TOWN OF SMITHS FALLS

SMITHS FALLS
RISE AT THE FALLS

SMITHS FALLS DRINKING WATER SYSTEM

2023 ANNUAL REPORT

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 1st to December 31st, 2023

Complete if your Category is Large Municipal Residential or Small Municipal Residential	***Complete for all other Categories.***
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 web site on the Internet?** **Yes [✓]** No [ ] **Location where Annual Report required under O. Reg. 170/03 Schedule 11 will be available to the public.** www.smithsfalls.ca Smiths Falls Town Hall Complex 77 Beckwith St. N Smiths Falls, ON K7A 4T6	**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
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

Describe your Drinking-Water System

The Smiths Falls Drinking Water System is comprised of the Water Treatment Plant (WTP) and Distribution system (WDS) 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 m^3/d with a future expansion to 18,000 m^3/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 supply water to the AquaDAF ® which is a high-rate dissolved air floatation clarifier. A coagulant & polymer are mixed with the Raw Water to aid in particle removal. Dissolved air will float these particles to form a blanket of sludge which is discharged to the wastewater collection system.

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

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

The WDS is a Class I subsystem, consisting of 61.94 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 (m^3) of storage**.**

List all water treatment chemicals used over this reporting period

CHEMICAL NAME	USE	SUPPLIER
PAX-XL6	Coagulant	Kemira
Magnafloc LT22s	Polymer	Northland Chemical
Chlorine Gas	Disinfection	Brenntag
Sodium Hydroxide	Corrosion Control	Brenntag
Fluorosilicic Acid	Fluoride	PVS Benson
Calcium Thiosulfate	De-chlorination	Cleartech
Sodium Chlorite	Pre-treatment Zebra Mussel	PVS Benson

Were any significant expenses incurred to?

[✓] Install required equipment
[✓] Repair required equipment
[ ] Replace required equipment

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

- GAC Replacement – $385,507
- High lift pump rebuild - $13,006
- Low lift pump rebuild - $7,017
- New Tower detailed design/Site clearing - $152,700
- WD Valve Maintenance trailer - $126,651
- Catherine Street reconstruction - $1,145,399
- Zebre Mussell/THMM reduction - $96,060
- AquaDAF 1&2 Actuators - $20,723
- Water meters - $59,315
- Old Water Tower Communications - $11,521
- Water Plant Exterior doors - $58,308

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
AWQI 161776 (2023-Apr-18)	Total Coliform (TC)	1	1 colony forming unit (CFU)/100mL	TC present at the Union St flusher. Re-samples collected 2023-Apr-18 from Union St flusher, FAC was 0.60mg/L, downstream sample collected at hydrant (Book Binding) FAC was 1.53 mg/L, no upstream sample. Verbal received on 2023-Apr-20 that samples zero for TC and E. Coli	2023-Apr-18 Section 2B submitted 2023-Apr-24
Incident #1-3JETDQ (2023-Jun-13)	Tower overflow	N/A	N/A	Tower briefly overflowed due to issues with instrumentation and SCADA. Issue resolved by looking into program	2023-Jun-13

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	53	0 - 101	10 - 500	N/A	N/A
Treated	52	0 - 0	0 - 0	52	10 - 300
Distribution - Routine	311	0 – 0	0 – 1 *	311	<10 - 150
Distribution **Water main Repairs/new installations/service repairs**	61	0 - 0	0 – 1 **	58	<10 - 300

*AWQI 161776 see above table for more information
** Non-regulatory sample Catherine St. capital project

