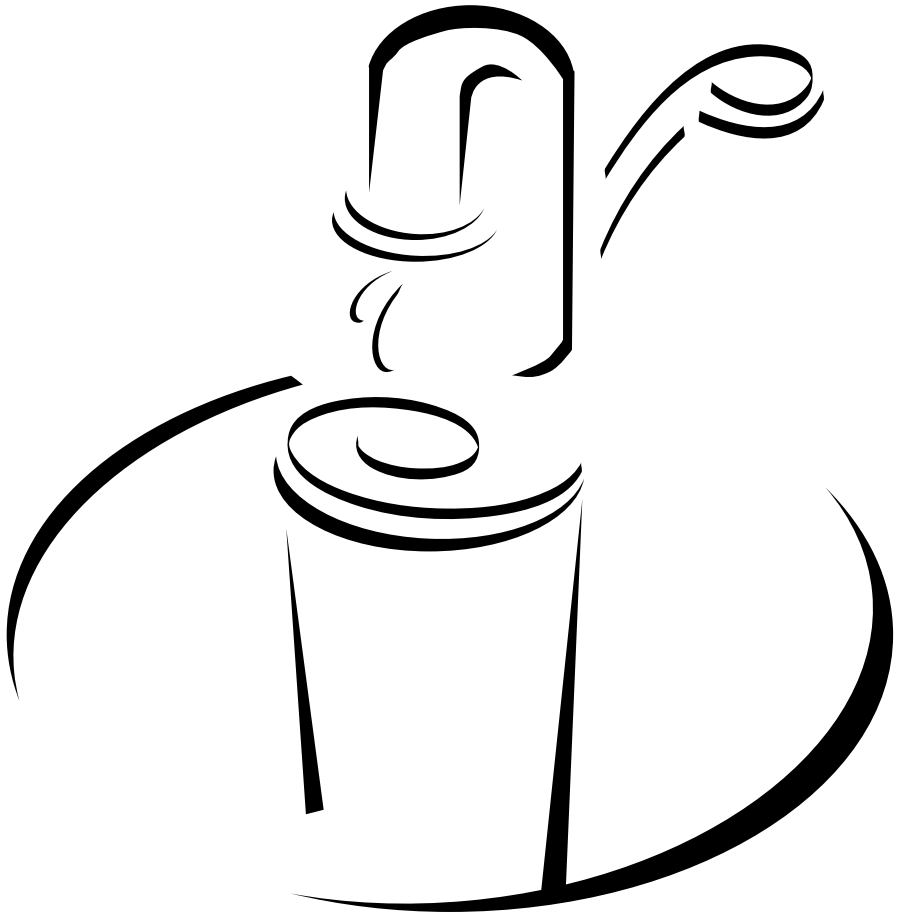
April - June 2003

Water Quality

QUARTERLY REPORT



TORONTO

Works & Emergency Services
Water and Wastewater Services

www.toronto.ca/water

Water Quality Quarterly Report

April to June 2003

Ontario's New Drinking Water Systems Regulations

The City of Toronto's Water and Wastewater Services Division is pleased to present this quarterly report.

From October 2000 to May 2003, the province's *Drinking Water Protection Regulation* required waterworks owners to publish reports to consumers on water quality. The regulation made the *Ontario Drinking Water Standards* legally enforceable and enhanced protection of water quality.

As of June 1, 2003, the new Drinking Water Systems Regulations (Regulation 170/03) will replace the Drinking Water Protection Regulation for larger water systems (Regulation 459/03). As part of the new regulations, the province also requires municipalities to replace the quarterly water quality reports with an annual report. The new regulations will continue to focus on the treatment and testing of drinking water and stipulates public access to information and notification of adverse results.

Starting in 2004, the City of Toronto will comply with the new annual report requirement and is considering distributing a water quality report as well. The report format has not been determined, however, the City would like to continue providing customers with more frequent information about Toronto's drinking water quality and operation.

A new supporting regulation has also been passed. Regulation 169/03 - Ontario Drinking Water Quality Standards (ODWQS) lists drinking water testing standards. This new regulation supersedes the previous Ontario Drinking Water Standards (ODWS).

Inside this report

TORONTO

New Water Acts

On December 13, 2002, the *Safe Drinking Water Act (SDWA)* and *Sustainable Water and Sewage Systems Act* received Royal Assent. The purpose of the SDWA is to gather in one place all legislation and regulations relating to the treatment and distribution of drinking water, expand on existing policy and practice and introduce new features to protect drinking water in Ontario.

The *Sustainable Water and Sewage Systems Act* provides the framework for the implementation of full-cost accounting, asset management and full-cost recovery.

