2020 Annual Surface Water Quality Summary

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1 INTRODUCTION

Since 2002, the Toronto and Region Conservation Authority (TRCA) has monitored stream water quality at selected locations within the watersheds in and around the Toronto region on a monthly basis. These activities have been undertaken as part of TRCA's Regional Watershed Monitoring Program (RWMP) in partnership with the Ministry of the Environment, Conservation and Parks (MECP) and the City of Toronto. The results are used for planning, implementation, and reporting activities including the development of watershed plans and report cards.

This report presents results for selected parameters from the 2020 surface water quality sampling. It provides a general overview and description of the range of water quality conditions across the TRCA jurisdiction during 2020. Results include data collected as part of the Provincial Water Quality Monitoring Network (PWQMN) and RWMP. The PWQMN is administered by the MECP in partnership with conservation authorities across Ontario and PWQMN stations within the TRCA jurisdiction are considered part of the RWMP. This report and associated data can assist in identifying areas of concern, elevated levels of contaminants, and can be used to affirm both poor and good water quality in different land use areas. The 2020 results should be interpreted with caution since water quality samples were collected independent of precipitation, and one year of data is insufficient to represent normal conditions at stations and watersheds. For example, 12 monthly samples from one site may be biased towards baseflow or stormwater runoff conditions. The 2011-2015 Surface Water Quality Summary report should be used as the most recent characterization of stream water quality across the region (TRCA 2017). Furthermore, the COVID-19 pandemic began in March 2020 which resulted in changes in both sample collection and laboratory analysis.

2 METHODS

Surface water quality samples were collected at 47 stations throughout the TRCA's jurisdiction in 2020 (Figure 1). Thirteen stations were sampled by TRCA under the MECP's PWQMN and 34 stations were sampled by TRCA for the RWMP. Samples were not collected during March and April due to the COVID-19 pandemic.

FIGURE 1: CURRENT PWQMN/RWMP WATER QUALITY MONITORING LOCATIONS

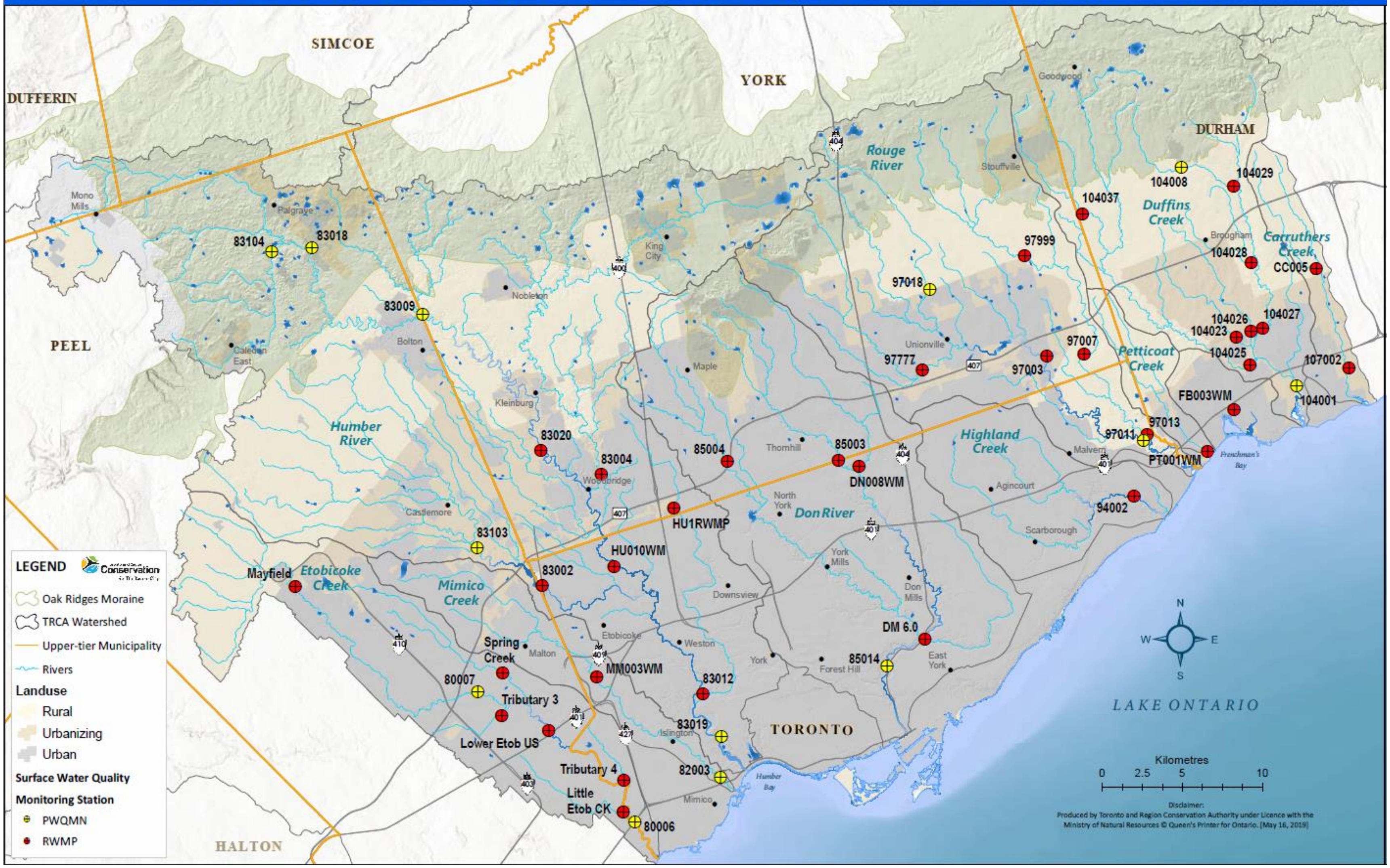

Figure 1. Current PWQMN/RWMP water quality monitoring locations 2020.

Monthly samples were collected using in-stream “grab” techniques following the MECP PWQMN protocol (MECP 2020) and also included in-situ measurements (e.g. water temperature, pH, and dissolved oxygen) collected using a hand-held water quality multi-probe. Water quality samples were collected throughout the year, typically in the third week of each month, irrespective of precipitation. Samples from the 13 stations that are part of the PWQMN partnership were submitted to the MECP Rexdale Laboratory. The remaining samples from the 34 stations or the months not included as part of the PWQMN (e.g. December to March) were submitted to the City of Toronto Dee Avenue Laboratory to maintain a year-round dataset (Table 1). Starting in December 2019, the MECP requested that 14 parameters for stations 97018, 104008, 80007 and 83018 be sent to the MECP Rexdale Laboratory for analysis from December to March in an effort to increase the amount of winter water quality data. These parameters included alkalinity, dissolved inorganic carbon, dissolved organic carbon, chloride, conductivity, ammonia, nitrates, nitrite, pH, orthophosphate, total phosphorus, silicon, total suspended solids, and total nitrogen. These sites would have been sent to the City of Toronto for analysis of these parameters between December and March but now only metals and *E. coli* are analyzed by the City of Toronto during these months.

While Table 1 represents a general summary of laboratory support, during 2020 there were several modifications due to the COVID-19 pandemic. Samples were not collected in March and April and the MECP laboratory was not analyzing PWQMN samples between May and September 2020. The samples that would have typically been sent to the MECP laboratory during this time were sent to the York-Durham Regional Environmental Laboratory for analysis instead.

The laboratories analyzed a standard suite of nutrients, metals, microbiological, and conventional water quality parameters (Table 2). The 16 parameters in boldface are those that were selected for discussion in this report including chloride, pH, total suspended solids as well as additional forms of nitrogen (ammonia + ammonium, nitrate, nitrite, and total Kjeldahl nitrogen), *Escherichia coli*, and several metals.

The results for each parameter were compared to the Provincial Water Quality Objectives (PWQO) where applicable. The PWQOs are a set of numerical and narrative ambient surface water quality criteria that represent a desirable level of water quality. These guidelines were developed to protect all forms of aquatic life and all aspects of their aquatic life cycles during indefinite exposure to the water as well as protecting recreational water usage based on public health considerations and aesthetics (OMOEE 1994). When PWQO guidelines were not available, other objectives were used such as Canadian Water Quality Guidelines (CWQG; CCME 2007) and Recommended Water Quality Guidelines for the Protection of Aquatic Life under the Canadian Environmental Sustainability Indicators (CESI) Initiative (EC 2012). All laboratory results that were reported as less than the minimum detection limit (MDL) were set to the MDL value for the purposes of interpretation. Surface water quality data are maintained in a relational SQL database that is part of the TRCA’s corporate database web applications. These data are also openly available on TRCA’s Open Data Portal (http://data.trca.ca) and through Conservation Ontario’s Open Data which is anticipated to be released in the Fall of 2021. For this report, only RWMP/PWQMN data are presented. TRCA collects other project specific data which are not included in this report.

Water quality laboratory results for 2020 for each parameter are presented in box plots which summarize the distribution of values for each parameter over the course of the year (Figure 2). Box plot graphs display a range of results where the majority (50%) of results are located within the box section. The ends of the boxes represent the 25th and 75th quartiles and the difference between the quartiles is the interquartile range. The line across the middle of the box identifies the median sample value. The “whiskers” above and below the box represent the range of data plus or minus 1.5 times the interquartile range, excluding extreme values. Water quality stations are arranged along the x-axis of each graph from upstream to downstream (left to right) and grouped into watersheds which are arranged from west to east.

Table 1. TRCA surface water quality stations, associated laboratories, and Environment Canada precipitation station.

Station	Watershed	Subwatershed	UTM Coordinates		Precipitation Station	Laboratory	
			Northing	Easting		Dec-Mar	Apr-Nov
Mayfield	Etobicoke	Upper Etobicoke	4843488	595028	Pearson	TOR	TOR
80007	Etobicoke	Upper Etobicoke	4836746	606933	Pearson	TOR*	MECP
Tributary 3	Etobicoke	Tributary 3	4835477	607825	Pearson	TOR	TOR
Spring Creek	Etobicoke	Spring Creek	4838157	607990	Pearson	TOR	TOR
Lower Etob US	Etobicoke	Etobicoke Main	4834442	610933	Pearson	TOR	TOR
Little Etob CK	Etobicoke	Little Etobicoke	4829577	615520	Pearson	TOR	TOR
Tributary 4	Etobicoke	Tributary 4	4831543	615546	Pearson	TOR	TOR
80006	Etobicoke	Lower Etobicoke	4829016	616234	Pearson	MECP	MECP
MM003WM	Mimico	Lower Mimico	4837916	613849	Pearson	TOR	TOR
82003	Mimico	Lower Mimico	4831713	621585	Pearson	MECP	MECP
83104	Humber	Main Humber	4864112	593560	Pearson	TOR	MECP
83018	Humber	Main Humber	4864329	595961	Pearson	TOR*	MECP
83009	Humber	Main Humber	4860243	602980	Pearson	TOR	MECP
83103	Humber	West Humber	4845870	606385	Pearson	TOR	MECP
83020	Humber	Main Humber	4851861	610386	Pearson	TOR	TOR
83002	Humber	West Humber	4843562	610459	Pearson	TOR	TOR
83004	Humber	East Humber	4850423	614148	Pearson	TOR	TOR
HU010WM	Humber	Lower Main	4844744	615027	Pearson	TOR	TOR
HU1RWMP	Humber	Black Creek	4848311	618678	Pearson	TOR	TOR
83012	Humber	Black Creek	4836845	620488	Pearson	TOR	TOR
83019	Humber	Lower Main	4834265	621663	Pearson	MECP	MECP
85004	Don	Upper West	4851207	622014	Pearson	TOR	TOR
85003	Don	Upper East	4851256	628954	Pearson	TOR	TOR
DN008WM	Don	German Mills	4850889	630236	Pearson	TOR	TOR
85014	Don	Lower Don	4838576	632000	Pearson	MECP	MECP
DM 6.0	Don	Taylor/Massey	4840251	634378	Pearson	TOR	TOR
94002	Highland	Main Highland	4849056	647429	Pearson	TOR	TOR
97777	Rouge	Middle Rouge	4856823	634214	Pearson	TOR	TOR
97018	Rouge	Bruce Creek	4861770	634680	Pearson	TOR*	MECP
97999	Rouge	Little Rouge	4863887	640589	Pearson	TOR	TOR
97003	Rouge	Lower Rouge	4857669	641985	Pearson	TOR	TOR
97007	Rouge	Little Rouge	4857816	644300	Pearson	TOR	TOR
97011	Rouge	Lower Rouge	4852511	648007	Pearson	MECP	MECP
97013	Rouge	Little Rouge	4852830	648243	Pearson	TOR	TOR
PT001WM	Petticoat	Lower Petticoat	4851804	652005	Pearson	TOR	TOR
FB003WM	Frenchman's	Frenchman's	4854151	653659	Pearson	TOR	TOR
104037	Duffins	West Duffins	4866462	644191	Pearson	TOR	TOR
104008	Duffins	East Duffins	4869299	650372	Pearson	TOR*	MECP
104029	Duffins	East Duffins	4868158	653641	Pearson	TOR	TOR
104028	Duffins	East Duffins	4863433	654742	Pearson	TOR	TOR
104023	Duffins	Ganatsekiagon	4858867	653796	Pearson	TOR	TOR
104026	Duffins	Urfe Creek	4859199	654730	Pearson	TOR	TOR
104025	Duffins	West Duffins	4857115	654656	Pearson	TOR	TOR
104027	Duffins	East Duffins	4859419	655458	Pearson	TOR	TOR
104001	Duffins	Lower Main	4855880	657579	Pearson	MECP	MECP
CC005	Carruthers	Carruthers	4863072	658808	Pearson	TOR	TOR
107002	Carruthers	Carruthers	4856972	660850	Pearson	TOR	TOR

*TOR only for metals and *E.coli* starting in Dec 2019. MECP for others.

Note: 2020 laboratory support varied from this general schedule. Please refer to the methods section for more information.

Table 2. Standard suite of water quality parameters analyzed by City of Toronto, MECP, and York-Durham laboratories. The results of the 16 parameters in boldface are discussed in this report.

General Chemistry	Nutrients & Microbiological	Metals
Alkalinity	**Total ammonia**	**Aluminium**
Biochemical Oxygen Demand	***Nitrate (2.93 mg/L)**	**Arsenic (5 µg/L)**
Calcium	***Nitrite (0.06 mg/L)**	Barium
***Chloride (120 mg/L; 640 mg/L)**	**Nitrogen, Total Kjeldahl**	Beryllium
Conductivity	Phosphate	Cadmium
Dissolved Oxygen	***Total Phosphorus (0.03 mg/L)**	Chromium
Hardness	***E. coli* (100 CFU/100mL)**	Cobalt
Magnesium		***Copper (5 µg/L)**
pH (between 6.5 and 8.5)		**Iron (300 µg/L)**
Potassium		***Lead (5 µg/L)**
Sodium		Manganese
Total Dissolved Solids		Molybdenum
***Total Suspended Solids (30 mg/L)**		**Nickel (25 µg/L)**
Turbidity		Strontium
Water Temperature		Vanadium
		***Zinc (20 µg/L)**

Note: additional parameters may be analyzed on a site or project specific basis.
*PWQMN recommended indicator parameters

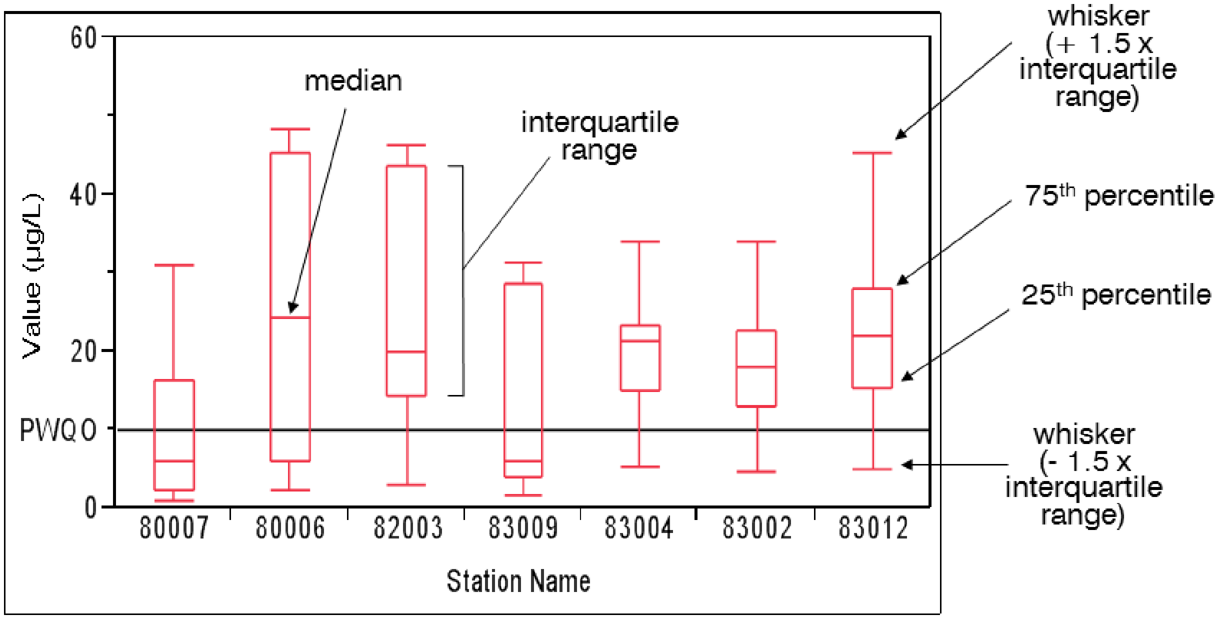

Figure 2. Example of a box plot graphic.

