2024

Halton Region Drinking Water Quality Report: Burlington, Burloak and Oakville Water Treatment Plants and Halton Region Distribution Subsystem

Contents

Introduction

Halton is committed to providing safe drinking water to all of our customers. As mandated by the Safe Drinking Water Act, 2002, this annual Water Quality Report includes:

- A description of the water treatment process and chemicals used;
- Any major expenses to install, repair or upgrade equipment in the system; and,
- The results of our water tests and how they compare to provincial regulatory standards.

All provincial regulatory monitoring requirements and actions applicable to Halton Region's operation of these systems were met or surpassed in the current reporting year.

Burlington Water Treatment Plant

The Burlington Water Treatment Plant is located at 3249 Lakeshore Road in Burlington. The facility is a conventional filtration treatment plant with a process that consists of the sand ballasted clarification process (microsand-enhanced clarification), filtration, fluoridation, optional pH adjustment, ozonation (disinfection and taste and odour control) and chlorination (secondary disinfection). Seasonally, the water is chlorinated at the intake for zebra mussel control. The plant is controlled through a computerized SCADA system that is monitored 24 hours per day, seven days a week. The treated drinking water is pumped into the Halton Region Distribution Subsystem. The treatment chemicals used in the current reporting year were:

- chlorine gas (disinfection and control of particle counts on filters and mussel formation at the intakes);
- hydrofluosilicic acid (fluoridation);
- polyaluminum chloride with provision to switch to aluminum sulphate (coagulation);
- polymer (coagulation aid);
- waste polymer (waste treatment aid);
- sodium bisulphite or calcium thiosulphate (dechlorination and ozone quenching);
- sodium metabisulphite (waste dechlorination); and
- liquid oxygen (ozone generation).

Burloak Water Treatment Plant

The Burloak Water Treatment Plant is located at 3380 Rebecca Street, Oakville. This facility is a membrane filtration plant with a process that consists of flocculation, ultra-filtration (via membranes), optional ultra-violet irradiation, ozonation (disinfection and taste and odour control), fluoridation, and chlorination (disinfection). Seasonally, the raw water intake is chlorinated for zebra mussel control. The plant is controlled through a computerized Supervisory Control and Data Acquisition (SCADA) system that is monitored twenty-four hours per day, seven days per week. The treated drinking water is pumped into the Halton Region Distribution

Subsystem. Seasonally, the water is chlorinated at the intake for mussel control. The treatment chemicals used in the current reporting year were:

- Chlorine gas (disinfection and mussel control);
- Hydrofluosilicic acid (fluoridation);
- Polyaluminum chloride;
- Citric acid (clean membranes);
- Sodium bisulphite (dechlorination and ozone quenching);
- Sodium hypochlorite (maintenance cleans on membrane system)
- Liquid oxygen (ozone generation); and
- Potassium hydroxide (pH adjustment on waste system).

Oakville Water Treatment Plant

The Oakville Water Treatment Plant is located at 21 Kerr Street in Oakville. This facility is a conventional filtration treatment plant with a process that consists of the sand ballasted clarification process (microsand-enhanced clarification), filtration, fluoridation, ozonation (disinfection and taste and odour control) and chlorination (disinfection).

Seasonally, the water is chlorinated at the intake for zebra mussel control. The plant is controlled through a computerized SCADA system that is monitored twenty-four hours per day, seven days a week. The treated drinking water is pumped into the Halton Region Distribution Subsystem. The treatment chemicals used in the current reporting year were:

- Chlorine gas (disinfection and mussel control);
- Hydrofluosilicic acid (fluoridation);
- Polyaluminum chloride with provision to switch to aluminum sulphate (coagulation);
- Polymer - solid (coagulation aid);
- Polymer - liquid (filtration and residue management aid);
- Liquid oxygen (ozone generation);
- Provision for hydrogen peroxide addition (taste and odour control); and
- Calcium thiosulphate (dechlorination and ozone quenching).