The *Sustainable Water and Sewage Systems Act* provides the framework for the implementation of full-cost accounting, asset management and full-cost recovery for designated providers of water or wastewater services to the public. Full-cost accounting and recovery for water and sewer services are steps toward ensuring a sustainable supply of clean, safe drinking water in Ontario.

For more information about Toronto's water system or this report, call (416) 392-4546 or visit www.toronto.ca/water

Toronto's Water Supply System -Who is responsible?

The Water and Wastewater Services Division, which is part of the City's Works and Emergency Services Department, supplies potable (drinkable) water to the city and treats the city's wastewater.

The Water and Wastewater Services Division headed by General Manager Michael Price, supplies water to 2.6 million Toronto residents and about 400,000 residents in York Region. The division operates four water treatment plants, 18 pumping stations, 10 storage reservoirs, about 500 kilometres (km) of trunk water mains and more than 5,300 km of local distribution water mains.

Where does our drinking water come from?

Lake Ontario, the eighth largest fresh-water lake in the world (part of the Great Lakes system containing 25 percent of the world's surface freshwater), is the only source of Toronto's drinking water.

Raw water (lake water) is pumped into four water treatment plants from intakes approximately 1 to 3 kilometres offshore and up to 17 metres below the surface. Because of the location and depth of the intakes, the source water is of very good quality and is not prone to sudden changes.

What is in the water?

Raw water taken directly from the lake is not suitable for drinking. There are many impurities in water that can harm human health if the water is ingested with no treatment. These impurities can be grouped into three categories:

(a) Microbiological: bacteria, algae, viruses, protozoa and other living organisms;

(b) Chemical: substances dissolved in the water from both natural and manufactured sources, which can be further grouped as inorganics, organics and pesticides; and

(c) Physical: materials that primarily make the water appear "cloudy" or "turbid" or unpalatable.

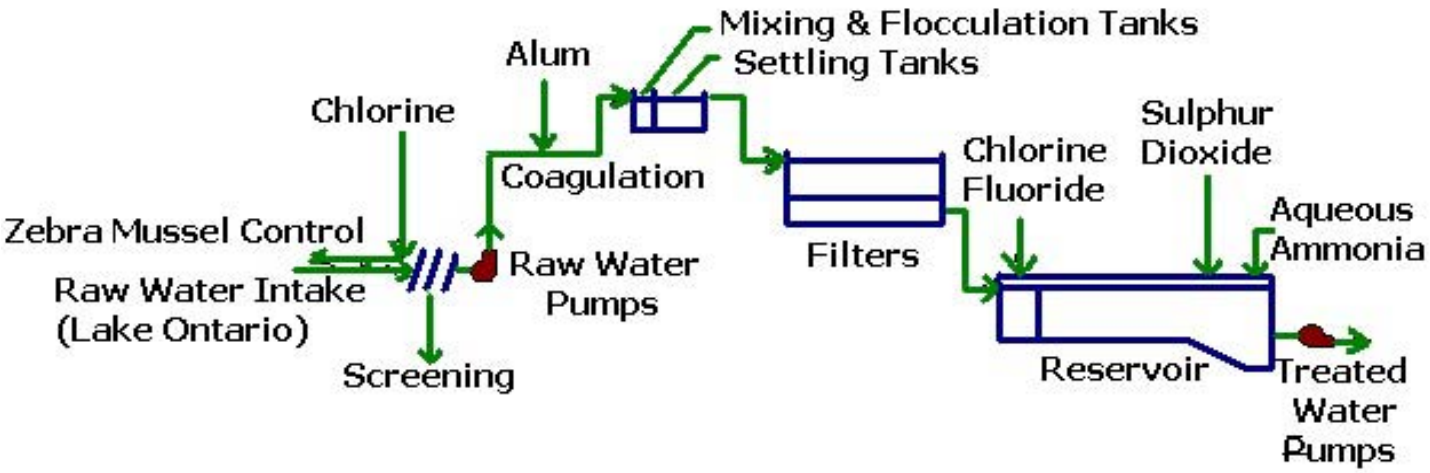
Water Treatment Process

The City treats raw water at four filtration plants and produces potable water that meets or exceeds all standards set for drinking water quality by the provincial and federal regulators, and is, therefore, safe to drink.

Three of the four filtration plants are strategically located on the mainland; F.J. Horgan Filtration Plant in the eastend, R.L. Clark Filtration Plant in the westend, and R.C. Harris Filtration Plant located centrally in the beaches area. The fourth plant, Island Filtration Plant, is located on the Toronto Islands and is operated as a summer plant to meet peak demands during warm weather. The Island plant is also operated during spring and fall to supplement production when one of the mainland plants is out of service for maintenance purposes. All of our plant operators are licensed under provincial regulation. The combined rated water production capacity at all plants is over 2,500 million litres per day. During this quarter, a total quantity of 134.1 billion litres was produced to meet consumer demands.