Stream conditions were recorded at the time of sampling to help characterize the sample with respect to flow response to recent or occurring precipitation. These field notes (Appendix A) as well as 2020 precipitation data from Pearson International Airport are included in this report to provide context to assist with interpretation of results.

Daily precipitation data were downloaded from the Environment Canada National Climate Data and Information Archive website (http://climate.weather.gc.ca/). Precipitation data from the meteorological station at Pearson International Airport were used for all stations (Table 1). When determining whether samples were collected during precipitation events, both precipitation on the day of sampling as well as the day prior to sampling were used. Wet events were assumed if there was greater than 10 mm of rain or 10 cm of snow on the day prior to sampling and before 3 pm on the day the sample was obtained. Dry events were assumed when there was less than 10 mm of rain or 10 cm of snow on the day prior to sampling and before 3 pm on the day the sample was obtained.

The results of the 2020 data are intended to provide a general characterization of TRCA surface water quality conditions. Due to the small annual sample size (10 or fewer months) for each station, only one or two high values (e.g. storm events) are required to skew results upwards. Therefore, one year of data cannot be assumed to represent normal conditions in the TRCA jurisdiction. The 2020 results should be considered a general overview of conditions and description of ranges of water quality parameters at stations across the jurisdiction. For more informative interpretation of results, the MECP recommends a minimum sample size of 30 samples per station (or 2.5 years of monthly data) to reduce the influence of unusual conditions such as spills, extreme runoff events and drought (OMOEE 2003). The results of the 2011-2015 Surface Water Quality report (TRCA 2017) provides sufficient sample sizes to characterize conditions at stations, watersheds and across the jurisdiction, and can be considered the most current representation of typical conditions within the jurisdiction. This report will be updated in 2021 to reflect current conditions from the 2016-2020 time period.

3 RESULTS

3.1 Precipitation

The jurisdictional precipitation discussed in this section was from Environment Canada's Pearson Airport meteorological station. In 2020, annual total precipitation was below average. The total amount of precipitation recorded in 2020 was 761 mm, which is 79 mm below the 19-year average of 840 mm (Figure 3).

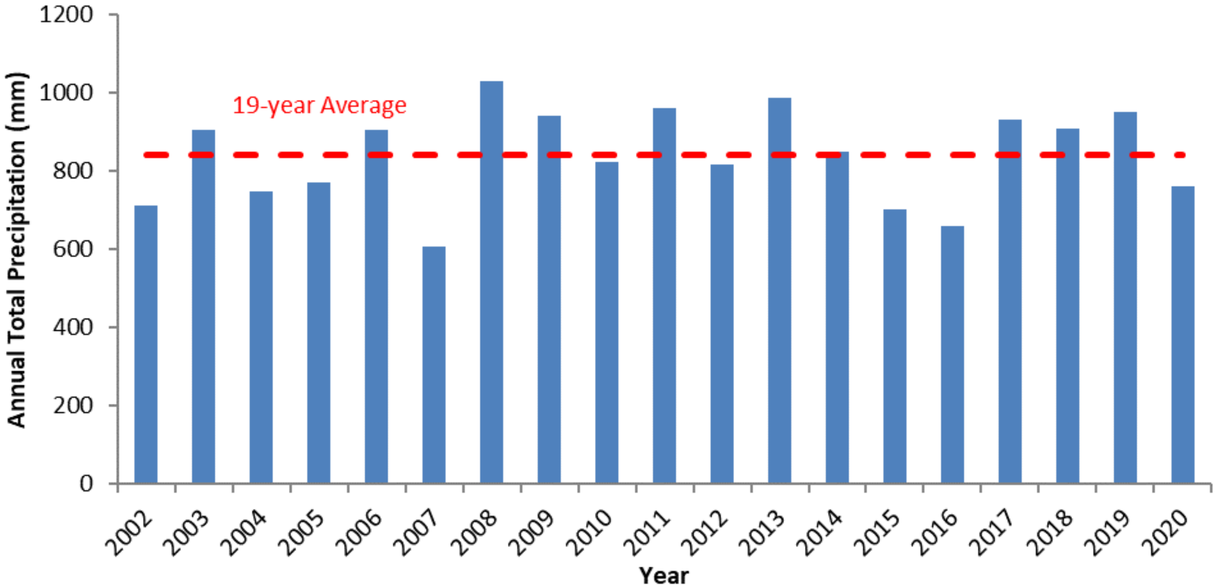

Figure 3. Annual precipitation for the TRCA jurisdiction from 2002 to 2020.

Figure 4 displays 2020 monthly precipitation and 19-year monthly precipitation averages. January, March, August, and December had higher than average total precipitation; however, every other month had lower than average total precipitation. Stations may exhibit elevated concentrations of water quality parameters and pollutants as a result of high precipitation.

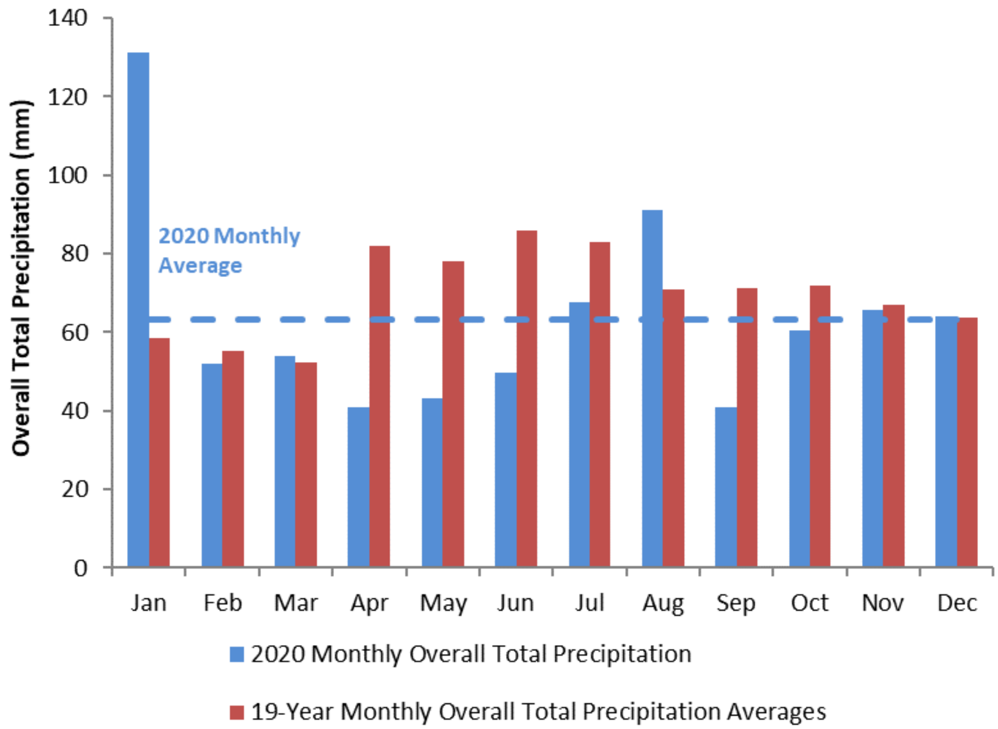

Figure 4. Monthly total precipitation for 2020 compared to 19-year monthly total precipitation averages.

Snowfall in 2020 (152 cm) was above average (130 cm) while 2006, 2010, 2012 and 2015 showed snowfall well below average and only 2008 (253cm) showed snowfall amounts well above average (Figure 5).

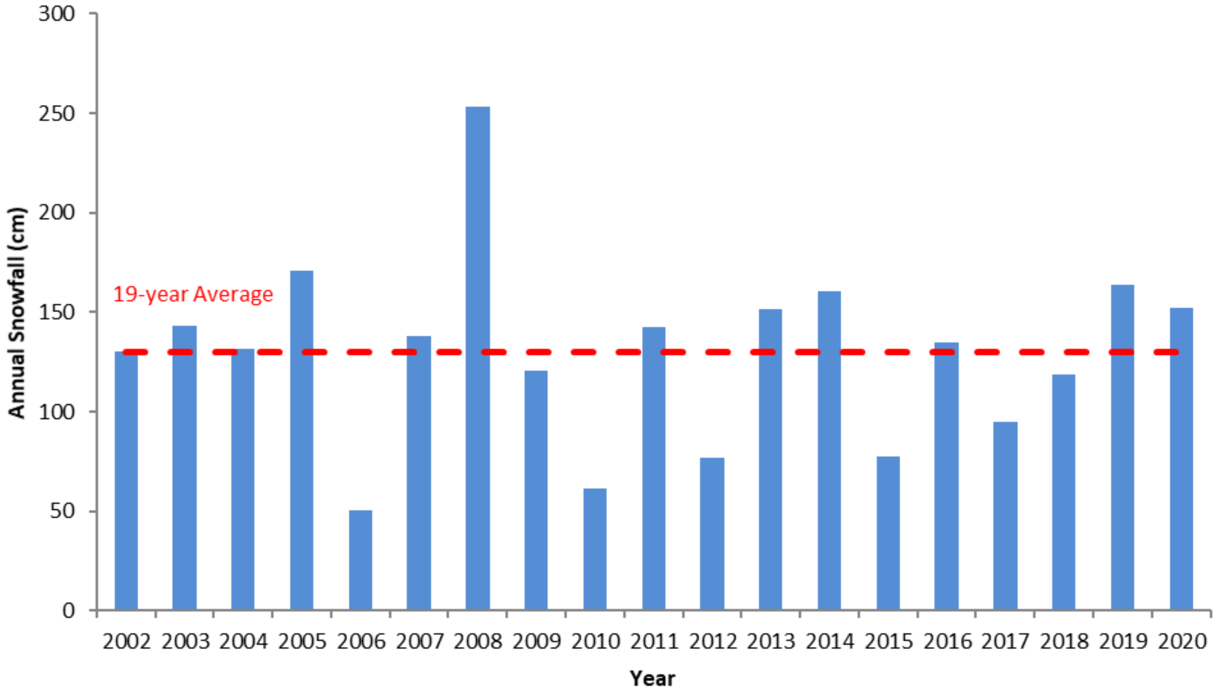

Figure 5. Annual snowfall from 2002 to 2020.

Stations were sampled independent of precipitation; however, Environment Canada precipitation data from the day of and the day prior to sampling were used to calculate the percentage of wet and dry sampling events (Table 3). The annual total number of sampling events ranged from 433 in 2009 to 600 in 2013 and this is due to a general increase in the number of stations. The number of sampling events was missing samples from March and April in 2020 due to the Covid-19 pandemic. Annual wet sampling events ranged from 9% in 2019 to 71% in 2011, with an average over the most recent five years of 15%. Dry events ranged from 29% in 2011 to 91% in 2019 and over the most recent five years averaged 85%.

Table 3. Wet and dry sampling events based on Environment Canada's Pearson Airport, from 2009 to 2014 and 2016 to 2020.

Year	Wet Events	Dry Events	Total Events	Wet Event Percentage	Dry Event Percentage
2020	65	405	470	13.8	86.2
2019	51	513	564	9.0	91.0
2018	177	387	564	31.4	68.6
2017	67	497	564	11.9	88.1
2016	60	504	564	10.6	89.4
2014	259	284	543	47.7	52.3
2013	355	245	600	59.2	40.8
2012	255	237	492	51.8	48.2
2011	349	143	492	70.9	29.1
2010	300	156	456	65.8	34.2
2009	252	181	433	58.2	41.8
Average	**199.1**	**322.9**	**522.0**	**41.7**	**58.3**

3.2 General Chemistry Parameters

3.2.1 Chloride

Chloride does not readily absorb onto mineral surfaces, and thus concentrations can be high in surface water and shallow aquifers, the latter releasing chloride throughout the year (CCME 2011). It can be toxic to aquatic organisms with acute toxic effects at high concentrations and chronic effects (on growth and reproduction) at lower concentrations (OMOE 2003). The CCME has two guidelines for chloride: acute, or short-term, and chronic, or long-term. The short-term guideline is 640 mg/L and the long-term guideline is 120 mg/L. A primary source of chloride is the application of road salt in winter months.

Station MM003WM in Mimico Creek had the highest median chloride value (1195 mg/L) while station 83009 in the upper reaches of the Main Humber River had the lowest median chloride value (35 mg/L; Figure 6). Most stations had concentrations above the chronic threshold except for stations in the upper Humber River, upper Rouge River and Duffins Creek watersheds. All stations in the Etobicoke Creek, Mimico Creek, Don River, Highland Creek, Petticoat Creek, Frenchman's Bay, and Carruthers Creek watersheds had median chloride concentrations above the chronic threshold. Four stations had median chloride concentrations above the acute guideline meaning that most aquatic species will experience severe effects, including mortality, above this guideline. These stations included Tributary 3 and Little Etob CK in Etobicoke Creek, MM003WM in middle Mimico Creek and HU1RWMP in the lower Black Creek.

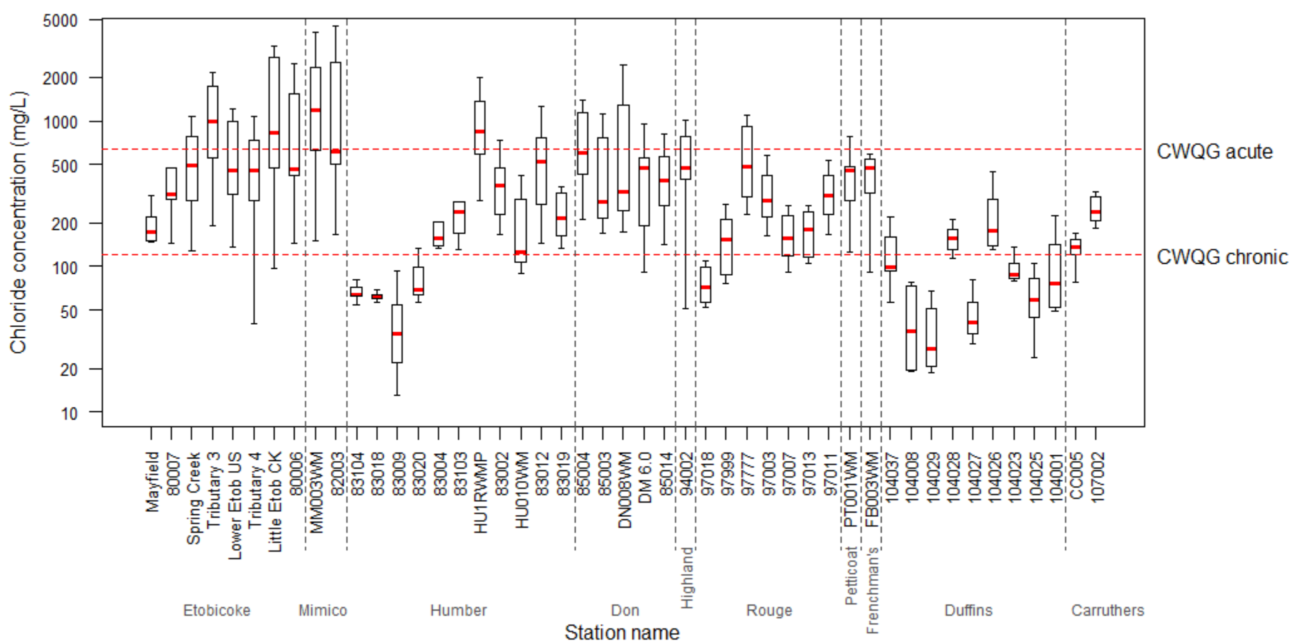

Figure 6. 2020 chloride concentrations (mg/L) at TRCA surface water quality monitoring stations (CWQG: long-term 120 mg/L (chronic) and short-term 640 mg/L (acute); CCME 2011).