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]	0.000	0.806	49.992
Turbidity - Raw Water (NTU)	(365 bench test)	0.297	0.103	3.86
Turbidity - Filter #1 (NTU) AIT 111	Continuous Monitoring[2]	0.000	0.033	5.00
Turbidity - Filter #1 (NTU)	(51 bench test)	0.047	0.103	0.178
Turbidity – Filter #2 (NTU) AIT 121	Continuous Monitoring[2]	0.000	0.035	5.00
Turbidity – Filter #2 (NTU)	(52 bench test)	0.045	0.113	0.217
Turbidity – Filter #3 (NTU) AIT 131	Continuous Monitoring[2]	0.000	0.033	5.00
Turbidity – Filter #3 (NTU)	(51 bench test)	0.033	0.128	0.365
Turbidity – Finished Water (NTU) AIT 184	Continuous Monitoring[3]	0.000	0.046	5.000
Turbidity – Finished Water (NTU)	(248 bench test)	0.030	0.091	0.363
Chlorine Total – Zebra Mussel (operation May to October mg/L) AIT 103	Continuous Monitoring[7] Total Chlorine	N/A	N/A	N/A
Chlorine Total – Zebra Mussel (operation May to October mg/L)	(0 bench test)[8]	N/A	N/A	N/A
Chlorine Free – Pre-Reservoir (mg/L) AIT 165	Continuous Monitoring[5] Free Chlorine	0.00	2.29	5.00
Chlorine Free – Pre-Reservoir (mg/L)	(52 bench test)	1.24	2.04	2.74
Chlorine Free – Post Reservoir (mg/L) AIT 180	Continuous Monitoring[5] Free Chlorine	0.00	1.78	3.02
Chlorine Free – Post Reservoir (mg/L)	(52 bench test)	1.07	1.61	2.23
Chlorine Free – Finished Water (mg/L) AIT 185	Continuous Monitoring[5] Free Chlorine	0.00	1.75	2.35
Chlorine Free – Finished Water (mg/L)	(249 bench test)	1.12	1.68	2.13
Chlorine Total – Finished Water (mg/L) AIT 186	Continuous Monitoring[6] Total Chlorine	0.00	1.99	2.63
Chlorine Total – Finished Water (mg/L)	(249 bench test)	1.40	1.90	2.49
Fluoride – Finished Water (mg/L) AIT 187	Continuous Monitoring[4]	0.00	0.62	2.00
Fluoride – Finished Water (mg/L)	(365 bench test)	0.24	0.57	1.15
UV Transmittance (%) AIT 160	Continuous Monitoring[9]	70.0	96.6	100.0
UV Transmittance (%)	(246 bench test)	80.8	92.8	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) start and stop, maintenance, calibration and flushing of lines.
2. High filter turbidity results of filter backwash, process upset or calibration.
3. High finished water turbidity 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.
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 (YYYY-MM-DD)	Result (µg/L)	Quarterly Average (µg/L)	Rolling Annual Average Quarter (µg/L)
Municipal Drinking Water License #164-101 Issue #6 2021-Jun-06	TTHM	2023-Jan-03	58.0	51.7	74.0
		2023-Feb-06	47.0		
		2023-Mar-06	50.0		
		2023-Apr-03	63.0	32.0	63.2
		2023-May-01	7.0		
		2023-Jun-05	26.0		
		2023-Jul-04	41.0	53.3	51.4
		2023-Aug-08	45.0		
		2023-Sept-05	74.0		
		2023-Oct-02	52.0	41.0	44.5
		2023-Nov-06	32.0		
		2023-Dec-04	39.0		

Notes:

1. 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
2. Granular activated carbon (GAC) changed out in all three filters beginning of April

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 (YYYY-MM-DD)	Result –Monthly TSS Average (mg/L)	Result –Monthly Grab Average Total Chlorine (mg/L)
Municipal Drinking Water License #164-101 issue #6 (Schedule C section 1.5 table 3)	TSS (grab sample)	2023-Jan-10	9.30	0.01
		2023-Feb-14	3.40	0.02
		2023-Mar-09	8.07	0.00
		2023-Apr-21	3.93	0.02
		2023-May-15	6.07	0.01
		2023-Jun-08	3.47	0.01
		2023-Jul-10	1.73	0.01
		2023-Aug-14	7.23	0.02
		2023-Sept-15	2.17	0.02
		2023-Oct-13	4.87	0.02
		2023-Nov-10	4.60	0.01
		2023-Dec-20	4.20	0.04
		Annual average	**4.92**	**0.02**

