#### CITY OF MARKHAM – WATER SAMPLING PROGRAM

#### January 1 to December 31, 2020

To comply with the Ontario Drinking Water System Regulation, Markham collects and tests water samples throughout its distribution system at a total of 106 locations. The 106 sample locations are strategically selected and evenly distributed to ensure Markham gets the best representation of the water distribution system. The need for additional locations is reviewed annually & in 2020, no additional locations were warranted. Sampling is rotated through the 106 locations and the drinking water is tested for Chlorine residual, Bacteria, Trihalomethanes (THM), Haloacetic Acids (HAA), Nitrites & Nitrates, Lead, Organics & Inorganics in compliance with Ontario Regulation 170/03. The samples are collected by licensed Waterworks operators and analyzed by an accredited and provincially licensed Laboratory.

Waterworks follows rigorous testing and compliance procedures. The City reports any adverse sampling results that occur to the York Region Medical Officer of Health and to the Ministry of Environment, Conservation and Parks (MECP) and immediately undertakes the necessary corrective action. Re-samples are taken following the corrective action(s) and tested until two consecutive samples are within acceptable parameters.

#### **Summary of the sampling for 2020 follows:**

#### **Sampling Program:**

Total Number of Samples collected and tested in 2020=7,222

#### **Adverse Test Results:**

Total Number of Adverse Water Quality Incidents (AWQI) = 12

#### **Breakdown of Adverse Results:**

Total adverse due to Microbiology Exceedances = 11

Total adverse due to low Chlorine Residual = 0

Total adverse due to Observation during Watermain Break = 1

The drinking water distributed to the City of Markham residents in 2020 was safe to drink and met all drinking water requirements. During 2020 the operation of the water distribution system, there were very few adverse sample incidents (0.15% of all system samples undertaken) and when these occurred, they were immediately resolved. The drinking water system is maintained by Waterworks with continual improvements and programs in place to ensure water of the highest quality.

#### ANNUAL REPORT

Drinking-Water System Number: Drinking-Water System Name: Drinking-Water System Owner: Drinking-Water System Category:

Period being reported:

220004162
Markham Distribution System
The Corporation of the City of Markham
Large Municipal Residential System
January 1, 2020 to December 31, 2020

#### <u>Complete if your Category is Large Municipal</u> Residential or Small Municipal Residential

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

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.

- www.markham.ca
- 8100 Warden Ave. Waterworks Department

#### Complete for all other Categories.

**Number of Designated Facilities served:** 

Not applicable

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

Yes [ ] No [ ]

Number of Interested Authorities you report to:

Not applicable

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:

<b>Drinking Water System Name</b>	Drinking Water System Number
Not applicable	

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.

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

#### **Describe your Drinking-Water System**

The City of Markham's distribution system is an extension of the Toronto and York Region distribution systems. Raw surface water from Lake Ontario is disinfected, treated and tested rigorously by the City of Toronto and Peel Region for microbiological, organic and inorganic parameters prior to reaching the York Region distribution system. Markham is supplied with treated water via feeder mains from Toronto and Peel Region. York Region distribution system acts as a wholesale supplier of water and provides further testing, storage and pressure boosting for the Markham system.

Markham's Distribution System provides treated water to approximately 351,251 residents and is comprised of approximately 1,092 kilometers of various size watermains, 11,239 watermain valves and 8,803 municipal fire hydrants. Markham is a distribution only system, without pumping and storage facilities. Markham's drinking water within the distribution system is tested for standard parameters, in compliance with Ontario Regulation 170/03. The samples are collected by licensed Waterworks operators and analyzed by an accredited and provincially licensed Laboratory.

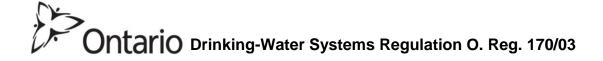
#### List all water treatment chemicals used over this reporting period

Not applicable; treatment chemicals are introduced at various sources by the City of Toronto, Peel Region and York Region only.