3.2.2 Total Suspended Solids

Turbidity refers to the cloudiness of water due to suspended particles. Turbidity can be caused by stormwater runoff, erosion, increased stream flow, as well as by construction and agriculture. Higher turbidity can increase the likelihood that bacteria are present (which can attach to the particles), block light from penetrating to lower depths negatively affecting species dependent upon such light, reduce the absorption of oxygen by fish gills and impair stream aesthetics. Suspended particles can cause abrasion on fish gills and reduce the amount and quality of spawning habitat. Toxic organics and metals often adhere to suspended solids and may become available to benthic fauna when the solids settle (CCME 2007). The amount of total suspended solids (TSS) increases with higher precipitation, stream flow, erosion and higher agricultural or urban land uses. The Canadian Water Quality Guidelines contain a narrative guideline for TSS: the maximum increase of TSS should be no more than 25 mg/L from background concentrations (with TRCA using a background TSS concentration of 5 mg/L determined using data from the jurisdiction; CCME 2002).

Median TSS values did not exceed the CWQG of 30 mg/L for any stations in 2020 although the highest median TSS value was recorded at 97777 along the Rouge River in the western portion of the Rouge River watershed (Figure 7). In general, there was a wide range of values at most stations indicating that some samples were collected during turbid conditions which could have been caused by precipitation events or an unidentified source of sediments.

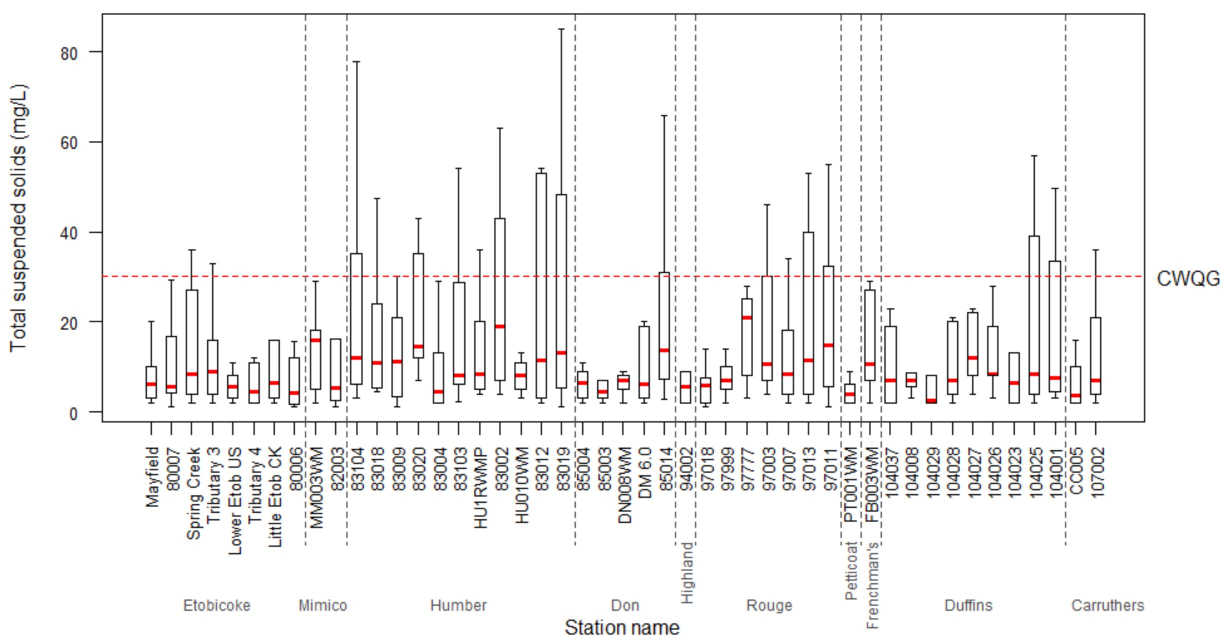

Figure 7. 2020 TSS concentrations (mg/L) at TRCA surface water quality monitoring stations (CWQG: 30 mg/L).

3.2.3 pH

pH is a measure of the acidity, neutrality or alkalinity of water. Fluctuations in pH can affect fish communities directly and indirectly by facilitating the release of organic and metal contaminants bonded to sediments. The pH of water also affects the toxicity of ammonia. Nutrient cycling, the discharge of industrial effluent and spills can result in pH fluctuations.

In 2020, no stations had median pH values that exceeded the upper or lower PWQO guidelines (Figure 8). The majority of stations exhibited limited variation in pH; however, station 83012 in the Lower Black Creek displayed the greatest range of data values.

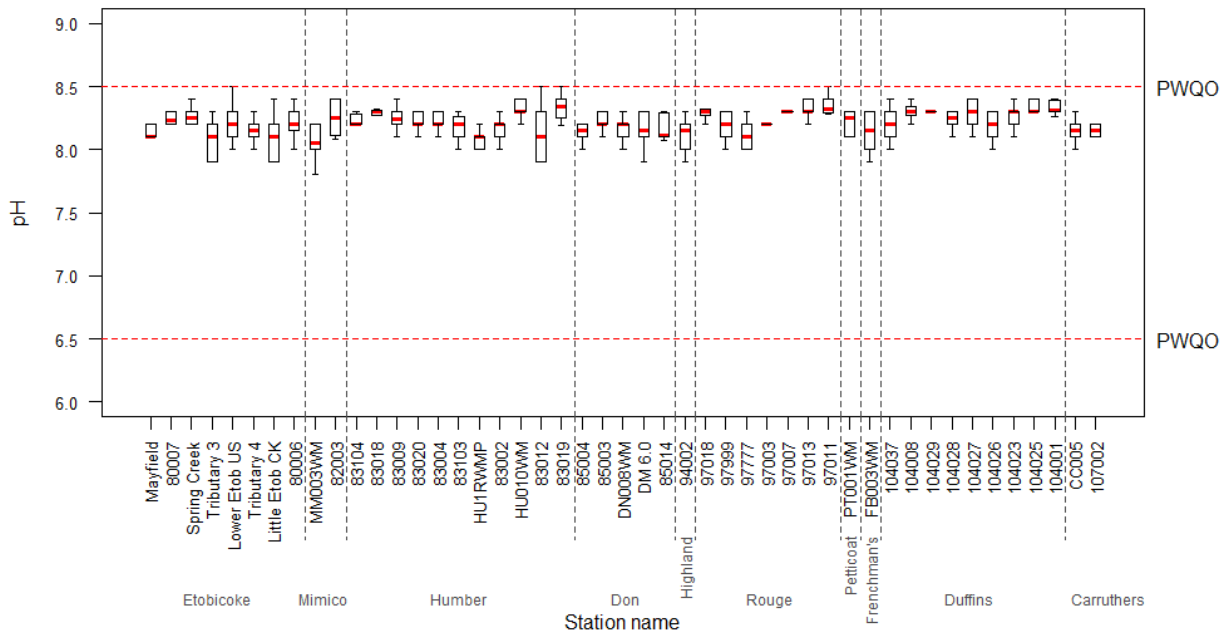

Figure 8. 2020 pH values at TRCA surface water quality monitoring stations (PWQO: 6.5-8.5).

3.3 Metals

Metals occur naturally in the environment usually in low concentrations. Industrial processes and increased stormwater runoff in urban areas can dramatically alter the distribution of metals and increase their concentration. High concentrations of metals can be toxic, cause disruptions to aquatic ecosystems and decrease the suitability of a waterbody to support aquatic life and supply water for domestic uses.

3.3.1 Aluminium

Since over 8% of the earth's crust is comprised of aluminium, the amount of aluminium in the environment from natural sources exceeds that from agriculture, industry and other anthropogenic sources. Acidic precipitation, poorly buffered soils and rapid spring snowmelts can increase concentrations of aluminium in streams (Wetzel 2001). Currently, there are no PWQO, CWQG or CESI guidelines which define the amount of allowable total aluminium for the protection of aquatic life.

In 2020, there was a wide degree of variation in aluminium concentrations although this is not unique to 2020 (Figure 9). The highest median aluminium value was at station 83002 on the West Humber River just south of the Claireville Reservoir.

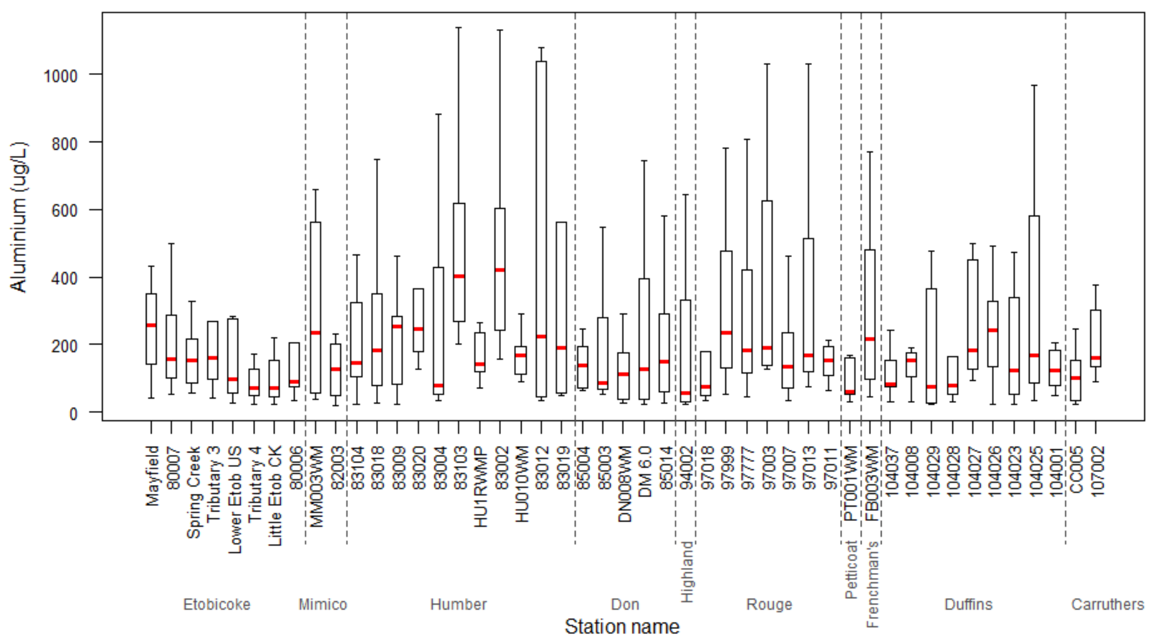

Figure 9. 2020 aluminium concentrations (ug/L) at TRCA surface water quality monitoring stations.

3.3.2 Arsenic

The weathering of rocks and soils, along with smelting and refining industries are sources of arsenic. Arsenic is an odourless, tasteless and toxic metal, for which the PWQO is 5 ug/L. PWQMN sites only represent data from five months (Jan-Feb, Oct-Dec) since data were sent to York-Durham for the other months and the detection limits were considerably higher (5 ug/L). Based on the data reported here, median arsenic concentrations at all stations in 2020 were below the PWQO of 5 ug/L (Figure 10). MM003WM in the Mimico Creek watershed had the highest median arsenic concentration of 1.87 ug/L.

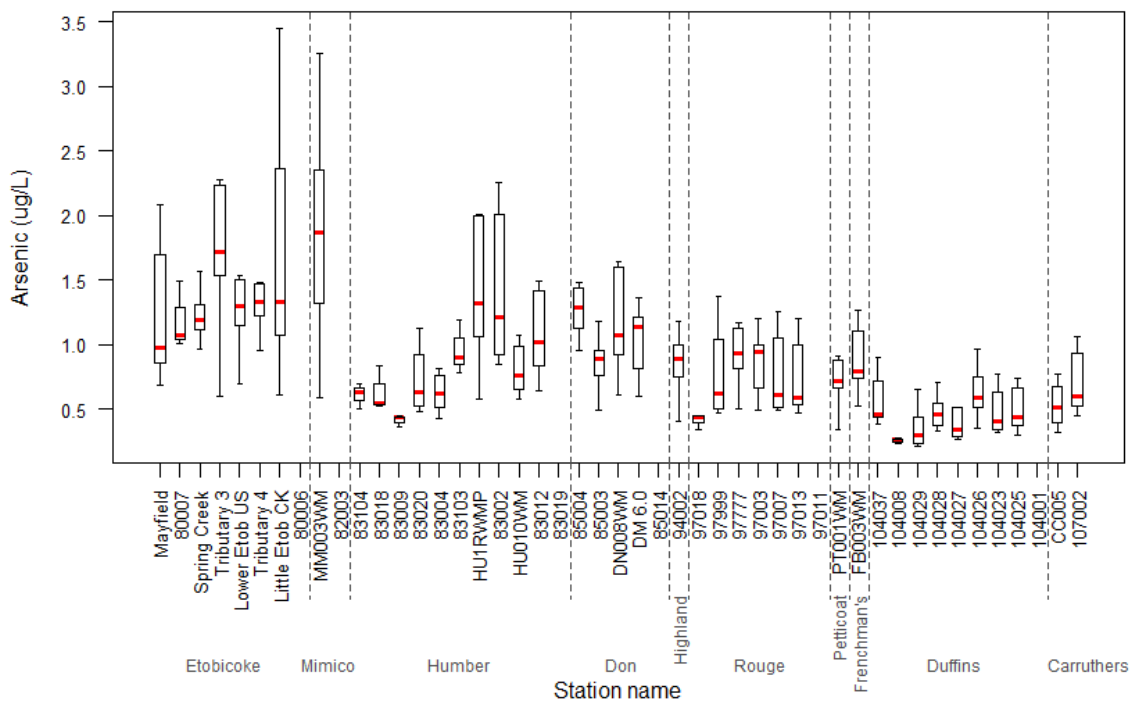

Figure 10. 2020 arsenic concentrations (ug/L) at TRCA surface water quality monitoring stations (PWQO: 5 ug/L). PWQMN sites with limited data included 80006, 80007, 83104, 83018, 83009, 83103, 82003, 83019, 85014, 97018, 97011, 104008, 104001.

3.3.3 Copper

Copper is a trace metal whose elevated concentrations are associated with urbanization. It may readily bind to soil particles (particularly organic matter) and is therefore relatively immobile. Anthropogenic sources of copper include textile manufacturing, paints, electrical conductors, plumbing fixtures and pipes, wood preservatives, pesticides, fungicides and sewage treatment plant effluent (OMOE 2003).

PWQMN sites only represent data from five months (Jan-Feb, Oct-Dec) since data were sent to York-Durham for the other months and the detection limits were considerably higher (20 ug/L). Based on the data reported here, median copper concentrations exceeded the PWQO guideline at five stations: 80006 at the mouth of Etobicoke Creek, MM003WM and 82003 in Mimico Creek, 83019 at the mouth of the Humber River, and 85014 at the mouth of the Don River (Figure 11). These stations are located in the in heavily urbanized and industrial areas or at the mouth of watersheds with considerable urbanization in the vicinity.

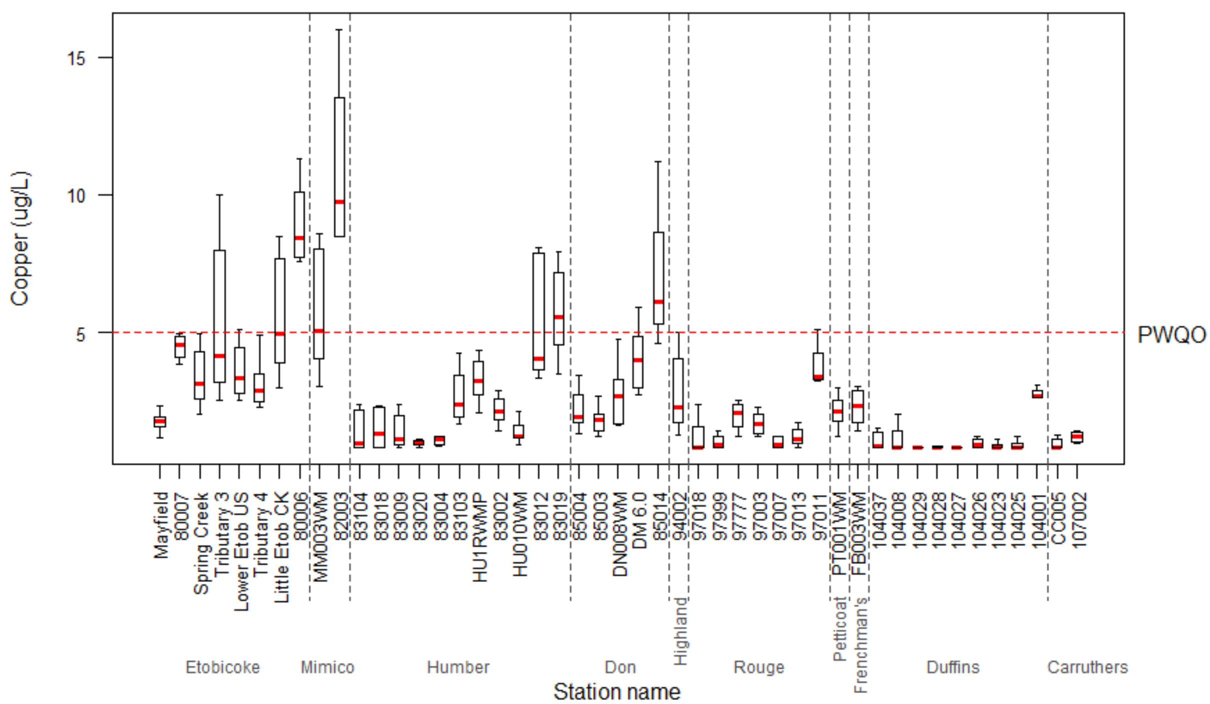

Figure 11. 2020 copper concentrations (ug/L) at TRCA surface water quality monitoring stations (PWQO: 5 ug/L). PWQMN sites with limited data included 80006, 80007, 83104, 83018, 83009, 83103, 82003, 83019, 85014, 97018, 97011, 104008, 104001.

