smiths Falls Drinking Water System
2017 Annual Report R1

Cadmium	April 3, 2017	<0.003	µg/L	No
Chromium	April 3, 2017	0.57	µg/L	No
Mercury	April 3, 2017	<0.01	µg/L	No
Selenium	April 3, 2017	0.07	µg/L	No
Uranium	April 3, 2017	0.010	µg/L	No
1 st Quarter Nitrite 2 nd Quarter Nitrite 3 rd Quarter Nitrite 4 th Quarter Nitrite	January 3, 2017 April 3, 2017 July 4, 2017 July 5, 2017 October 2, 2017	<0.1 <0.1 <0.1 <0.1 <0.1	mg/L	No
1 st Quarter Nitrate 2 nd Quarter Nitrate 3 rd Quarter Nitrate 4 th Quarter Nitrate	January 3, 2017 April 3, 2017 July 4, 2017 July 5, 2017 October 2, 2017	0.8 0.1 <0.1 <0.1 <0.1	mg/L	No
Sodium	April 3, 2017	15.0	mg/L	No

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
1 st Quarter HAA5	February 7, 2017	25.9	µg/L	No
2 nd Quarter HAA5	May 5, 2017	37.0	µg/L	No
3 rd Quarter HAA5	August 11, 2017	53.4	µg/L	No
4 th Quarter HAA5	November 9, 2017	40.2	µg/L	No

Summary of lead testing under Schedule 15.1 during this reporting period & MDWL #164-101 Issue #5 Schedule C, Section 5.0

Location Type	Number of Total Samples	Range of Lead Results 1 st One Litre Sample min# – max # (mg/L)	Number of Exceedances 1 st Sample	Range of Lead Results 2 nd One Litre Sample min# – max # (mg/L)	Number of Exceedances 2 nd Sample
Plumbing – residential	22	0.00020 – 0.02200	3	0.00013 – 0.02280	3
Plumbing – non residential	26	0.00016 – 0.58900	1	0.00012 – 0.00950	0
Distribution	4	0.000190 – 0.00290	0	N/A	N/A
Finished Water	4	0.00020 – 0.00020	0	N/A	N/A

Location Type	pH (min # - max #)	Total samples	Temperature °C (min # - max #)	Total samples
Plumbing – residential	7.15 – 8.47	11	10.10 -19.30	11
Plumbing – non residential	7.13 – 7.91	13	8.50 – 21.70	13
Distribution	7.36 – 7.72	4	6.00 – 19.70	4
Finished Water	7.25 – 7.45	4	5.00 – 23.00	4

Location Type	Alkalinity mg/L (min # - max #)	Total samples
Plumbing – residential	64 -84	11
Plumbing – non residential	62 -78	11
Distribution	68 - 80	4
Finished Water	62 - 90	4

Notes:

1. Maximum Allowable Concentration (MAC) for lead is 0.010 mg/L or 10.0 ug/L

Smiths Falls Drinking Water System
2017 Annual Report R1

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

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	April 3, 2017	<0.02	µg/L	No
Atrazine	April 3, 2017	<0.01		
Atrazine + N-dealkylated metabolites	April 3, 2017	<0.01	µg/L	No
Azinphos-methyl	April 3, 2017	<0.05	µg/L	No
Benzene	April 3, 2017	<0.32	µg/L	No
Benzo(a)pyrene	April 3, 2017	<0.004	µg/L	No
Bromoxynil	April 3, 2017	<0.20	µg/L	No
Carbaryl	April 3, 2017	<0.05	µg/L	No
Carbofuran	April 3, 2017	<0.01	µg/L	No
Carbon Tetrachloride	April 3, 2017	<0.16	µg/L	No
Chlorpyrifos	April 3, 2017	<0.02	µg/L	No
Desethyl atrazine	April 3, 2017	<0.01	µg/L	No
Diazinon	April 3, 2017	<0.02	µg/L	No
Dicamba	April 3, 2017	<0.20	µg/L	No
1,2-Dichlorobenzene	April 3, 2017	<0.41	µg/L	No
1,4-Dichlorobenzene	April 3, 2017	<0.36	µg/L	No
1,2-Dichloroethane	April 3, 2017	<0.35	µg/L	No
1,1-Dichloroethylene (vinylidene chloride)	April 3, 2017	<0.33	µg/L	No
Dichloromethane	April 3, 2017	<0.35	µg/L	No
2,4-Dichlorophenol	April 3, 2017	<0.15	µg/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	April 3, 2017	<0.19	µg/L	No
Diclofop-methyl	April 3, 2017	<0.40	µg/L	No
Dimethoate	April 3, 2017	<0.03	µg/L	No
Diquat	April 3, 2017	<0.17	µg/L	No
Diuron	April 3, 2017	<0.03	µg/L	No
Glyphosate	April 3, 2017	<1	µg/L	No
Malathion	April 3, 2017	<0.02	µg/L	No
2-Methyl-4-chlorophenoxyacetic acid (MCPA)	April 3, 2017	<0.00012	µg/L	No
Metolachlor	April 3, 2017	<0.01	µg/L	No
Metribuzin	April 3, 2017	<0.02	µg/L	No
Monochlorobenzene	April 3, 2017	<0.30	µg/L	No
Paraquat	April 3, 2017	<1	µg/L	No
Pentachlorophenol	April 3, 2017	<0.15	µg/L	No
Phorate	April 3, 2017	<0.01	µg/L	No
Picloram	April 3, 2017	<1	µg/L	No
Polychlorinated Biphenyls (PCB)	April 3, 2017	<0.04	µg/L	No
Prometryne	April 3, 2017	<0.03	µg/L	No
Simazine	April 3, 2017	<0.01	µg/L	No
Terbufos	April 3, 2017	<0.01	µg/L	No
Tetrachloroethylene (perchloroethylene)	April 3, 2017	<0.35	µg/L	No
2,3,4,6-Tetrachlorophenol	April 3, 2017	<0.20	µg/L	No
Triallate	April 3, 2017	<0.01	µg/L	No
Trichloroethylene	April 3, 2017	<0.44	µg/L	No

Smiths Falls Drinking Water System
2017 Annual Report R1

2,4,6-Trichlorophenol	April 3, 2017	<0.25	µg/L	No
Trifluralin	April 3, 2017	<0.02	µg/L	No
Vinyl Chloride	April 3, 2017	<0.17	µg/L	No

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

Glossary

- AWQI = adverse water quality indicator
- CFU = colony forming units
- DWS = drinking water system
- DS = distribution system
- EA = Environmental Assessment
- HAA5 = total haloacetic acid
- mg/L = milligrams per liter
- MDWL = Municipal Drinking Water License
- TTHM = trihalomethane
- ug/L = micrograms per liter
- WTP = water treatment plant

Contact for more information:

Should you require clarification or more information please contact

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Revision #1 February 23, 2018: Change table for TTHM MDWL issue from #2 to #5