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

Parameter	Sample Date (YYYY-MM-DD)	Result Value	Unit of Measure	Exceedance
Antimony	2023-Apr-03	<0.6	µg/L	No
Arsenic	2023-Apr-03	<0.2	µg/L	No
Barium	2023-Apr-03	38.4	µg/L	No
Boron	2023-Apr-03	12	µg/L	No
Cadmium	2023-Apr-03	0.003	µg/L	No

Chromium	2023-Apr-03	0.31	µg/L	No
Mercury	2023-Apr-03	<0.01	µg/L	No
Selenium	2023-Apr-03	0.05	µg/L	No
Uranium	2023-Apr-03	0.021	µg/L	No
1st Quarter Nitrite 2nd Quarter Nitrite 3rd Quarter Nitrite 4th Quarter Nitrite	2023-Feb-06 2023-May-01 2023-Aug-08 2023-Nov-06	<0.05 <0.05 <0.05 0.05	mg/L mg/L mg/L mg/L	No No No No
1st Quarter Nitrate 2nd Quarter Nitrate 3rd Quarter Nitrate 4th Quarter Nitrate	2023-Feb-06 2023-May-01 2023-Aug-08 2023-Nov-06	0.18 <0.05 <0.05 0.05	mg/L mg/L mg/L mg/L	No No No No
Sodium	2023-Apr-03	13.8	mg/L	No

Parameter	**Sample Date (YYYY-MM-DD)**	**Result Value (ug/L)**	**Rolling Annual Average Quarter (ug/L)**	**Exceedance**
HAA5 1st Quarter	2023-Feb-06	32.1	49.4	No
HAA5 2nd Quarter	2023-May-01	5.3	35.9	No
HAA5 3rd Quarter	2023-Aug-08	36.9	31.1	No
HAA5 4th Quarter	2023-Nov-06	30.7	26.3	No

Notes:

1. Maximum Allowable Concentration (MAC) for HAA is based on a four-quarter rolling annual average of 0.080 mg/L or 80.0 ug/L
2. Granular activated carbon (GAC) changed out in all three filters beginning of April

Summary of lead testing under Schedule 15.1 during this reporting period & MDWL #164-101 Issue #6 Schedule C, Section 6.6

Location Type	**Number of Total Samples**	**Range of Lead Results 1st One Litre Sample min# – max # (mg/L)**	**Number of Exceedances 1st Sample**	**Range of Lead Results 2nd One Litre Sample min# – max # (mg/L)**	**Number of Exceedances 2nd Sample**
Plumbing – residential	23	0.000080 – 0.059700	6	0.000050 – 0.063000	6
Plumbing – non residential	0	N/A	N/A	N/A	N/A
Distribution	4	0.000030 – 0.000960	0	N/A	N/A
Finished Water	4	0.000020 – 0.000020	0	N/A	N/A

Location Type	**Number of Total samples**	**pH (min # - max #)**	**Number of Total samples**	**Temperature °C (min # - max #)**
Plumbing – residential	23	7.12 – 7.83	23	6.7 – 22.1
Plumbing – non residential	0	N/A	N/A	N/A
Distribution	4	7.53 – 7.80	4	4.8 - 21.6
Finished Water	4	7.40 – 7.70	4	7.5 – 22.9

Location Type	Number of Total samples	Alkalinity mg/L (min # - max #)
Plumbing – residential	23	72 – 105
Plumbing – non-residential	0	N/A
Distribution	4	73 – 78
Finished Water	4	77 – 97

Notes:

1. Maximum Allowable Concentration (MAC) for lead is 0.010 mg/L or 10.0 ug/L.
2. Only Distribution lead samples above 0.010 mg/L or 10.0 ug/L are reportable.
3. Plumbing samples from residential or non-residential, the occupant receives a letter to indicate if a sample is above the MAC, the results and an information sheet on lead.