Halton Region Distribution Subsystem

The Halton Region Distribution Subsystem is supplied by the Burlington, Oakville and Burloak Water Treatment Plants. The Halton Region Distribution Subsystem serves Burlington, Oakville and parts of Milton and Halton Hills, and includes 16 reservoirs/storage tanks:

- Appleby Reservoir and Booster Station
- Ashgrove (Trafalgar Road) Reservoir and Booster Station
- Bailie Reservoir and Booster Station
- Beaufort Reservoir and Booster Station
- Tyandaga Reservoir and Booster Station
- Brant Reservoir and Booster Station
- Headon Reservoir

- Washburn Reservoir and Booster Station
- Waterdown Reservoir
- Kitchen Reservoir and Booster Station
- McCraney Reservoir
- Eighth Line Glenashton Reservoir and Booster Station
- Moore Reservoir
- Burnhamthorpe Tower
- Third Line Reservoir, and
- Milton Tower.

As the Halton Region Subsystem is distribution only, it does not require a Permit to Take Water. Flows into the distribution subsystem are reported under the three water treatment plants, which provided the treated water in 2024.

What Improvements Are We Making?

In the current reporting year, approximately $20,390,000 was spent on capital upgrades to the Burlington, Burloak and Oakville treatment facilities and Halton Region outlying stations. Projects included:

- Bailie Reservoir and Booster Station Improvements;
- 4th Line Booster station improvements;
- Kitchen Reservoir Pump Studies and Replacements;
- Neyagawa Booster Station Improvements;
- Davis Road Booster Station Renewal;
- Headon Reservoir Improvements; and
- Eighth Line Booster Station Improvements.

Approximately $35,875,000 was spent on watermain projects in Oakville, Burlington, Milton and Halton Hills (lake-based) which are all connected to the Halton Region Distribution Subsystem. In addition to capital upgrades, Halton Region continued to support the production of high-quality, safe drinking water through water sampling and monitoring above the provincial requirements, ongoing upgrades to the SCADA monitoring and infrastructure management systems, oversight of cross-connection control, an update of the Water Master Plan, water efficiency programs and optimization of water treatment processes. Work also continued on the Drinking Water Quality Management System, a provincial requirement to support the licensing of municipal drinking water systems which came into effect for Halton in January 2009.

Partnership for Safe Water Program

The Partnership for Safe Water is an alliance of drinking water organizations with a mission of improving the quality of drinking water delivered to customers. Halton Region is actively involved in the Partnership for Safe Water program that awarded the Region the prestigious American Water Works Association Directors Awards in 2020. The Region is the first municipality in Canada to receive the awards recognizing outstanding commitment to high-quality drinking water and treatment. The Public Works department has built a one-team culture effectively integrating operations with maintenance and engineering. The culture aligns with the Partnership for Safe Water and optimization program capable plant concept. Operational process control combines with facility design, asset maintenance and administrative policies to create an infrastructure capable of achieving or bettering objectives and targets set by the regulatory bodies and the operating authority.

Water Quality Testing

A large number of water quality tests are performed every day, in accordance with the *Safe Drinking Water Act, 2002 and* regulations. The following sections provide a summary of the test results.

Terms

CFU/100 mL	Colony-forming units per 100 millilitres of water
µg/L	micrograms per litre
mg/L	milligrams per litre
Standard	Ontario Drinking Water Quality Standard, O.Reg. 169/03

Microbiological Testing

	Number of Samples	E. coli Results (min-max)	Total Coliform Results (min-max)	Number of HPC Samples	HPC Results (min-max)
Raw Water Burlington	53	0 – 40	0 – 6840	N/A	N/A
Treated Water Burlington	54	0 – Absent	0 – Absent	54	0 - 14
Raw Water Oakville	53	0 – 400	0 - 7510	N/A	N/A
Treated Water Oakville	63	0 – Absent	0 – Absent	63	0 - 74
Raw Water Burloak	53	0 - 1	0 – 291	N/A	N/A
Treated Water Burloak	63	0 – Absent	0 – Absent	63	0 - 2
Distribution	3315	0 – Absent	0 - Present	2499	0 - 293

Microbiological standards for treated and distributed water:

E.coli not detected

Total Coliforms not detected

HPC Heterotrophic Plate Counts are conducted on some distribution system samples. The HPC test is used as a tool to monitor overall quality, but the results are not indicators of water safety. There is no Drinking Water Quality Standard for HPC.