3.3.4 Iron

Iron comes from various natural and anthropogenic sources in the environment. Natural sources include weathering of bedrock and anthropogenic sources include landfills, water purification and sewage treatment systems and pesticides and fertilizers (Dodson 2005). Iron is needed for proper ecosystem functioning as it is a necessary component of many biological processes for plants and animals; however, it can be toxic in higher concentrations (Dodson 2005).

Median iron concentrations for 13 of 47 stations in 2020 exceeded the PWQO of 300 ug/L (Figure 12). The highest median iron concentration was 534 ug/L at station 83012 on the Lower Black Creek.

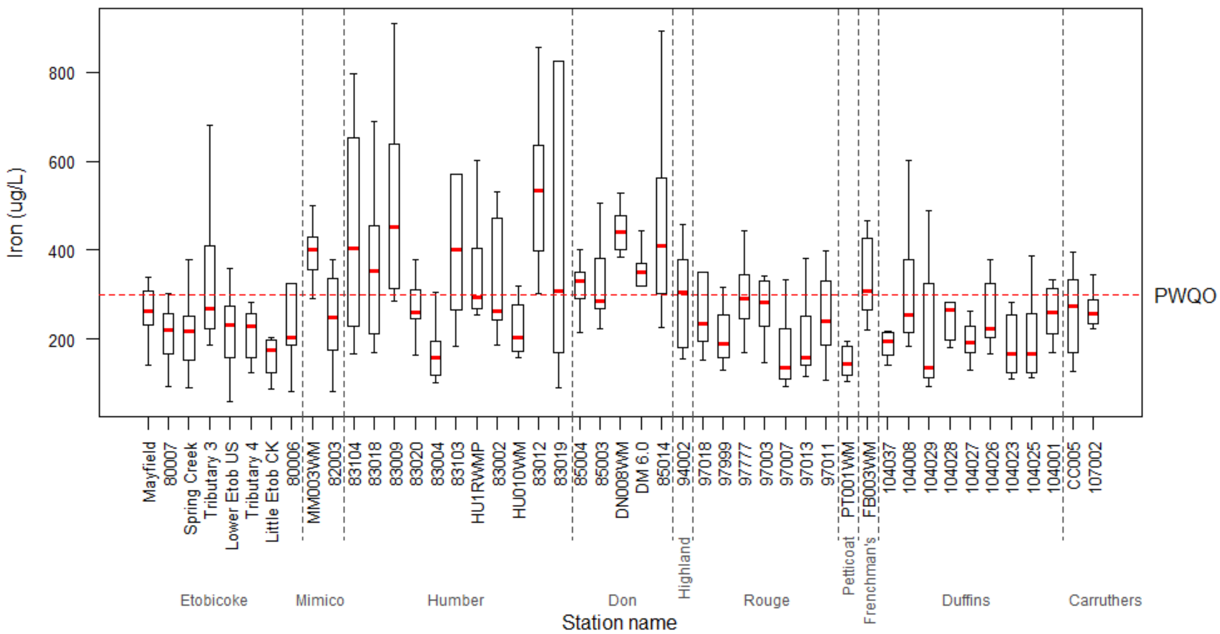

Figure 12. 2020 iron concentrations (ug/L) at TRCA surface water quality monitoring stations (PWQO: 300 ug/L).

3.3.5 Lead

Laboratory results for lead from the MECP were excluded from analysis because the MECP minimum detection limit (MDL) of 7 ug/L is much higher than the MDL for the City of Toronto (0.05 ug/L) and the PWQO of 5 ug/L. Also, PWQMN sites only represent data from five months (Jan-Feb, Oct-Dec) since data were sent to York-Durham for the other months and the detection limits were considerably higher (20 ug/L).

Based on the data reported here, all 41 stations had median lead concentrations well below the PWQO (Figure 13). Station 83009 in the upper reaches of the Main Humber River and 83012 on the lower Black Creek had maximum lead concentrations above the PWQO (24 ug/L and 5.15 ug/L, respectively).

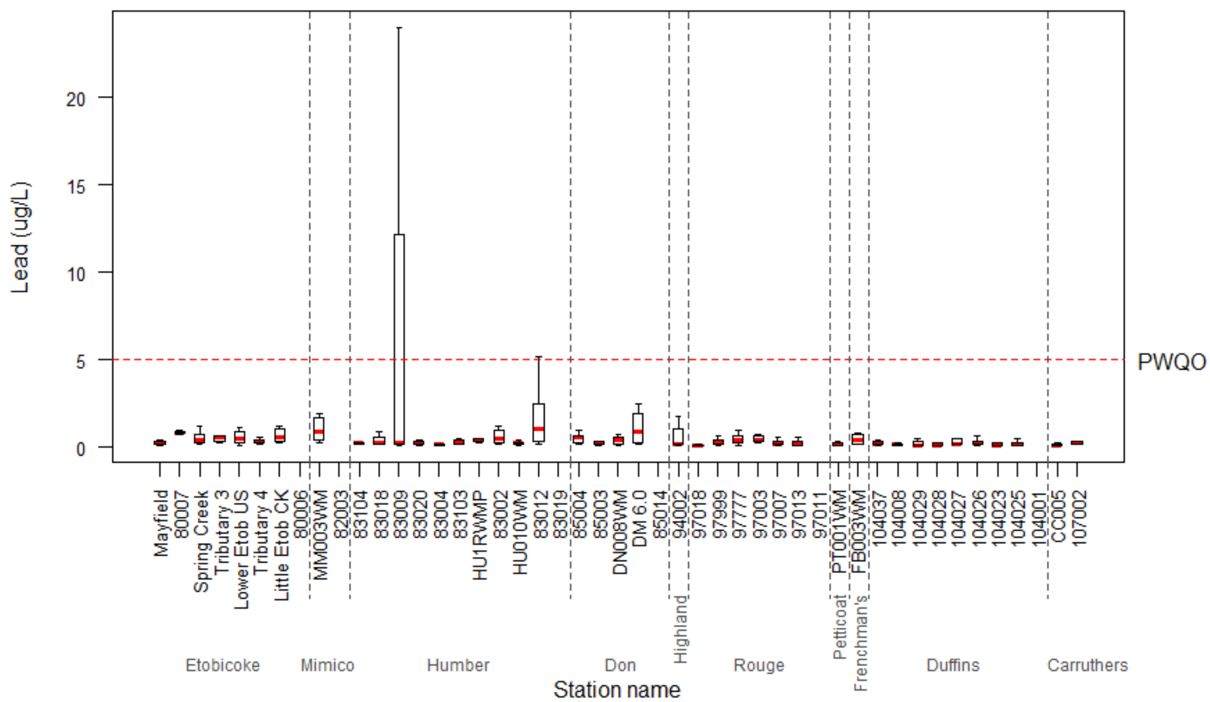

Figure 13. 2020 lead concentrations (ug/L) at TRCA surface water quality monitoring stations (PWQO: 5 ug/L). PWQMN sites with limited data included 80006, 80007, 83104, 83018, 83009, 83103, 82003, 83019, 85014, 97018, 97011, 104008, 104001.

3.3.6 Nickel

For PWQMN sites, only data from five months (Jan-Feb, Oct-Dec) were used in Figure 14 due to detection limit issues. Samples were sent to York-Durham for the other months and the detection limits were considerably higher than other labs (20 ug/L). Also due to a higher MDL, MECP laboratory results for 2020 that were reported as <2 ug/L detection limit were excluded.

Based on the data reported here, median nickel concentrations were highest at stations Tributary 3 (1.67 ug/L) in Etobicoke Creek, MM003WM (1.42 ug/L) in middle Mimico Creek, HU1RWMP (1.31 ug/L) on the upper Black Creek and 83012 (1.79 ug/L) on the lower Black Creek. All stations were below the PWQO of 25 ug/L.

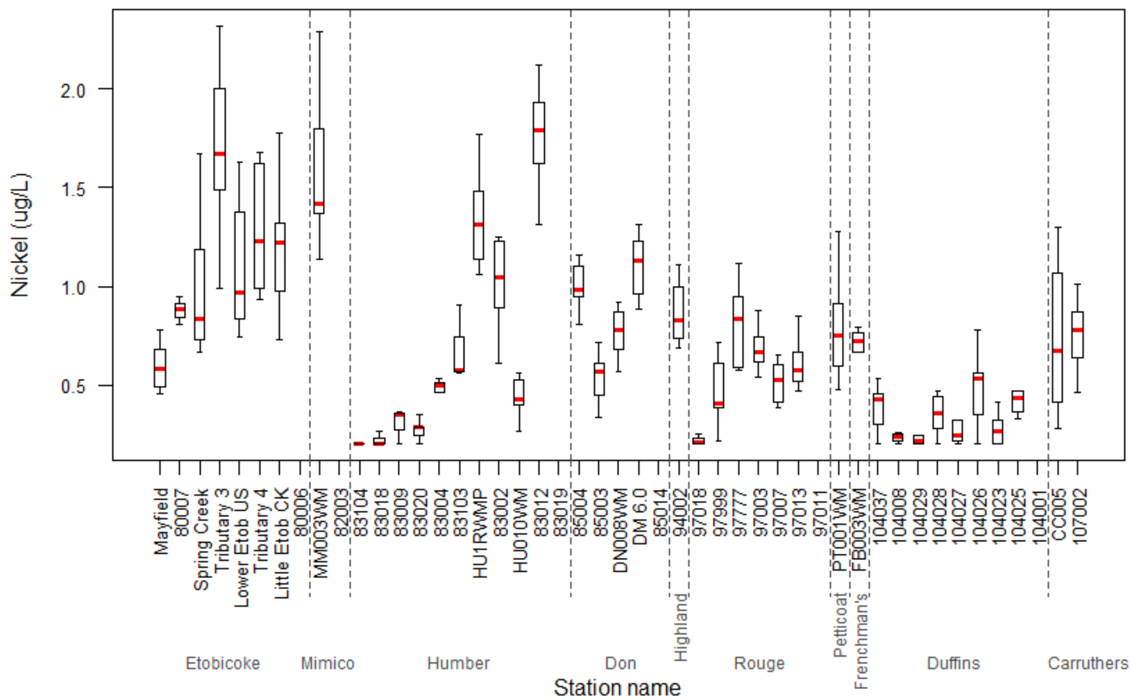

Figure 14. 2020 nickel concentrations (ug/L) at TRCA surface water quality monitoring stations (PWQO: 25 ug/L). PWQMN sites with limited data included 80006, 80007, 83104, 83018, 83009, 83103, 82003, 83019, 85014, 97018, 97011, 104008, 104001.

3.3.7 Zinc

Similar to other metals, the natural process of weathering makes zinc available in ecosystems. Anthropogenic sources include municipal wastewater, wood combustion, iron and steel production, and waste incineration (OMOEE 2003).

The MDL for the City of Toronto laboratory was 10 ug/L and these appear as a straight line on the graph meaning that the actual zinc concentration was below 10 ug/L which is below the PWQO of 20 ug/L. Only station MM003WM on Mimico Creek had a median zinc concentration above the PWQO in 2020 (Figure 15). Zinc concentrations tended to be the lowest in the Humber River, Rouge River, Duffins Creek, and Carruthers Creek watersheds.

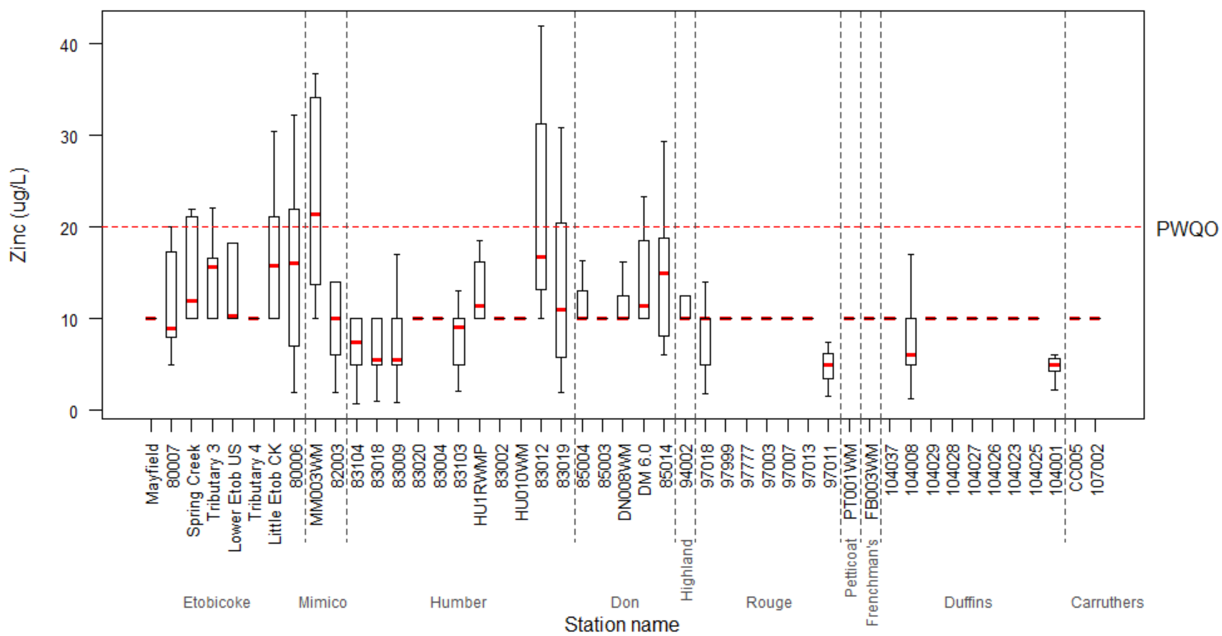

Figure 15. 2020 zinc concentrations (ug/L) at TRCA surface water quality monitoring stations (PWQO: 20 ug/L).

3.4 Bacteria

Escherichia coli (*E. coli*) are part of the coliform group of bacteria commonly found in the digestive systems of warm-blooded animals (Health Canada 2012). *E. coli* are used to indicate the presence of fecal contamination in water since it is not naturally found on plants or in soils and water. *E. coli* can affect human health by causing gastrointestinal illness and potentially more serious health problems (Health Canada 2012). *E. coli* levels may increase in urbanized areas due to inadequately designed combined sewer systems, illegal connections between storm and sanitary sewers and precipitation events that overflow those sewer systems (CCME 2003). Municipalities use *E. coli* as an indicator to ensure that drinking water and recreational bathing waters are safe; however, RWMP monitoring of *E. coli* levels in TRCA streams was designed to measure and track long-term watershed health.

Tributary 4 in Etobicoke Creek had the highest median *E. coli* count of 1845 CFU/mL (Figure 16). The lowest *E. coli* counts were generally found in the upper reaches of the watersheds, but tended to be generally low in the Duffins Creek and Carruthers Creek watersheds.

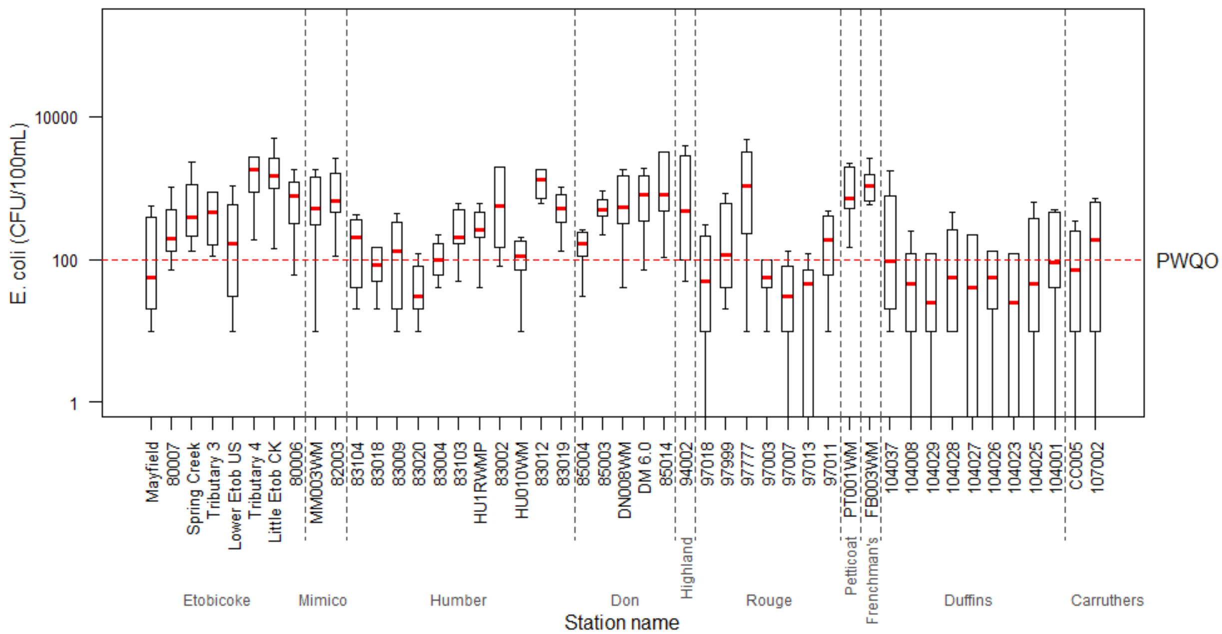

Figure 16. 2020 E. coli concentrations (CFU/100 mL) at TRCA surface water quality monitoring stations (PWQO: 100 CFU/100 mL).