#### Were any significant expenses incurred to?

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

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



# <u>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</u>

<b>Incident Date and</b>	Parameter	Result	Unit of	Corrective	Corrective
AWQI#			Measure	Action	<b>Action Date</b>
July 07, 2020	Total	No Data,	cfu/100mL	Flush Mains	July 07, 2020
(AWQI # 150542)	Coliform	Overgrown		and Resample	
July 14, 2020	Total	1	cfu/100mL	Flush Mains	July 14, 2020
(AWQI # 150668)	Coliform			and Resample	
July 21, 2020	Total	No Data,	cfu/100mL	Flush Mains	July 21, 2020
(AWQI # 150838)	Coliform	Overgrown		and Resample	
July 28, 2020	Total	1	cfu/100mL	Flush Mains	July 28, 2020
(AWQI # 150974)	Coliform			and Resample	
August 11, 2020	Total	1	cfu/100mL	Flush Mains	August 11, 2020
(AWQI # 151330)	Coliform			and Resample	
August 18, 2020	Total	114	cfu/100mL	Flush Mains	August 18, 2020
(AWQI # 151430)	Coliform			and Resample	
August 19, 2020	Total	1	cfu/100mL	Flush Mains	August 19, 2020
(AWQI # 151448)	Coliform			and Resample	
August 21, 2020	Total	2	cfu/100mL	Flush Mains	August 21, 2020
(AWQI # 151499)	Coliform			and Resample	
August 25, 2020	Total	2	cfu/100mL	Flush Mains	August 25, 2020
(AWQI # 151561)	Coliform			and Resample	
August 28, 2020	Total	21	cfu/100mL	Flush Mains	August 28, 2020
(AWQI # 151637)	Coliform			and Resample	
<b>September 01, 2020</b>	On-Site	n/a	n/a	Repair	Sept. 01, 2020
(AWQI # 151741)	Observational			Watermain	
	Adverse			Break, Flush	
				Mains and	
				Sample	
November 03, 2020	Total	No Data,	cfu/100mL	Flush Mains	November 03,
(AWQI #152815)	Coliform	Overgrown		and Resample	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	N/A				
Treated	N/A				
Distribution	1,839	0 - 0	0 – No Data Overgrown	613	0 ->2,000

Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the

period covered by this Annual Report.

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	Number of Grab Samples	Range of Results (min #)-(max #)
Turbidity		
Chlorine	8,760 (Chlorine Analyzer)	Combined: 0.31mg/L – 1.96 mg/L
	4,554 (Grab)	
Fluoride (If the DWS provides fluoridation)	0.8 mg/L	

NOTE: For continuous monitors use 8760

**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

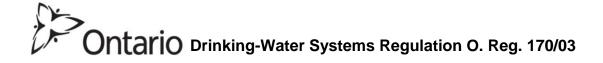
requirement of an approval, order or other legal instrument.

	Date of legal instrument	Parameter	Date Sampled	Result	Unit of Measure
	issued				
	N/A				
Ī					

<u>Summary of Inorganic parameters tested during this reporting period or the most</u>

recent sample results

Parameter	Sample Date	Result Value	Unit of	Exceedance
			Measure	
Antimony	April 29, 2020	0.0001	mg/L	No
Arsenic	April 29, 2020	0.0008	mg/L	No
Barium	April 29, 2020	0.022	mg/L	No
Boron	April 29, 2020	0.023	mg/L	No
Cadmium	April 29, 2020	<0.000015	mg/L	No
Chromium	April 29, 2020	<0.002	mg/L	No
*Lead	See Summary Below			
Mercury	April 29, 2020	<0.00002	mg/L	No
Selenium	April 29, 2020	<0.001	mg/L	No
Sodium	January 07, 2020	16.2	mg/L	No
Uranium	April 29, 2020	0.00027	mg/L	No
Fluoride	January 07, 2020	0.8	mg/L	No
Nitrite	November 26, 2019	<0.01	mg/L	No
Nitrate	November 26, 2019	0.42	mg/L	No



#### \*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)

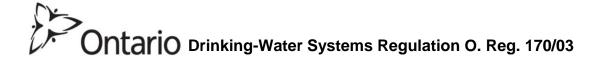
<b>Location Type</b>	Number of Samples	Range of Lead Results (min#) – (max #)	Number of Exceedances
Plumbing	0	n/a	n/a
Distribution	20	<0.00002 mg/L – 0.00163 mg/L	0

The City of Markham was granted relief from regulatory requirements contained in Schedule 15.1 of O. Reg. 170/03. This includes no lead testing from plumbing servicing of private residences, no lead testing from plumbing servicing non-residential buildings and reduced lead testing from distribution locations (10 per period). This reduced sampling was granted for the two periods of sampling in 2020, December 15, 2019 to April 15, 2020 and June 15, 2020 to October 15, 2020.