Operational Testing

At all three Water Treatment Plants, continuous analyzers measure and record the results of chlorine residual, turbidity and fluoride residual throughout the treatment process and in the treated water. All of the readings are validated by an operator and are also reviewed by the Ministry of the Environment, Conservation and Parks (MECP) Inspector. As well, Halton operators measure the chlorine in the distributed water. ‘Adverse’ test results must be reported if there is an indication that primary inactivation (disinfection) may not have been achieved, if the turbidity of filtered water is >1.0 NTU, if the fluoride residual is >1.5 mg/L or if a free chlorine residual in the distribution system is <0.05 mg/L. In the current reporting year, all validated readings and test results for these parameters were within the ranges required by regulation.

Chemical Testing

Inorgranic Parameters

Parameter	Sample Date	Result Value	Unit of Measure	Standard	Exceedance of Standard
Antimony	04/22/24	mg/L	<0.0005	0.0005	<0.0005
Arsenic	04/22/24	mg/L	<0.001	0.001	<0.001
Barium	04/22/24	mg/L	0.023	0.022	0.023
Boron	04/22/24	mg/L	0.026	0.026	0.027
Bromate (latest running annual average)	12/09/24	mg/L	0.005	0.005	0.005
Cadmium	04/22/24	mg/L	<0.0005	<0.0005	<0.0005
Chromium	04/22/24	mg/L	<0.001	<0.001	<0.001
Mercury	04/22/24	mg/L	<0.00005	<0.00005	<0.00005
Selenium	04/22/24	mg/L	<0.001	<0.001	<0.001
Sodium	12/16/24	mg/L	14.0	15.8	*25.4 Duplicate *25.1
Uranium	04/22/24	mg/L	<0.001	<0.001	<0.001
Fluoride	12/16/24	mg/L	0.67	0.67	0.67
Nitrite	11/04/24	mg/L	<0.01	<0.01	<0.01

Organic Parameters

Parameter	Sample Date	Result Value	Unit of Measure	Standard	Exceedance of Standard
Alachlor	04/22/24	µg/L	<0.50	<0.50	<0.50
Atrazine + N-dealkylated metabolites	04/22/24	µg/L	<1.0	<1.0	<1.0
Azinphos-methyl	04/22/24	µg/L	<2.0	<2.0	<2.0
Benzene	04/22/24	µg/L	<0.10	<0.10	<0.10
Benzo(a)pyrene	04/22/24	µg/L	<0.0050	<0.0050	<0.0050
Bromoxynil	04/22/24	µg/L	<0.50	<0.50	<0.50
Carbaryl	04/22/24	µg/L	<5.0	<5.0	<5.0
Carbofuran	04/22/24	µg/L	<5.0	<5.0	<5.0
Carbon Tetrachloride	04/22/24	µg/L	<0.10	<0.10	<0.10
Chlorpyrifos	04/22/24	µg/L	<1.0	<1.0	<1.0
Diazinon	04/22/24	µg/L	<1.0	<1.0	<1.0
Dicamba	04/22/24	µg/L	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	04/22/24	µg/L	<0.20	<0.20	<0.20
1,4-Dichlorobenzene	04/22/24	µg/L	<0.20	<0.20	<0.20
1,2-Dichloroethane	04/22/24	µg/L	<0.20	<0.20	<0.20
1,1-Dichloroethylene (vinylidene chloride)	04/22/24	µg/L	<0.10	<0.10	<0.10
Dichloromethane	04/22/24	µg/L	<0.50	<0.50	<0.50
2-4 Dichlorophenol	04/22/24	µg/L	<0.25	<0.25	<0.25
2,4-Dichlorophenoxy acetic acid (2,4-D)	04/22/24	µg/L	<1.0	<1.0	<1.0
Diclofop-methyl	04/22/24	µg/L	<0.90	<0.90	<0.90
Dimethoate	04/22/24	µg/L	<2.5	<2.5	<2.5
Diquat	04/22/24	µg/L	<7.0	<7.0	<7.0
Diuron	04/22/24	µg/L	<10	<10	<10
Glyphosate	04/22/24	µg/L	<10	<10	<10