3.5 Nutrients

Nitrogen and phosphorus are critical to plant and animal life and their concentrations determine the productivity of aquatic systems. Phosphorus is commonly the growth limiting nutrient in aquatic systems; however, if there are substantial phosphorus loadings, nitrogen becomes the limiting nutrient.

Nitrogen occurs in various forms such as nitrate, nitrite, and ammonia. Nitrate is the most common form of nitrogen entering freshwater systems and is assimilated by plants. Upon the decomposition of plant matter, dissolved organic nitrogen is converted to ammonia, an energy-efficient source of nitrogen for plants (Dodson 2005). Bacteria convert ammonia into nitrate, nitrite, and nitrogen. Nitrite is easily converted and rarely accumulates unless organic pollution is high (Wetzel 2001). Total Kjeldahl nitrogen (TKN) is a quantitative determination of nitrogen and ammonia that is required in the analysis of sewage treatment plant effluent.

Anthropogenic sources of nitrogen and phosphorus (agricultural fertilizer, animal wastes and municipal sewage) that move into aquatic systems can cause unusually high concentrations of these nutrients. This over-nutrition, or eutrophication, of aquatic environments can promote excessive plant and algae growth. Eutrophic lakes can be characterized by algal blooms which reduce recreational use and deplete oxygen levels to the detriment of other biota, especially fish. Excessive growth of aquatic plants in streams can cause dissolved oxygen concentrations to decrease during the night to levels that may not sustain certain aquatic species, as well as reduce the aesthetic appeal of the stream.

3.5.1 Ammonia

Currently, there are no PWQO, CWQG or CESI guidelines which define the amount of allowable total ammonia (ammonia + ammonium) for the protection of aquatic life. The highest median ammonia concentrations were at stations MM003WM in Mimico Creek (315 ug/L), 85014 in the lower Don River (316 ug/L), and 83012 on the lower Black Creek (335 ug/L).

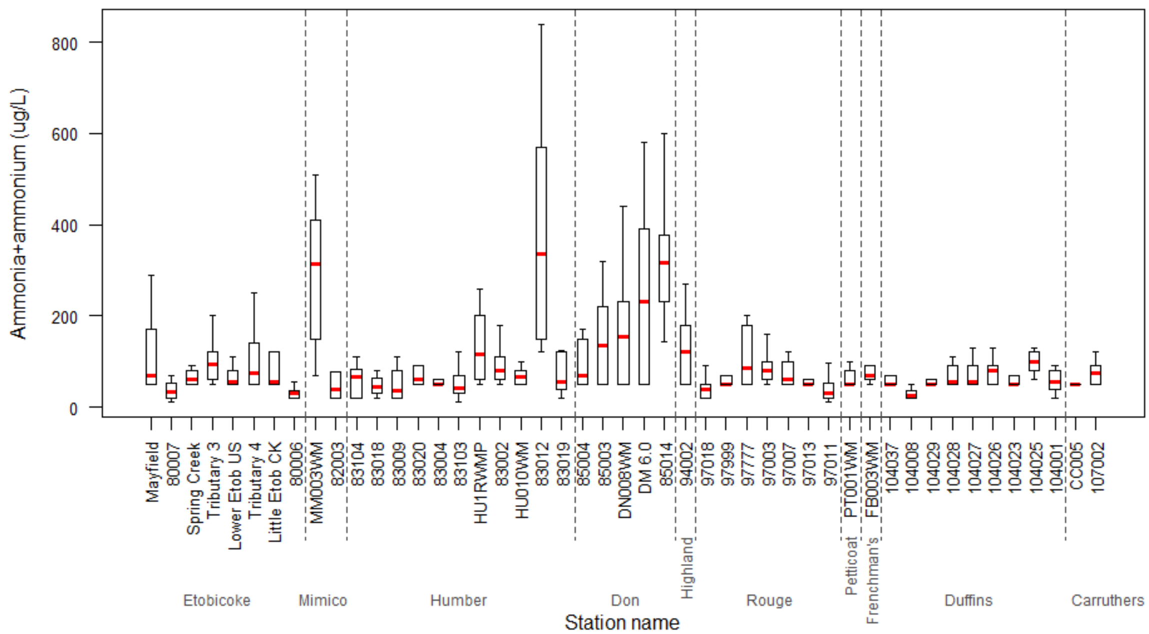

Figure 17. 2020 ammonia concentrations (ug/L) at TRCA surface water quality monitoring stations.

3.5.2 Nitrate

There were no stations with median nitrate concentrations above the CWQG guideline of 2.93 mg/L (Figure 18). Stations DM 6.0 and 85014 in the Lower Don had the highest median nitrate concentrations of 1.71 and 1.26 mg/L, respectively followed by 83012 in Lower Black Creek (1 mg/L).

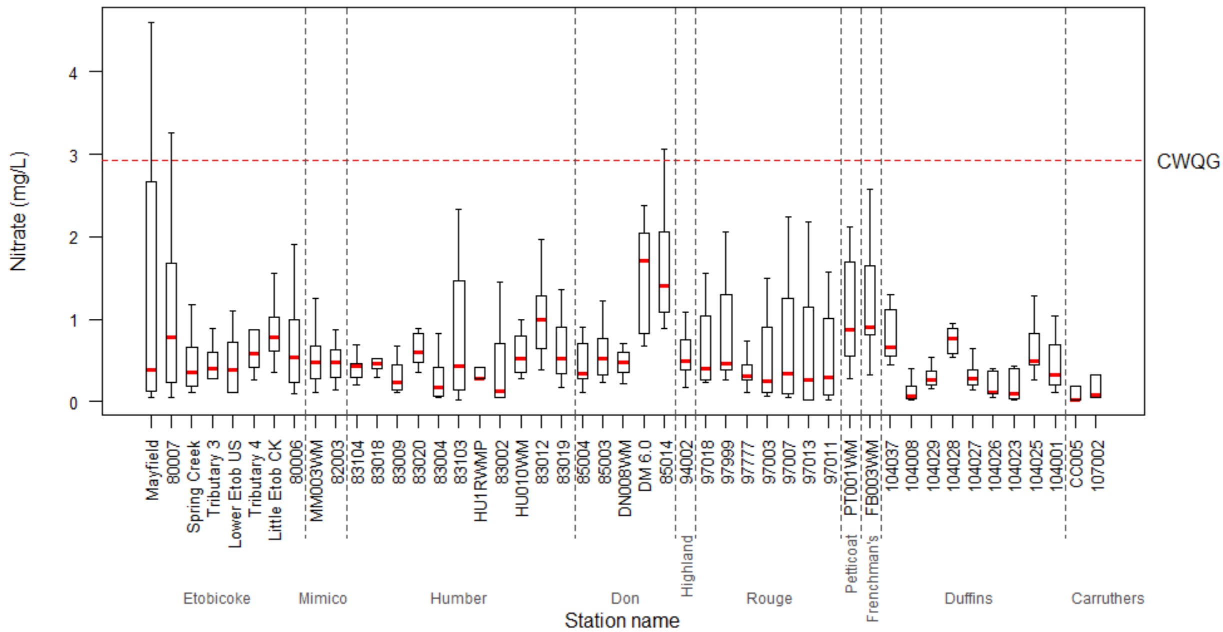

Figure 18. 2020 nitrate concentrations (mg/L) at TRCA surface water quality monitoring stations (CWQG: 2.93 mg/L).

3.5.3 Nitrite

Median nitrite concentrations exceeded the CWQG of 0.06 mg/L at station 85014 in the lower Don River watershed (Figure 19). Stations 83012 on the lower Black Creek, DM 6.0 on the lower Don River, and FB003WM in Frenchman's Bay had interquartile ranges suggesting higher nitrite. The upper Humber River, Rouge River, Duffins Creek and Carruthers Creek watersheds had the lowest nitrite levels and Etobicoke Creek, Mimico Creek, lower Humber River, Don River, and Frenchman's Bay had higher nitrite levels.

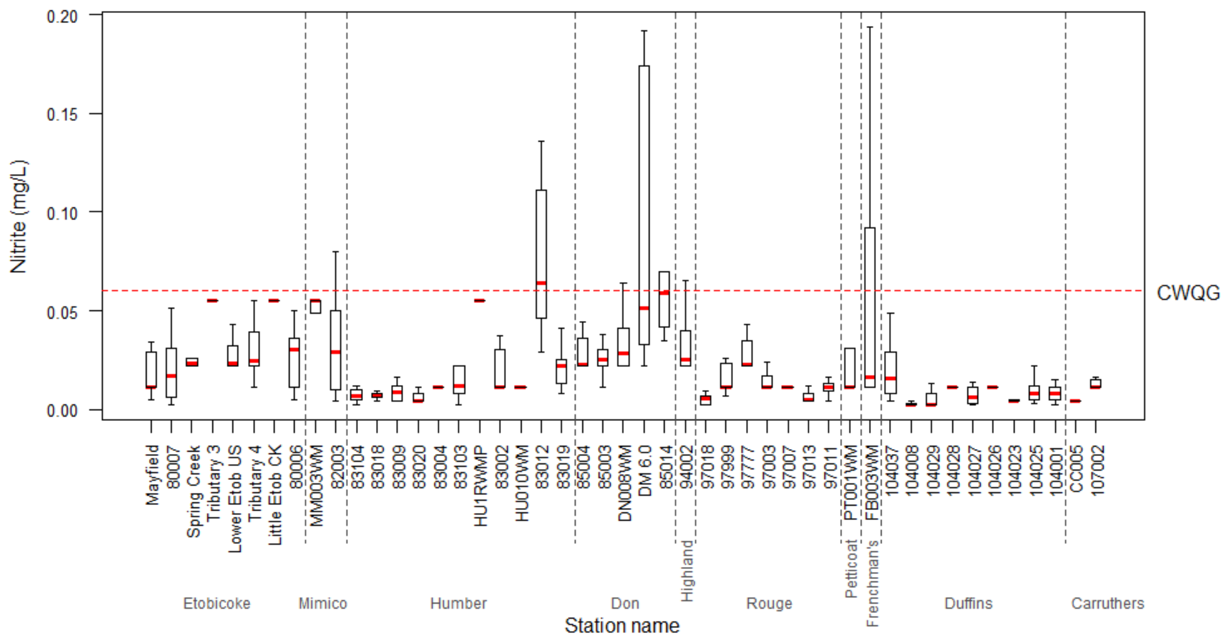

Figure 19. 2020 nitrite concentrations (mg/L) at TRCA surface water quality monitoring stations (CWQG: 0.06 mg/L).

3.5.4 Total Kjeldahl Nitrogen

The following stations had limited (5-8 months) of TKN data: 80007, 80006, 82003, 83104, 83018, 83009, 83103, 83019, 85014, 97018, 97011, 104008, 104001. The highest median TKN concentrations were found at 83012 (1.54 mg/L) on the lower Black Creek, MM003WM in Mimico Creek (1.41 mg/L), and 85014 at the Don River mouth (1.31 mg/L). TKN concentrations were lowest in the upper Humber River, upper Don River, Duffins Creek, and Carruthers Creek watersheds.

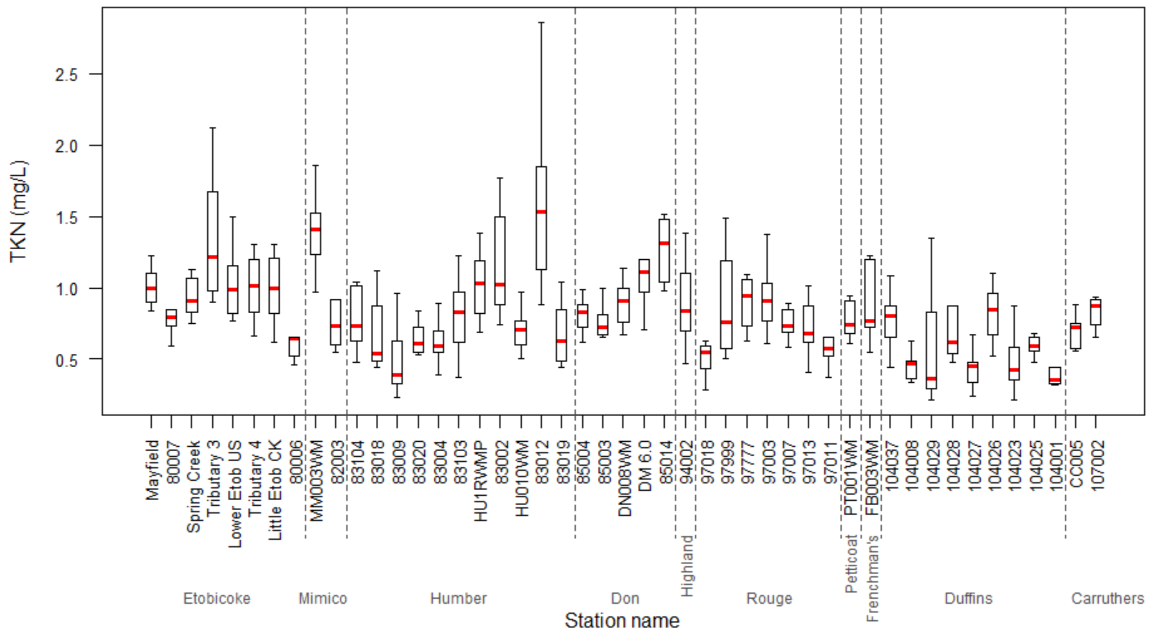

Figure 20. 2020 TKN concentrations (mg/L) at TRCA surface water quality monitoring stations.

3.5.5 Phosphorus

Phosphorus readily binds to sediment particles and increases in phosphorus concentrations are typically associated with storm events and elevated levels of suspended solids. The highest median phosphorus concentrations were at stations 85014 (0.128 mg/L) and DM 6.0 (0.172) in the lower Don River watershed (Figure 21). Thirty-five stations had median phosphorus concentrations above the PWQO of 0.03 mg/L, and 12 stations were below the guideline.

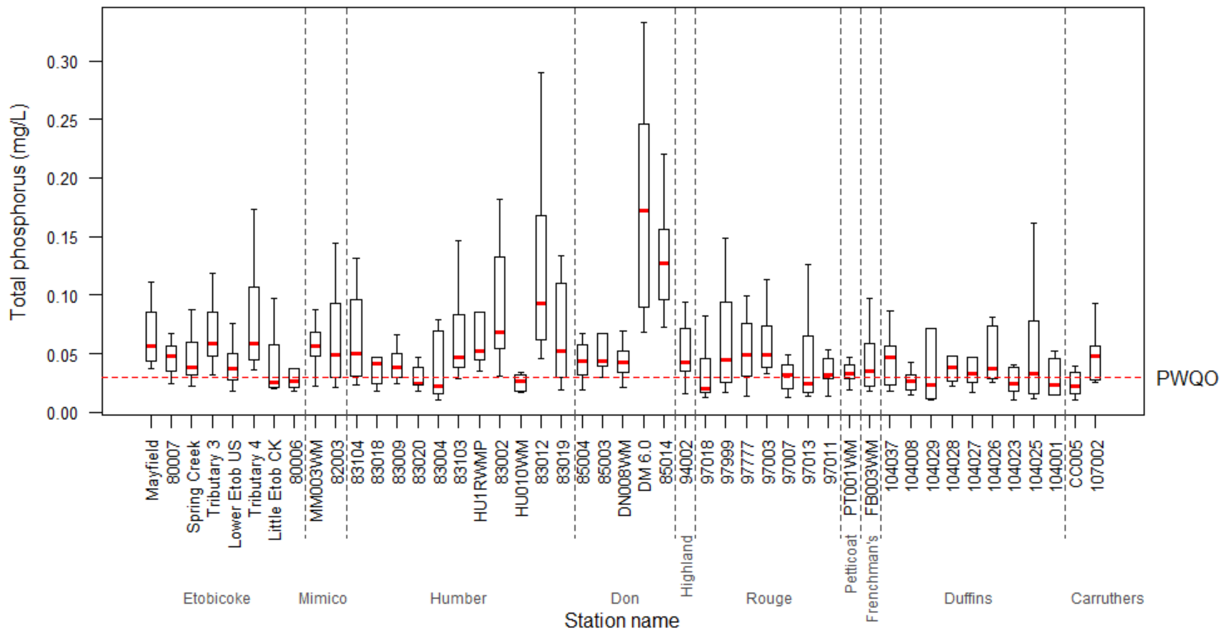

Figure 21. 2020 phosphorus concentrations (mg/L) at TRCA surface water quality monitoring stations (PWQO: 0.03 mg/L).