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

Parameter	Sample Date (YYYY-MM-DD)	Result Value	Unit of Measure	Exceedance
Alachlor	2023-Apr-03	<0.02	µg/L	No
Atrazine	2023-Apr-03	<0.01	µg/L	No
Atrazine + N-dealkylated metabolites	2023-Apr-03	<0.01	µg/L	No
Azinphos-methyl	2023-Apr-03	<0.05	µg/L	No
Benzene	2023-Apr-03	<0.32	µg/L	No
Benzo(a)pyrene	2023-Apr-03	<0.004	µg/L	No
Bromoxynil	2023-Apr-03	<0.33	µg/L	No
Carbaryl	2023-Apr-03	<0.05	µg/L	No
Carbofuran	2023-Apr-03	<0.01	µg/L	No
Carbon Tetrachloride	2023-Apr-03	<0.17	µg/L	No
Chlorpyrifos	2023-Apr-03	<0.02	µg/L	No
Desethyl atrazine	2023-Apr-03	<0.01	µg/L	No
Diazinon	2023-Apr-03	<0.02	µg/L	No
Dicamba	2023-Apr-03	<0.20	µg/L	No
1,2-Dichlorobenzene	2023-Apr-03	<0.41	µg/L	No
1,4-Dichlorobenzene	2023-Apr-03	<0.36	µg/L	No
1,1-Dichloroethylene (vinylidene chloride)	2023-Apr-03	<0.33	µg/L	No
1,2-Dichloroethane	2023-Apr-03	<0.35	µg/L	No
Dichloromethane	2023-Apr-03	<0.35	µg/L	No
2,4-Dichlorophenol	2023-Apr-03	<0.15	µg/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	2023-Apr-03	<0.19	µg/L	No
Diclofop-methyl	2023-Apr-03	<0.40	µg/L	No
Dimethoate	2023-Apr-03	<0.06	µg/L	No
Diquat	2023-Apr-03	<1	µg/L	No
Diuron	2023-Apr-03	<0.03	µg/L	No
Glyphosate	2023-Apr-03	<1	µg/L	No
Malathion	2023-Apr-03	<0.02	µg/L	No
2-Methyl-4-chlorophenoxyacetic acid (MCPA)	2023-Apr-03	<0.00012	µg/L	No

Metolachlor	2023-Apr-03	<0.01	µg/L	No
Metribuzin	2023-Apr-03	<0.02	µg/L	No
Monochlorobenzene	2023-Apr-03	<0.3	µg/L	No
Paraquat	2023-Apr-03	<1	µg/L	No
Pentachlorophenol	2023-Apr-03	<0.15	µg/L	No
Phorate	2023-Apr-03	<0.01	µg/L	No
Picloram	2023-Apr-03	<1	µg/L	No
Polychlorinated Biphenyls (PCB)	2023-Apr-03	<0.04	µg/L	No
Prometryne	2023-Apr-03	<0.03	µg/L	No
Simazine	2023-Apr-03	<0.01	µg/L	No
Terbufos	2023-Apr-03	<0.01	µg/L	No
Tetrachloroethylene (perchloroethylene)	2023-Apr-03	<0.35	µg/L	No
2,3,4,6-Tetrachlorophenol	2023-Apr-03	<0.20	µg/L	No
Triallate	2023-Apr-03	<0.01	µg/L	No
Trichloroethylene	2023-Apr-03	<0.44	µg/L	No
2,4,6-Trichlorophenol	2023-Apr-03	<0.25	µg/L	No
Trifluralin	2023-Apr-03	<0.02	µg/L	No
Vinyl Chloride	2023-Apr-03	<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:

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