HAA (latest running annual average)	11/04/24	µg/L	10.2	6.8	7.5
2-Methyl-4-chlorophenoxyacetic acid	04/22/24	µg/L	<10	<10	<10
Malathion	04/22/24	µg/L	<5.0	<5.0	<5.0
Metolachlor	04/22/24	µg/L	<0.50	<0.50	<0.50
Metribuzin	04/22/24	µg/L	<5.0	<5.0	<5.0
Monochlorobenzene	04/22/24	µg/L	<0.10	<0.10	<0.10
Paraquat	04/22/24	µg/L	<1.0	<1.0	<1.0
Pentachlorophenol	04/22/24	µg/L	<0.50	<0.50	<0.50
Phorate	04/22/24	µg/L	<0.50	<0.50	<0.50
Picloram	04/22/24	µg/L	<5.0	<5.0	<5.0
Polychlorinated Biphenyls(PCB)	04/22/24	µg/L	<0.05	<0.05	<0.05
Prometryne	04/22/24	µg/L	<0.25	<0.25	<0.25
Simazine	04/22/24	µg/L	<1.0	<1.0	<1.0
THM - Distribution (latest running annual average)	12/09/24	µg/L	31.4	31.4	31.4
Terbufos	04/22/24	µg/L	<0.50	<0.50	<0.50
Tetrachloroethylene	04/22/24	µg/L	<0.10	<0.10	<0.10
2,3,4,6-Tetrachlorophenol	04/22/24	µg/L	<0.50	<0.50	<0.50
Triallate	04/22/24	µg/L	<1.0	<1.0	<1.0
Trichloroethylene	04/22/24	µg/L	<0.10	<0.10	<0.10
2,4,6-Trichlorophenol	04/22/24	µg/L	<0.50	<0.50	<0.50
Trifluralin	04/22/24	µg/L	<1.0	<1.0	<1.0
Vinyl Chloride	04/22/24	µg/L	<0.20	<0.20	<0.20

Additional Testing Required by the Municipal Drinking Water Licence

Parameter	Date Sampled	Burlington Result	Oakville Result	Burloak Result	Exceedance of Specified Concentration
Suspended solids in the treated wastewater at point of discharge (composite or automatic sampler)	Monthly (January to December)	6.4 mg/L (average) Max. per MDWL = 15 mg/L	17.0 mg/L (average) Max. per MDWL = 25 mg/L	11.0 mg/L (average) Max. per MDWL = 15 mg/L	No

'Adverse' Results Notifications

The following tables show the notices of 'adverse' water quality results submitted in accordance with the Safe Drinking Water Act, 2002 to the MECP and the Medical Officer of Health.

Sample Date	Location	Adverse Condition	Corrective Action	Notice of Issue Resolution
August 28, 2024	Treated	Sodium = 25.4 mg/L Duplicate = 25.1 mg/L	Resamples taken and resample results within acceptable limits Reportable every 57 months	August 29, 2024
September 19, 2024	Distribution	Presence/Absence confirmed Total Coliform	System flushed, resampled, and resample results within acceptable limits	September 21, 2024
September 24, 2024	Distribution	Presence/Absence confirmed Total Coliform Duplicate P/A confirmed Total Coliform	System flushed and resampled, results within acceptable limits	September 26, 2024
September 24, 2024	Distribution	Presence/Absence confirmed Total Coliform	System flushed, resampled, and resample results within acceptable limits	September 26, 2024

Community-Wide Lead Sampling Program Results

Under the Community-Wide Lead Sampling Program, samples were collected from twenty-one sampling points and six sets of consumer samples located throughout the Halton Region Distribution Subsystem in the current reporting year. One of the sets of samples contained concentrations of lead above the standard of 10 µg/L.

Sample Date	Location	Adverse Condition	Corrective Action	Notice of Issue Resolution
March 11, 2024	Distribution	Lead = 38.7 µg/L	March 11, 2024	Distribution

Microcystin Sampling Results

Under the direction of the MECP, Microcystin samples were collected on a weekly basis from June to October, from Oakville, Burlington and Burloak Water Treatment Plants. None of the samples contained Microcystin concentrations at or above the standard of 1.5 µg/L. The results for all raw and treated samples were <0.1 µg/L for Total Microcystin.

More Information or Questions

The related annual Drinking Water Systems Flow Report is presented to Municipal Council members on or before March 31 of each year and is posted on halton.ca

For alternative formats or questions relating to these documents, email accesshalton@halton.ca or call 311.

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