4 SUMMARY

This report represents a summary assessment and characterization of 47 water quality stations based on 16 water quality parameters collected throughout 2020. Annual total precipitation in 2020 was below the 19-year average. Monthly precipitation in January, March, August, and December was higher than the monthly 19-year average but all other months were lower. Snowfall in 2020 was above the 19-year average. Sampling was performed irrespective of precipitation, and it should be expected that levels of many of the parameters presented in this report would be higher when mobilized by storm events. Due to the COVID-19 pandemic, samples were not collected during March and April and due to limited lab capacity at the MECP during summer months, samples that were usually sent to the MECP laboratory were sent to the York-Durham Laboratory leading to detection limit issues.

Chloride concentrations were highest in areas of each watershed that are known to be urbanized. This observation has been supported in the literature and can also be specifically related to the Toronto region (Williams et al. 1999, Kaushal et al. 2005, Findlay and Kelly 2011). Stations with the highest chloride concentrations were in the Etobicoke Creek, Mimico Creek, lower Humber River, and Don River watersheds (Little Etob CK, Tributary 3, MM003WM, 82003, HU1RWMP, 85004). Stations with the lowest chloride concentrations were in the upper Humber River, upper Rouge River, and Duffins Creek watersheds.

Stations with particularly high median concentrations of metals included stations MM003WM and 82003 in the Mimico Creek watershed, most stations in the Etobicoke Creek watershed (but particularly Tributary 3 and 80006), and station 83012 in the lower Humber River. Metals did not show clear and consistent patterns among stations and this could be due to the variability in the location of point-sources and/or temporal variation in when they are discharged. Arsenic and lead are two metals that are not required for biological activity and are toxic to aquatic organisms (Dodson 2005). Several stations had maximum arsenic values approaching the PWQO of 5 ug/L including Tributary 3 and in the Etobicoke Creek watershed and MM003WM in the Mimico Creek watershed. Maximum lead values exceeded the PWQO of 5 ug/L at 83012 on the lower Black Creek and 83009 in the upper reaches of the main Humber River. Metal concentrations were generally the lowest in the upper Humber River and the upper Duffins Creek watersheds.

Median nutrient and *E. coli* values were often highest at stations DM 6.0 and 85014 in the lower Don River watershed and at station 83012 on the lower Black Creek. Station 85014 is downstream of the North Toronto Wastewater Treatment Plant and stations DM 6.0 and 83012 are in the lower Don River and Humber River watersheds, respectively. The upper Humber River, Duffins Creek, and Carruthers Creek watersheds had the lowest median nutrient concentrations and *E. coli* counts. The upper Rouge River watershed also had low nutrients and *E. coli* in general; however, nitrate concentrations were higher and compared more closely to the Etobicoke Creek watershed with moderate concentrations.

Overall, stations in areas known to be more heavily urbanized or industrialized had poorer water quality with higher concentrations of chloride, metals, nutrients, and *E. coli*. Stations in watersheds with less urbanization/industry or in more rural areas of watersheds tended to have better water quality with lower concentrations of chloride, metals, nutrients, and *E. coli*. Stream water quality varied across the Toronto region demonstrating the diversity of land uses and point-sources affecting streams and potential opportunities for further investigation, remediation/restoration, and protection.

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6 APPENDIX

6.1 Appendix A. Water quality stream conditions from field notes for 2020.

Station	January	February	May	June	July
80006	CLEAR, FROZEN SLIGHTLY	CLEAR	CLEAR	HIGH SLIGHTLY, TURBID SLIGHTLY	CLEAR
80007	HIGH SLIGHTLY, TURBID SLIGHTLY, FROZEN SLIGHTLY	TURBID SLIGHTLY, HIGH SLIGHTLY	CLEAR	CLEAR/SLIGHTLY HIGH	CLEAR
82003	CLEAR, FROZEN SLIGHTLY	CLEAR	CLEAR	TURBID SLIGHTLY, HIGH	CLEAR
83002	CLEAR, FROZEN SLIGHTLY	CLEAR	SLIGHTLY TURBID	TURBID, HIGH	SLIGHTLY TURBID
83004	HIGH, FROZEN SLIGHTLY	TURBID SLIGHTLY	CLEAR	CLEAR	CLEAR
83009	CLEAR, FROZEN SLIGHTLY	CLEAR	CLEAR	SLIGHTLY HIGH/TURBID	TURBID SLIGHTLY, HIGH SLIGHTLY
83012	CLEAR	HIGH/TURBID SLIGHTLY	CLEAR	CLEAR	TURBID, HIGH
83018	CLEAR, HIGH SLIGHTLY, FROZEN SLIGHTLY	CLEAR, FROZEN SLIGHTLY	CLEAR	HIGH SLIGHTLY	CLEAR, HIGH SLIGHTLY
83019	CLEAR, FROZEN	HIGH/TURBID SLIGHTLY	CLEAR	SLIGHTLY HIGH/TURBID	TURBID, HIGH
83020	HIGH, FROZEN SLIGHTLY	TURBID SLIGHTLY, HIGH	SLIGHTLY TURBID	TURBID/HIGH	SLIGHTLY TURBID
83103	CLEAR, FROZEN SLIGHTLY	CLEAR	CLEAR	TURBID/HIGH SLIGHTLY	TURBID, HIGH SLIGHTLY
83104	CLEAR, FROZEN SLIGHTLY	FROZEN/CLEAR	CLEAR	HIGH SLIGHTLY/TURBID	TURBID, HIGH SLIGHTLY
85003	CLEAR, FROZEN SLIGHTLY	CLEAR	CLEAR	TURBID SLIGHTLY, HIGH SLIGHTLY	TURBID SLIGHTLY
85004	CLEAR, FROZEN SLIGHTLY	TURBID SLIGHTLY	CLEAR	TURBID SLIGHTLY	CLEAR, HIGH SLIGHTLY
85014	CLEAR	TURBID SLIGHTLY, HIGH SLIGHTLY	CLEAR	SLIGHTLY HIGH/TURBID	TURBID, HIGH
94002	HIGH, FROZEN SLIGHTLY	TURBID SLIGHTLY	CLEAR	CLEAR	TURBID, SLIGHTLY HIGH
97003	HIGH, FROZEN SLIGHTLY	TURBID SLIGHTLY, HIGH SLIGHTLY	SLIGHTLY TURBID	SLIGHTLY TURBID	TURBID SLIGHTLY, HIGH SLIGHTLY
97007	HIGH, FROZEN SLIGHTLY	PARTIALLY FROZEN, TURBID SLIGHTLY	CLEAR	CLEAR	CLEAR
97011	HIGH, FROZEN SLIGHTLY	HIGH SLIGHTLY	CLEAR	SLIGHTLY HIGH, CLEAR	TURBID, HIGH
97013	HIGH, FROZEN SLIGHTLY	PARTIALLY FROZEN, TURBID SLIGHTLY	SLIGHTLY TURBID/ HIGH	SLIGHTLY HIGH, SLIGHTLY TURBID	TURBID SLIGHTLY, HIGH
97018	CLEAR, FROZEN SLIGHTLY	CLEAR, PARTIALLY FORZEN	CLEAR	CLEAR	CLEAR
97777	CLEAR, FROZEN SLIGHTLY	CLEAR	SLIGHTLY TURBID	TURBID SLIGHTLY	SLIGHTLY TURBID
97999	SLIGHTLY TURBID, FROZEN SLIGHTLY	CLEAR, PARTIALLY FORZEN	SLIGHTLY TURBID/HIGH	TURBID SLIGHTLY	SLIGHTLY TURBID
104001	SLIGHTLY TURBID, FROZEN SLIGHTLY	TURBID SLIGHTLY, HIGH SLIGHTLY	CLEAR	TURBID SLIGHTLY	SLIGHTLY TURBID
104008	CLEAR, FROZEN SLIGHTLY	CLEAR, PARTIALLY FORZEN	CLEAR	CLEAR	CLEAR
104023	CLEAR, FROZEN SLIGHTLY	SLIGHTLY HIGH, TURBID, FROZEN	TURBID/HIGH	HIGH, TURBID	SLIGHTLY TURBID
104025	SLIGHTLY TURBID, FROZEN SLIGHTLY	TURBID SLIGHTLY	TURBID/HIGH	TURBID, HIGH SLIGHTLY	TURBID
104026	SLIGHTLY TURBID, FROZEN SLIGHTLY	CLEAR	SLIGHTLY TURBID, HIGH	HIGH SLIGHTLY, CLEAR	SLIGHTLY TURBID
104027	SLIGHTLY TURBID, FROZEN SLIGHTLY	TURBID SLIGHTLY	TURBID/HIGH	HIGH SLIGHTLY	CLEAR
104028	SLIGHTLY TURBID, FROZEN SLIGHTLY	CLEAR	TURBID/SLIGHTLY HIGH	CLEAR	CLEAR
104029	CLEAR, FROZEN SLIGHTLY	CLEAR	TURBID/SLIGHTLY HIGH	CLEAR	CLEAR
104037	CLEAR, FROZEN	CLEAR, PARTIALLY FORZEN	SLIGHTLY TURBID/HIGH	CLEAR	CLEAR
107002	SLIGHTLY TURBID, FROZEN SLIGHTLY	CLEAR	CLEAR	TURBID SLIGHTLY	SLIGHTLY TURBID
CC005	CLEAR, FROZEN SLIGHTLY	CLEAR	SLIGHTLY TURBID/HIGH	OIL SHEEN IN SPOTS	CLEAR
DM 6.0	CLEAR, FROZEN SLIGHTLY	TURBID SLIGHTLY	CLEAR	CLEAR	TURBID, HIGH SLIGHTLY
DN008WM	CLEAR, FROZEN SLIGHTLY	CLEAR	CLEAR	CLEAR	CLEAR
FB003WM	HIGH, FROZEN SLIGHTLY	WATER HAS SEWAGE SMELL	CLEAR	CLEAR	TURBID, HIGH
HU010WM	CLEAR, FROZEN SLIGHTLY	TURBID SLIGHTLY, HIGH	CLEAR	TURBID, HIGH SLIGHTLY	CLEAR
HU1RWMP	CLEAR, FROZEN SLIGHTLY	CLEAR	CLEAR	CLEAR	TURBID, HIGH
Little Etob CK	CLEAR, FROZEN SLIGHTLY	CLEAR		CLEAR	CLEAR
Lower Etob US	CLEAR, FROZEN SLIGHTLY	TURBID SLIGHTLY	CLEAR	CLEAR	CLEAR
Mayfield	CLEAR, FROZEN SLIGHTLY	CLEAR	CLEAR	SLIGHTLY TURBID	CLEAR
MM003WM	CLEAR, FROZEN SLIGHTLY	TURBID SLIGHTLY	CLEAR	CLEAR	CLEAR
PT001WM	HIGH, FROZEN SLIGHTLY	HIGH SLIGHTLY, TURBID	CLEAR	CLEAR	CLEAR
Spring Creek	CLEAR, FROZEN SLIGHTLY	Turbid	CLEAR	CLEAR	CLEAR
Tributary 3	CLEAR, FROZEN SLIGHTLY	TURBID SLIGHTLY	CLEAR	CLEAR	CLEAR
Tributary 4	CLEAR, FROZEN SLIGHTLY	CLEAR		TURBID SLIGHTLY, HIGH	CLEAR

Station	August	September	October	November	December
80006	CLEAR	CLEAR	HIGH, TURBID	SLIGHTLY TURBID/HIGH	CLEAR
80007	CLEAR	CLEAR		TURBID	CLEAR
82003	CLEAR	CLEAR	HIGH, TURBID	TURBID/ SLIGHLTY HIGH	TURBID
83002	TURBID, HIGH SLIGHTLY	CLEAR	TURBID, HIGH SLIGHTLY	SLIGHTLY TURBID	SLIGHTLY TURBID
83004	CLEAR	CLEAR			CLEAR
83009	CLEAR	CLEAR	CLEAR/HIGH SLIGHTLY	TUBRID/HIGH	CLEAR
83012	HIGH, TURBID	CLEAR	HIGH/TURBID	TURBID	CLEAR
83018	CLEAR	CLEAR	CLEAR/HIGH SLIGHTLY	TURBID/HIGH	CLEAR
83019	CLEAR	CLEAR	SLIGHTLY TURBID	TURBID/HIGH	TURBID
83020	TURBID SLIGHTLY	CLEAR	SLIGHTLY TURBID/HIGH	SLIGHTLY TURBID	HIGH/TURBID
83103	CLEAR	CLEAR	CLEAR	TURBID	TURBID
83104	CLEAR	CLEAR	CLEAR/HIGH SLIGHTLY	TURBID/HIGH	CLEAR
85003	CLEAR	CLEAR		SLIGHTLY HIGH/CLEAR	CLEAR
85004	CLEAR	CLEAR		SLIGHTLY TURBID	CLEAR
85014	CLEAR	CLEAR	TURBID/HIGH SLIGHTLY	TURBID/HIGH	CLEAR
94002	CLEAR	CLEAR		TUBRID	CLEAR
97003	CLEAR	CLEAR		SLIGHTLY TURBID	CLEAR
97007	CLEAR	CLEAR			CLEAR/PARTIALLY FROZEN
97011	CLEAR	CLEAR			PARTIALLY FROZEN/CLEAR
97013	TURBID	CLEAR			CLEAR/PARTIALLY FROZEN
97018	CLEAR	CLEAR	CLEAR		CLEAR, PARTIALLY FORZEN
97777	TURBID SLIGHTLY	CLEAR	CLEAR	TURBID	CLEAR, PARTIALLY FORZEN
97999	CLEAR	CLEAR	CLEAR		CLEAR, PARTIALLY FORZEN
104001	CLEAR	CLEAR	CLEAR		PARTIALLY FROZEN, TURBID SLIGHTLY
104008	TURBID SLIGHTLY	CLEAR	CLEAR		CLEAR, PARTIALLY FORZEN
104023	CLEAR	CLEAR	CLEAR		CLEAR, PARTIALLY FORZEN
104025	TURBID	CLEAR	CLEAR		CLEAR, PARTIALLY FORZEN
104026	CLEAR	CLEAR	CLEAR	SLIGHTLY TURBID	CLEAR, PARTIALLY FORZEN
104027	TURBID SLIGHTLY	CLEAR	SLIGHTLY TURBID		CLEAR, PARTIALLY FORZEN
104028	CLEAR	CLEAR	CLEAR		CLEAR
104029	TURBID SLIGHTLY	CLEAR	CLEAR		CLEAR, PARTIALLY FORZEN
104037	CLEAR	CLEAR	CLEAR		CLEAR, PARTIALLY FORZEN
107002	CLEAR	SLIGHTLY TURBID	SLIGHTLY TURBID		CLEAR, PARTIALLY FORZEN
CC005	CLEAR	CLEAR	CLEAR		CLEAR
DM 6.0	CLEAR	CLEAR	CLEAR	TURBID/HIGH	CLEAR
DN008WM	CLEAR	CLEAR		SLIGHTLY TURBID	CLEAR
FB003WM	CLEAR	CLEAR			CLEAR
HU010WM	CLEAR	CLEAR			SLIGHLTY HIGH/CLEAR
HU1RWMP	CLEAR	CLEAR	CLEAR	TURBID	CLEAR
Little Etob CK	CLEAR, HIGH SLIGHTLY	CLEAR	HIGH, TURBID	CLEAR	CLEAR
Lower Etob US	CLEAR	CLEAR		TURBID	CLEAR
Mayfield	CLEAR	CLEAR	CLEAR		CLEAR
MM003WM	TURBID, HIGH SLIGHTLY	CLEAR		TURBID	SLIGHTLY TURBID
PT001WM	CLEAR	CLEAR		TURBID/BANK FLOODED	FROZEN/CLEAR
Spring Creek	CLEAR	CLEAR		SLIGHTLY TURBID	CLEAR
Tributary 3	TURBID SLIGHTLY	CLEAR			SLIGHTLY TURBID/OIL SHEEN
Tributary 4	CLEAR	CLEAR	HIGH, TURBID	CLEAR	CLEAR