### Summary of Organic parameters sampled during this reporting period or the most

recent sample results

Parameter	Sample Date	Result	Unit of	Exceedance
A	4 11 20 2020	Value	Measure	
Alachlor	April 29, 2020	<0.3	ug/L	No
Atrazine + Metobolites	April 29, 2020	<0.5	ug/L	No
Azinphos-methyl	April 29, 2020	<1	ug/L	No
Benzene	April 29, 2020	< 0.5	ug/L	No
Benzo(a)pyrene	April 29, 2020	< 0.005	ug/L	No
Bromoxynil	April 29, 2020	< 0.5	ug/L	No
Carbaryl	April 29, 2020	<3.0	ug/L	No
Carbofuran	April 29, 2020	<1.0	ug/L	No
Carbon Tetrachloride	April 29, 2020	<0.2	ug/L	No
Chlorpyrifos	April 29, 2020	<0.5	ug/L	No
Diazinon	April 29, 2020	<1.0	ug/L	No
Dicamba	April 29, 2020	<10.0	ug/L	No
1,2-Dichlorobenzene	April 29, 2020	<0.5	ug/L	No
1,4-Dichlorobenzene	April 29, 2020	<0.5	ug/L	No
1,2-Dichloroethane	April 29, 2020	<0.5	ug/L	No
1,1-Dichloroethylene	April 29, 2020	<0.5	ug/L	No
Dichloromethane	April 29, 2020	<5.0	ug/L	No
2-4 Dichlorophenol	April 29, 2020	<0.1	ug/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	April 29, 2020	<10.0	ug/L	No
Diclofop-methyl	April 29, 2020	<0.9	ug/L	No
Dimethoate	April 29, 2020	<1.0	ug/L	No
Diquat	April 29, 2020	<5.0	ug/L	No
Diuron	April 29, 2020	<5.0	ug/L	No
Glyphosate	April 29, 2020	<25	ug/L	No
Haleoacetic Acids (HAA)	Running Annual	< 5.3	ug/L	No
	Average of			
Malathion	Quarterly Results April 29, 2020	<5.0	ng/I	No
Metolachlor	April 29, 2020 April 29, 2020		ug/L	
Metoracinor	Aprii 29, 2020	<3.0	ug/L	No



Metribuzin	April 29, 2020	<3.0	ug/L	No
Monochlorobenzene	April 29, 2020	<0.5	ug/L	No
Nitrosodimethylamine (NDMA)	Running Annual Average of Quarterly Results	0.001	ug/L	No
Paraquat	April 29, 2020	<1.0	ug/L	No
Pentachlorophenol	April 29, 2020	<0.1	ug/L	No
Phorate	April 29, 2020	<0.3	ug/L	No
Picloram	April 29, 2020	<15.0	ug/L	No
Polychlorinated Biphenyls(PCB)	April 29, 2020	< 0.05	ug/L	No
Prometryne	April 29, 2020	<0.1	ug/L	No
Simazine	April 29, 2020	<0.5	ug/L	No
THM (NOTE: show latest annual average)	Running Annual Average of Quarterly Results	11.89	ug/L	No
Terbufos	April 29, 2020	<0.4	ug/L	No
Tetrachloroethylene	April 29, 2020	<0.5	ug/L	No
2,3,4,6-Tetrachlorophenol	April 29, 2020	<0.1	ug/L	No
Triallate	April 29, 2020	<10.0	ug/L	No
Trichloroethylene	April 29, 2020	<0.5	ug/L	No
2,4,6-Trichlorophenol	April 29, 2020	<0.1	ug/L	No
Trifluralin	April 29, 2020	<0.5	ug/L	No
Vinyl Chloride	April 29, 2020	<0.2	ug/L	No
MCPA	April 29, 2020	<10.0	ug/L	No

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

Parameter	Result Value	Unit of Measure	Date of Sample
Fluoride	0.8	mg/L	January 07, 2020