6.2 Appendix B. Stations sampled in 2020 and associated weather.

Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	# wet samples	# dry samples
80006	Dry	Dry			Dry	Dry	Wet	Dry	Dry	Dry	Dry	Dry	1	9
80007	Dry	Dry			Dry	Dry	Dry	Dry	Dry	Wet	Dry	Dry	1	9
82003	Dry	Dry			Dry	Dry	Wet	Dry	Dry	Dry	Dry	Dry	1	9
83002	Dry	Dry			Dry	Dry	Wet	Dry	Dry	Dry	Dry	Dry	1	9
83004	Dry	Dry			Dry	Dry	Dry	Dry	Dry	Wet	Dry	Dry	1	9
83009	Dry	Dry			Dry	Dry	Wet	Dry	Dry	Dry	Dry	Dry	1	9
83012	Dry	Dry			Dry	Dry	Wet	Dry	Dry	Dry	Dry	Dry	1	9
83018	Dry	Dry			Dry	Dry	Wet	Dry	Dry	Dry	Dry	Dry	1	9
83019	Dry	Dry			Dry	Dry	Wet	Dry	Dry	Dry	Dry	Dry	1	9
83020	Dry	Dry			Dry	Dry	Dry	Dry	Dry	Wet	Dry	Dry	1	9
83103	Dry	Dry			Dry	Dry	Wet	Dry	Dry	Dry	Dry	Dry	1	9
83104	Dry	Dry			Dry	Dry	Wet	Dry	Dry	Dry	Dry	Dry	1	9
85003	Dry	Dry			Dry	Dry	Wet	Dry	Dry	Dry	Dry	Dry	1	9
85004	Dry	Dry			Dry	Dry	Wet	Dry	Dry	Dry	Dry	Dry	1	9
85014	Dry	Dry			Dry	Dry	Wet	Dry	Dry	Dry	Dry	Dry	1	9
94002	Dry	Dry			Dry	Dry	Wet	Dry	Dry	Wet	Dry	Dry	2	8
97003	Dry	Dry			Dry	Dry	Dry	Dry	Dry	Wet	Dry	Dry	1	9
97007	Dry	Dry			Dry	Dry	Dry	Dry	Dry	Wet	Dry	Dry	1	9
97011	Dry	Dry			Dry	Dry	Wet	Dry	Dry	Wet	Dry	Dry	2	8
97013	Dry	Dry			Dry	Dry	Dry	Dry	Dry	Wet	Dry	Dry	1	9
97018	Dry	Dry			Dry	Dry	Wet	Dry	Dry	Dry	Wet	Dry	2	8
97777	Dry	Dry			Dry	Dry	Wet	Dry	Dry	Dry	Wet	Dry	2	8
97999	Dry	Dry			Dry	Dry	Wet	Dry	Dry	Dry	Wet	Dry	2	8
104001	Dry	Dry			Dry	Dry	Wet	Dry	Dry	Dry	Wet	Dry	2	8
104008	Dry	Dry			Dry	Dry	Wet	Dry	Dry	Dry	Wet	Dry	2	8
104023	Dry	Dry			Dry	Dry	Wet	Dry	Dry	Dry	Wet	Dry	2	8
104025	Dry	Dry			Dry	Dry	Wet	Dry	Dry	Dry	Wet	Dry	2	8
104026	Dry	Dry			Dry	Dry	Wet	Dry	Dry	Dry	Wet	Dry	2	8
104027	Dry	Dry			Dry	Dry	Wet	Dry	Dry	Dry	Wet	Dry	2	8
104028	Dry	Dry			Dry	Dry	Wet	Dry	Dry	Dry	Wet	Dry	2	8
104029	Dry	Dry			Dry	Dry	Wet	Dry	Dry	Dry	Wet	Dry	2	8
104037	Dry	Dry			Dry	Dry	Wet	Dry	Dry	Dry	Wet	Dry	2	8
107002	Dry	Dry			Dry	Dry	Wet	Dry	Dry	Dry	Wet	Dry	2	8
CC005	Dry	Dry			Dry	Dry	Wet	Dry	Dry	Dry	Wet	Dry	2	8
DM 6.0	Dry	Dry			Dry	Dry	Wet	Dry	Dry	Dry	Dry	Dry	1	9
DN008WM	Dry	Dry			Dry	Dry	Wet	Dry	Dry	Dry	Dry	Dry	1	9
FB003WM	Dry	Dry			Dry	Dry	Wet	Dry	Dry	Wet	Dry	Dry	2	8
HU010WM	Dry	Dry			Dry	Dry	Wet	Dry	Dry	Dry	Dry	Dry	1	9
HU1RWMP	Dry	Dry			Dry	Dry	Wet	Dry	Dry	Dry	Dry	Dry	1	9
Little Etob CK	Dry	Dry			Dry	Dry	Wet	Dry	Dry	Dry	Dry	Dry	1	9
Lower Etob US	Dry	Dry			Dry	Dry	Dry	Dry	Dry	Wet	Dry	Dry	1	9
Mayfield	Dry	Dry			Dry	Dry	Wet	Dry	Dry	Dry	Dry	Dry	1	9
MM003WM	Dry	Dry			Dry	Dry	Dry	Dry	Dry	Wet	Dry	Dry	1	9
PT001WM	Dry	Dry			Dry	Dry	Wet	Dry	Dry	Wet	Dry	Dry	2	8
Spring Creek	Dry	Dry			Dry	Dry	Dry	Dry	Dry	Wet	Dry	Dry	1	9
Tributary 3	Dry	Dry			Dry	Dry	Dry	Dry	Dry	Wet	Dry	Dry	1	9
Tributary 4	Dry	Dry			Dry	Dry	Wet	Dry	Dry	Dry	Dry	Dry	1	9

6.3 Appendix C. Descriptive statistics for 2020 water quality data.

		AVERAGE															
		Aluminium (ug/L)	Arsenic (ug/L)	Chloride (mg/L)	Copper (ug/L)	E. coli (CFU/100 mL)	Iron (ug/L)	Lead (ug/L)	Nickel (ug/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Ammonia (ug/L)	pH (lab)	TP (mg/L)	TSS (mg/L)	Zinc (ug/L)
Etobicoke Creek	Mayfield	281	1.20	209	1.83	339	265	0.23	0.60	1.31	0.038	1.01	111	8.1	0.065	7.4	10.0
	80007	205	1.19	486	4.48	377	247	0.84	0.76	1.02	0.020	0.80	65.8	8.2	0.047	9.6	11.8
	Spring Creek	286	1.28	646	3.92	1074	212	0.83	1.02	0.46	0.027	0.98	76	8.2	0.056	21.0	24.1
	Tributary 3	268	1.90	1487	5.20	1476	348	0.99	1.71	0.46	0.055	1.46	157	8.1	0.068	16.8	20.1
	Lower Etob US	224	1.27	590	4.03	459	230	0.83	1.07	0.54	0.027	1.02	78	8.2	0.040	8.6	17.1
	Tributary 4	185	1.33	647	3.24	2464	232	0.44	1.29	0.83	0.031	1.17	125	8.2	0.086	8.3	10.8
	Little Etob CK	156	1.64	1290	5.64	1859	189	0.85	1.17	0.83	0.055	1.00	102	8.1	0.039	14.6	18.8
	80006	175		869	8.92	1070	286			0.55	0.026	0.66	31.5	8.2	0.038	10.0	15.3
Mimico Creek	MM003WM	292	2.08	1614	5.81	1714	400	1.01	1.61	0.53	0.052	1.39	291	8.0	0.057	13.6	26.7
	82003	156		1458	10.98	1301	279			0.50	0.034	0.85	71.4	8.2	0.060	14.9	14.6
Humber River	83104	265	0.61	66	1.43	360	505	0.21	0.92	0.43	0.008	1.00	60.5	8.2	0.100	37.5	6.8
	83018	243	0.63	63	1.51	153	399	0.41	0.55	0.45	0.007	0.67	48	8.3	0.051	18.8	6.2
	83009	228	0.41	40	1.44	266	509	6.14	0.71	0.33	0.009	0.49	51.8	8.2	0.044	12.2	7.2
	83020	417	0.72	82	1.06	59	282	0.30	0.30	0.63	0.007	0.63	92	8.2	0.035	24.1	10.3
	83004	224	0.63	192	1.19	143	196	0.22	0.48	0.26	0.012	0.62	82	8.2	0.034	9.2	10.0
	83103	768	0.96	288	2.74	423	665	0.29	0.97	0.86	0.022	0.80	57.5	8.2	0.062	18.6	7.9
	HU1RWMP	321	1.56	1166	3.64	632	364	0.51	1.32	0.39	0.055	1.03	136	8.0	0.078	18.7	14.6
	83002	477	1.59	381	2.27	1811	336	0.59	1.09	0.53	0.018	1.17	107	8.1	0.087	24.0	10.5
	HU010WM	327	0.81	187	1.35	220	245	0.30	0.46	0.59	0.013	0.73	81	8.3	0.033	17.4	10.1
	83012	703	1.22	723	5.26	1777	526	1.52	1.83	1.03	0.075	1.62	391	8.1	0.124	46.6	22.2
	83019	672		322	5.75	947	719			0.54	0.021	0.69	68.4	8.3	0.065	28.2	13.7
Don River	85004	138	1.38	885	2.69	189	328	0.49	1.00	0.52	0.041	0.86	112	8.1	0.045	6.5	12.5
	85003	193	0.87	478	1.80	624	324	0.39	0.54	0.57	0.025	0.76	151	8.2	0.058	10.4	10.0
	DN008WM	123	1.29	819	3.18	765	463	0.38	0.76	0.54	0.034	0.89	164	8.2	0.047	10.2	11.3
	DM 6.0	217	1.05	474	4.05	1816	343	1.09	1.12	1.60	0.083	1.14	253	8.1	0.181	13.8	14.1
	85014	620		526	7.18	2608	825			1.60	0.076	1.26	355.2	8.1	0.141	31.7	18.0
Highland Creek	94002	183	0.95	608	2.78	1371	303	0.58	0.88	0.68	0.033	0.88	128	8.1	0.050	10.9	12.2
Rouge River	97018	179	0.41	79	1.19	144	374	0.08	0.66	0.56	0.007	0.50	42.7	8.3	0.034	7.2	8.9
	97999	294	0.78	154	1.00	284	204	0.30	0.46	0.78	0.015	0.86	74	8.2	0.059	8.4	10.0
	97777	334	0.91	569	2.11	2279	288	0.48	0.81	0.41	0.029	1.02	140	8.1	0.052	16.8	10.3
	97003	347	0.86	346	1.77	87	293	0.59	0.67	0.48	0.016	0.92	101	8.2	0.060	17.0	10.0
	97007	176	0.76	168	0.98	45	166	0.23	0.52	0.66	0.011	0.75	87	8.3	0.035	18.4	10.0
	97013	446	0.73	177	1.21	45	202	0.27	0.63	0.60	0.008	0.73	67	8.3	0.042	32.8	10.0
	97011	717		350	3.91	286	766			0.36	0.010	0.81	40.2	8.3	0.064	35.4	8.5
Petticoat Creek	PT001WM	113	0.82	409	2.16	1093	161	0.24	0.77	1.22	0.095	0.84	74	8.2	0.035	8.0	10.1
Frenchmans Bay	FB003WM	280	0.85	410	2.27	1355	328	0.53	0.70	1.14	0.374	1.29	107	8.1	0.047	18.0	10.6
Duffins Creek	104037	149	0.57	121	1.12	487	200	0.26	0.39	0.78	0.019	0.82	86	8.2	0.045	14.4	10.0
	104008	150	0.25	43	1.11	191	314	0.15	0.68	0.11	0.003	0.46	29.1	8.3	0.029	7.5	7.7
	104029	438	0.34	37	1.01	243	291	0.39	0.32	0.32	0.005	0.71	57	8.3	0.070	25.3	10.1
	104028	534	0.48	171	1.03	286	314	0.45	0.42	0.80	0.015	1.02	91	8.2	0.104	23.6	10.0
	104027	759	0.41	47	1.11	216	320	0.51	0.43	0.32	0.007	0.72	69	8.3	0.092	58.3	10.6
	104026	265	0.62	219	1.01	1279	257	0.27	0.49	0.18	0.011	0.81	83	8.2	0.048	11.8	10.0
	104023	608	0.48	96	1.03	147	222	0.35	0.36	0.19	0.005	0.54	61	8.3	0.047	29.1	10.0
	104025	548	0.49	62	0.99	158	218	0.27	0.50	0.63	0.029	0.64	109	8.3	0.090	29.9	10.0
	104001	188		101	2.80	478	305			0.37	0.008	0.38	57.6	8.3	0.035	28.3	7.0
Carruthers Creek	CC005	104	0.52	130	0.94	196	262	0.12	0.72	0.37	0.004	0.70	52	8.2	0.023	5.9	10.0
	107002	242	0.69	260	1.22	284	268	0.26	0.77	0.36	0.013	0.97	75	8.2	0.047	13.3	10.0

		MEDIAN															
		Aluminium (ug/L)	Arsenic (ug/L)	Chloride (mg/L)	Copper (ug/L)	E. coli (CFU/100 mL)	Iron (ug/L)	Lead (ug/L)	Nickel (ug/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Ammonia (ug/L)	pH (lab)	TP (mg/L)	TSS (mg/L)	Zinc (ug/L)
Etobicoke Creek	Mayfield	258	0.97	173	1.78	55	263	0.21	0.58	0.39	0.011	1.00	70	8.1	0.056	6.0	10.0
	80007	158	1.07	312	4.55	195	221	0.78	0.84	0.79	0.017	0.80	32	8.2	0.048	5.6	9.0
	Spring Creek	153	1.19	499	3.16	390	218	0.40	0.84	0.36	0.024	0.91	60	8.3	0.038	8.5	11.9
	Tributary 3	160	1.72	998	4.17	450	268	0.57	1.67	0.40	0.055	1.22	95	8.1	0.058	9.0	15.7
	Lower Etob US	99	1.30	458	3.36	165	231	0.49	0.97	0.39	0.024	0.99	55	8.2	0.038	5.5	10.3
	Tributary 4	73	1.33	455	2.88	1845	230	0.34	1.23	0.59	0.025	1.01	75	8.2	0.059	4.5	10.0
	Little Etob CK	70	1.33	827	4.96	1465	174	0.54	1.22	0.78	0.055	1.00	55	8.1	0.026	6.5	15.8
	80006	90		467	8.42	790	203			0.49	0.030	0.64	30	8.2	0.027	4.3	16.0
Mimico Creek	MM003WM	234	1.87	1195	5.07	515	400	0.86	1.42	0.49	0.055	1.41	315	8.1	0.057	16.0	21.4
	82003	128		620	9.73	665	247			0.47	0.029	0.73	40	8.3	0.050	5.4	10.0
Humber River	83104	145	0.63	64	0.96	205	405	0.23	0.20	0.43	0.007	0.73	66.5	8.2	0.051	12.0	7.5
	83018	182	0.55	62	1.34	85	352	0.23	0.20	0.44	0.007	0.54	44	8.3	0.041	11.0	5.5
	83009	256	0.43	35	1.14	130	452	0.22	0.37	0.24	0.009	0.39	37	8.2	0.039	11.2	5.5
	83020	247	0.63	69	1.01	30	259	0.23	0.29	0.61	0.004	0.61	60	8.2	0.025	14.5	10.0
	83004	78	0.62	156	1.14	100	158	0.13	0.50	0.18	0.011	0.60	50	8.2	0.022	4.5	10.0
	83103	404	0.90	236	2.37	200	400	0.27	0.91	0.44	0.012	0.83	41.5	8.2	0.047	8.2	9.1
	HU1RWMP	143	1.32	843	3.23	255	294	0.44	1.31	0.29	0.055	1.03	115	8.1	0.053	8.5	11.5
	83002	421	1.21	357	2.15	565	263	0.49	1.05	0.14	0.012	1.02	80	8.2	0.068	19.0	10.0
	HU010WM	170	0.76	125	1.21	110	204	0.23	0.43	0.53	0.011	0.71	65	8.3	0.026	8.0	10.0
	83012	225	1.02	530	4.07	1290	534	1.00	1.79	1.00	0.064	1.54	335	8.1	0.093	11.5	16.7
	83019	189		217	5.58	521	307			0.41	0.022	0.63	56	8.3	0.052	13.1	11.0
Don River	85004	138	1.28	604	1.91	170	329	0.54	0.98	0.35	0.023	0.83	70	8.2	0.043	6.5	10.0
	85003	87	0.89	280	1.81	505	285	0.28	0.57	0.53	0.025	0.72	135	8.2	0.044	4.5	10.0
	DN008WM	114	1.07	329	2.71	540	442	0.40	0.78	0.48	0.029	0.91	155	8.2	0.042	7.0	10.0
	DM 6.0	129	1.14	474	3.99	815	351	0.86	1.13	1.71	0.052	1.11	230	8.2	0.172	6.0	11.5
	85014	150		387	6.13	798	410			1.26	0.059	1.31	316	8.1	0.128	13.7	15.0
Highland Creek	94002	58	0.89	473	2.28	480	306	0.20	0.83	0.50	0.025	0.84	120	8.2	0.043	5.5	10.0
Rouge River	97018	74	0.44	72	0.80	50	235	0.06	0.23	0.40	0.006	0.55	39	8.3	0.020	5.9	10.0
	97999	235	0.62	154	0.91	115	189	0.23	0.41	0.46	0.011	0.76	50	8.2	0.045	7.0	10.0
	97777	185	0.94	487	2.09	1085	291	0.41	0.84	0.31	0.023	0.94	85	8.1	0.049	21.0	10.0
	97003	189	0.94	287	1.66	55	282	0.39	0.67	0.25	0.012	0.91	80	8.2	0.049	10.5	10.0
	97007	136	0.61	158	0.91	30	134	0.18	0.52	0.34	0.011	0.74	60	8.3	0.032	8.5	10.0
	97013	168	0.58	179	1.14	45	157	0.17	0.57	0.27	0.005	0.68	50	8.3	0.025	11.5	10.0
	97011	152		308	3.38	190	240			0.10	0.011	0.57	29.5	8.3	0.032	14.7	5.0
Petticoat Creek	PT001WM	59	0.71	456	2.16	720	144	0.17	0.75	0.88	0.011	0.75	50	8.3	0.033	4.0	10.0
Frenchmans Bay	FB003WM	218	0.79	475	2.34	1085	308	0.40	0.72	0.91	0.016	0.77	70	8.2	0.036	10.5	10.0
Duffins Creek	104037	83	0.46	99	0.86	95	194	0.19	0.42	0.66	0.016	0.80	50	8.2	0.047	7.0	10.0
	104008	154	0.26	36	0.80	45	253	0.13	0.25	0.05	0.003	0.47	25	8.3	0.026	7.0	6.0
	104029	76	0.29	27	0.80	25	136	0.08	0.22	0.27	0.003	0.37	50	8.3	0.024	2.5	10.0
	104028	77	0.46	157	0.80	55	265	0.11	0.36	0.77	0.011	0.62	55	8.3	0.038	7.0	10.0
	104027	184	0.34	41	0.80	40	193	0.20	0.24	0.28	0.006	0.46	55	8.3	0.033	12.0	10.0
	104026	243	0.59	177	0.91	55	223	0.23	0.53	0.12	0.011	0.85	80	8.2	0.037	8.5	10.0
	104023	123	0.40	88	0.80	25	167	0.11	0.27	0.11	0.004	0.43	50	8.3	0.025	6.5	10.0
	104025	167	0.43	59	0.84	45	168	0.15	0.43	0.50	0.008	0.60	100	8.3	0.033	8.5	10.0
	104001	123		76	2.67	90	259			0.25	0.008	0.35	54.5	8.3	0.023	7.6	5.0
Carruthers Creek	CC005	101	0.51	137	0.81	70	273	0.11	0.67	0.02	0.004	0.72	50	8.2	0.022	3.5	10.0
	107002	161	0.60	236	1.23	190	258	0.25	0.78	0.09	0.011	0.88	75	8.2	0.048	7.0	10.0

		MINIMUM															
		Aluminium (ug/L)	Arsenic (ug/L)	Chloride (mg/L)	Copper (ug/L)	E. coli (CFU/100 mL)	Iron (ug/L)	Lead (ug/L)	Nickel (ug/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Ammonia (ug/L)	pH (lab)	TP (mg/L)	TSS (mg/L)	Zinc (ug/L)
Etobicoke Creek	Mayfield	42	0.68	146	1.19	10	141	0.07	0.45	0.06	0.005	0.84	50	7.9	0.037	2	10
	80007	54	1.01	145	3.87	70	92	0.75	0.41	0.05	0.002	0.59	10	8.2	0.024	1	5
	Spring Creek	57	0.61	129	2.03	130	89	0.16	0.67	0.11	0.022	0.75	50	8.0	0.023	2	10
	Tributary 3	41	0.60	192	2.52	110	186	0.27	0.99	0.28	0.031	0.90	50	7.9	0.032	2	10
	Lower Etob US	26	0.70	135	2.52	10	58	0.12	0.75	0.11	0.022	0.77	50	8.0	0.018	2	10
	Tributary 4	25	0.70	41	2.29	190	123	0.15	0.94	0.26	0.011	0.66	50	8.0	0.036	2	10
	Little Etob CK	25	0.61	98	3.00	140	87	0.21	0.73	0.35	0.055	0.62	50	7.9	0.020	2	10
	80006	36		143	7.56	60	81			0.10	0.005	0.46	20	8.0	0.018	1	2
Mimico Creek	MM003WM	37	0.59	150	3.05	10	290	0.21	1.14	0.11	0.022	0.97	70	7.8	0.022	2	10
	82003	18		165	8.46	110	81			0.15	0.004	0.55	20	8.1	0.022	1	2
Humber River	83104	23	0.50	54	0.80	20	167	0.13	0.20	0.20	0.002	0.48	20	7.9	0.023	3.2	0.657
	83018	28	0.53	57	0.80	20	170	0.14	0.06	0.20	0.002	0.44	20	8.2	0.018	4.5	0.94
	83009	22	0.36	13	0.80	10	284	0.11	0.20	0.12	0.004	0.23	20	7.9	0.024	1.2	0.876
	83020	126	0.47	57	0.80	10	163	0.11	0.20	0.35	0.004	0.20	50	8.1	0.018	7	10
	83004	35	0.43	134	0.89	40	102	0.10	0.34	0.06	0.011	0.39	50	8.1	0.010	2	10
	83103	201	0.78	132	1.70	50	182	0.13	0.56	0.02	0.002	0.37	10	8.0	0.029	2.1	2.05
	HU1RWMP	71	0.58	282	2.06	40	255	0.26	1.06	0.28	0.055	0.69	50	7.8	0.035	4	10
	83002	156	0.84	167	1.45	80	186	0.20	0.61	0.06	0.011	0.74	50	7.8	0.031	4	10
	HU010WM	89	0.57	89	0.92	10	157	0.12	0.27	0.28	0.006	0.50	50	8.1	0.017	3	10
	83012	34	0.64	144	3.33	620	302	0.18	1.31	0.39	0.029	0.88	120	7.9	0.046	2	10.1
	83019	50		134	3.51	130	90			0.18	0.008	0.44	20	8.2	0.019	1.1	2
Don River	85004	65	0.56	211	1.32	30	213	0.16	0.81	0.12	0.022	0.62	50	8.0	0.019	2	10
	85003	52	0.49	168	1.23	220	222	0.12	0.34	0.24	0.011	0.65	50	8.1	0.030	2	10
	DN008WM	26	0.61	172	1.61	40	383	0.07	0.57	0.22	0.022	0.67	50	8.0	0.021	2	10
	DM 6.0	25	0.60	91	2.74	70	170	0.15	0.88	0.68	0.022	0.71	50	7.9	0.069	2	10
	85014	25		142	4.59	108	225			0.89	0.035	0.98	144	7.8	0.072	2.9	6
Highland Creek	94002	25	0.40	52	1.26	50	155	0.11	0.69	0.17	0.022	0.47	50	7.9	0.016	2	10
Rouge River	97018	35	0.34	52	0.80	0	152	0.05	0.20	0.23	0.002	0.28	20	8.1	0.013	1	1.78
	97999	54	0.47	77	0.80	20	131	0.10	0.22	0.27	0.007	0.50	50	8.0	0.017	2	10
	97777	44	0.50	230	1.21	10	169	0.12	0.58	0.11	0.022	0.63	50	8.0	0.014	3	10
	97003	128	0.49	163	1.20	10	146	0.27	0.54	0.07	0.011	0.61	50	8.2	0.033	4	10
	97007	34	0.49	92	0.80	0	93	0.08	0.39	0.06	0.006	0.58	50	8.1	0.012	2	10
	97013	77	0.47	105	0.82	0	115	0.11	0.47	0.02	0.004	0.41	50	8.1	0.014	2	10
	97011	66		167	3.25	10	107			0.02	0.002	0.37	10	8.1	0.014	1	1.54
Petticoat Creek	PT001WM	33	0.34	125	1.21	150	104	0.08	0.47	0.28	0.011	0.61	50	8.1	0.019	2	10
Frenchmans Bay	FB003WM	47	0.52	91	1.43	590	221	0.13	0.47	0.33	0.011	0.55	50	7.9	0.018	2	10
Duffins Creek	104037	30	0.38	57	0.80	10	141	0.09	0.20	0.44	0.004	0.44	50	8.0	0.018	2	10
	104008	30	0.23	19	0.80	0	184	0.10	0.20	0.02	0.002	0.34	20	8.2	0.015	3	1.26
	104029	25	0.21	19	0.80	0	93	0.05	0.20	0.16	0.002	0.21	50	8.1	0.011	2	10
	104028	32	0.33	114	0.80	10	180	0.07	0.20	0.54	0.008	0.48	50	8.1	0.023	2	10
	104027	93	0.26	29	0.80	0	130	0.13	0.20	0.15	0.002	0.24	50	8.1	0.016	4	10
	104026	25	0.35	131	0.80	0	165	0.06	0.20	0.06	0.009	0.52	50	8.0	0.026	3	10
	104023	25	0.32	80	0.80	0	109	0.05	0.20	0.02	0.002	0.21	50	8.1	0.010	2	10
	104025	35	0.30	24	0.80	0	113	0.05	0.33	0.27	0.003	0.36	60	8.1	0.011	2	10
	104001	50		49	2.63	0	170			0.12	0.002	0.32	20	8.3	0.014	3	2.28
Carruthers Creek	CC005	25	0.31	78	0.80	0	127	0.05	0.28	0.02	0.002	0.56	50	8.0	0.011	2	10
	107002	89	0.45	183	0.99	0	224	0.14	0.46	0.06	0.011	0.65	50	8.1	0.026	2	10

		MAXIMUM															
		Aluminium (ug/L)	Arsenic (ug/L)	Chloride (mg/L)	Copper (ug/L)	E. coli (CFU/100 mL)	Iron (ug/L)	Lead (ug/L)	Nickel (ug/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Ammonia (ug/L)	pH (lab)	TP (mg/L)	TSS (mg/L)	Zinc (ug/L)
Etobicoke Creek	Mayfield	775	2.08	412	2.72	1870	339	0.43	0.78	4.60	0.236	1.22	290	8.2	0.111	20	10
	80007	500	1.49	1270	4.94	1190	594	0.98	0.95	3.25	0.051	1.06	360	8.3	0.067	29.2	20
	Spring Creek	1500	2.50	1940	10.00	4900	377	4.19	1.67	1.17	0.045	1.62	210	8.4	0.170	102	116
	Tributary 3	847	4.22	5850	10.00	8500	681	4.25	2.32	0.89	0.076	2.79	690	8.3	0.119	73	74.8
	Lower Etob US	1160	1.53	1200	8.59	2240	458	3.83	1.63	1.70	0.043	1.50	210	8.5	0.076	37	43.3
	Tributary 4	1130	2.11	2310	5.09	7550	449	1.52	1.68	2.49	0.055	2.88	420	8.6	0.209	36	17.9
	Little Etob CK	742	3.45	3270	8.48	4930	513	3.22	1.78	1.56	0.059	1.30	290	8.4	0.097	58	44
	80006	494		2450	11.30	4170	600			1.90	0.050	1.02	56	8.4	0.108	51.4	32.3
Mimico Creek	MM003WM	658	4.95	4050	8.58	11000	499	1.89	2.29	1.26	0.068	1.86	510	8.2	0.087	29	69.2
	82003	520		4500	16.00	5120	685			1.44	0.080	1.44	212	8.4	0.144	54.6	38.1
Humber River	83104	1000	0.69	81	2.37	1930	1430	0.26	2.00	0.69	0.026	2.75	110	8.4	0.459	185	10
	83018	747	0.83	71	2.34	600	895	0.85	2.00	0.88	0.014	1.12	80	8.4	0.132	52	10
	83009	464	0.45	93	2.37	1290	910	24.00	2.00	0.68	0.016	0.96	110	8.4	0.084	30.1	17
	83020	1590	1.12	133	1.74	200	484	0.82	0.54	0.89	0.019	0.99	270	8.3	0.092	76	12.9
	83004	881	0.82	338	1.92	490	504	0.82	0.64	0.83	0.022	0.89	310	8.3	0.079	29	10
	83103	3610	1.19	924	4.26	1730	2710	0.47	1.64	2.33	0.075	1.22	150	8.3	0.146	54	13
	HU1RWMP	1850	3.56	3480	8.00	3870	613	1.16	1.77	0.75	0.055	1.38	260	8.2	0.191	79	33.8
	83002	1130	3.74	733	3.90	10750	531	1.17	2.04	2.42	0.037	1.77	270	8.3	0.182	63	15
	HU010WM	1830	1.07	420	2.14	1220	529	1.00	0.76	0.99	0.032	1.07	230	8.4	0.113	106	11
	83012	3290	2.84	2450	8.07	4500	855	5.15	2.60	1.97	0.136	2.86	840	8.5	0.290	284	42
	83019	2600		1180	7.95	4800	2370			1.36	0.041	1.04	125	8.5	0.134	85.1	30.9
Don River	85004	245	3.07	2530	8.00	550	478	0.95	1.16	1.48	0.158	1.44	330	8.2	0.068	11	25.1
	85003	547	1.29	1110	2.67	1680	506	1.08	0.72	1.22	0.038	1.00	320	8.3	0.110	57	10
	DN008WM	291	2.97	2410	8.00	1790	698	0.70	0.92	1.42	0.064	1.14	440	8.3	0.088	48	16.2
	DM 6.0	745	1.36	944	5.89	11000	525	2.50	1.31	2.38	0.192	1.74	580	8.3	0.333	66	23.3
	85014	4560		1820	11.20	9330	4350			3.06	0.176	1.51	720	8.3	0.277	137	50
Highland Creek	94002	646	1.79	1900	4.98	3980	456	1.78	1.11	2.05	0.065	1.38	270	8.3	0.094	47	20.5
Rouge River	97018	621	0.45	110	2.37	720	1020	0.14	2.00	1.55	0.026	0.63	90	8.4	0.091	26.5	19
	97999	783	1.37	265	1.42	840	317	0.67	0.72	2.06	0.026	1.49	150	8.3	0.149	23	10
	97777	920	1.17	1090	3.72	9600	444	0.94	1.12	1.16	0.055	2.38	480	8.3	0.100	28	12.9
	97003	1030	1.20	739	3.12	230	588	2.06	0.88	1.50	0.036	1.37	270	8.3	0.113	46	10
	97007	464	1.25	260	1.25	130	333	0.55	0.66	2.24	0.018	0.89	230	8.4	0.084	88	10
	97013	1800	1.20	261	1.71	120	380	0.74	1.02	2.18	0.022	1.01	200	8.4	0.126	174	10
	97011	4760		711	5.11	1100	4510			1.57	0.016	1.94	97	8.5	0.345	190	37
Petticoat Creek	PT001WM	429	1.99	775	2.98	2220	323	0.96	1.28	3.43	0.725	1.60	210	8.3	0.064	44	10.8
Frenchmans Bay	FB003WM	771	1.26	595	3.06	3100	465	1.73	0.92	2.58	3.350	5.53	330	8.3	0.098	64	14.3
Duffins Creek	104037	576	0.89	218	2.42	1750	347	0.77	0.54	1.30	0.049	1.42	330	8.4	0.087	64	10
	104008	316	0.27	79	2.02	1300	602	0.21	2.00	0.48	0.005	0.63	50	8.4	0.059	16.7	17
	104029	3140	0.66	68	2.80	1480	1260	2.64	1.11	0.63	0.013	2.56	100	8.4	0.290	169	10.8
	104028	4110	0.70	331	2.68	1870	886	2.73	1.17	1.39	0.056	2.94	320	8.3	0.529	153	10
	104027	5560	0.85	81	3.92	1010	1490	2.80	2.08	0.64	0.014	3.39	130	8.4	0.564	470	16.4
	104026	657	0.96	451	1.63	11750	377	0.60	0.78	0.40	0.014	1.10	160	8.3	0.081	28	10
	104023	4650	0.77	136	2.68	870	601	2.37	1.16	0.43	0.012	1.32	120	8.4	0.253	230	10
	104025	2790	0.74	106	1.92	630	478	1.06	0.98	1.28	0.208	1.28	220	8.4	0.493	140	10
	104001	679		222	3.10	3360	708			1.03	0.015	0.44	90	8.4	0.114	143	24
Carruthers Creek	CC005	247	0.77	168	1.28	1050	395	0.22	1.30	2.57	0.010	0.88	70	8.3	0.039	16	10
	107002	732	1.06	446	1.44	720	344	0.58	1.01	1.85	0.022	2.21	120	8.2	0.093	36	10

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