Water goes through seven different processes from the time it enters a plant to the time it is transported through the City's extensive system of water supply pipes, reservoirs and elevated storage tanks to the consumer's tap.

Diagram of Water Treatment Process



Raw Water Screening
Large particles and debris are removed from the raw water by travelling screens just as the water enters the treatment plants.

Coagulation, Flocculation, and Sedimentation
These processes refer to rapid mixing of chemicals known as coagulants or coagulant aids to make the small physical particles in the water clump together (coagulation), and then the gentle mixing to form larger groups of particles known as floc (flocculation). Alum (aluminum sulphate), polyaluminum chloride and a group of chemicals known as polyelectrolytes are the chemicals currently used by the City for this purpose. The thicker, denser floc settles and deposits at the bottom of large sedimentation tanks and the rest is removed during the filtration stage.

Taste and Odour Control
While we have experienced intermittent taste and odour events, during the late summer, tap water remains safe to drink during such events. Taste and odour episodes are caused by trace amounts of naturally occurring compounds in the lake. Processes to reduce unpleasant taste and odour in the drinking water were put into place at each plant during 1999 and 2000.

Granular activated carbon filters have been installed at two plants and one-half of the third plant. Powdered activated carbon feed systems at the other two plants are placed into service to reduce the intensity of taste and odour in drinking water during an event. During this quarter, no taste and odour events were encountered.

Filtration
In this stage, the remaining floc, some chemical and physical impurities, and most of the biological impurities (bacteria, etc.) are removed. The water flows downward by gravity through dual media filters. Dual media filters are made up of layers of granular activated carbon or anthracite, a coal-like mineral, and sand supported on layers of graded gravel. The filtered water is collected via an underdrain system into large tanks for further treatment.

During the filtration process, filters must be cleaned (backwashed) on a regular basis as the filters become clogged due to accumulated solids. The backwash procedure involves pumping treated water through the filter in the reverse direction, dislodging and removing accumulated materials, which results in the generation of backwash wastewater.

Disinfection
Disinfection, which is the destruction of disease-causing organisms in the raw and treated water through the addition of chlorine, is a vital step in the water treatment process. Chlorine is added to the water at two different points in the treatment process: to the raw water as it enters the plant, through a process known as pre-chlorination, and to the water after the filtration stage, through post-chlorination. The primary purpose of pre-chlorination is to decrease microbiological activity within the process which could impair treatment performance and impact undesirably on aesthetic quality of the water. From late spring to autumn, when the water is warmer, pre-chlorine is applied at the inlet of the offshore intakes to mitigate growth and attachment of zebra mussels inside the intakes and on internal surfaces of plant structures.

Post-chlorine is applied following filtration in quantities required to achieve thorough disinfection. Following a prescribed contact time for effective disinfection, sulphur dioxide is added to the water to remove any excess chlorine and leave an acceptable level (called chlorine residual).

Fluoridation
Fluoride is added to the water in a carefully controlled manner during the treatment process for control of dental caries. The Ontario Drinking Water Quality Standards (ODWQS) recommends that the concentration of fluoride be adjusted to 0.5 to 0.8 mg/L. The City has already been operating within this range. This level is lower than Health Canada's guideline.

While our fluoride content level (0.8 mg/L) falls within the ODWQS recommended range, we have asked Toronto's Medical Officer of Health advice on a fluoride level that would be most beneficial to our community.

Ammoniation

Ammoniation is the final conditioning process in the treatment of drinking water. During ammoniation, ammonia is added to water which reacts with chlorine residual to form combined chlorine residual. This type of chlorine residual lasts longer providing ongoing protection against any potential contamination of water during its travel through the distribution system. Typically, the level of chlorine residual leaving the filtration plants is 1.2 mg/L.

Ammoniation also helps to reduce the intensity of chlorinous odours in the drinking water.

When the water has passed through all these processes, it is available for pumping into the distribution system through "high-lift" pumps. Water is then transported through an extensive system of trunk transmission pipes, underground reservoirs, storage tanks, additional pumping stations and a distribution grid of smaller water mains to serve the consumers in the City of Toronto and a major part of the Region of York.

Terms you need to know

Here are some terms you should know about before reading the information below.

MAC

Maximum Acceptable Concentration. This is a health-related Ontario drinking water standard established for contaminants that have known or suspected adverse health effects when above a certain concentration. The length of time the MAC can be exceeded without injury to health will depend on the nature and concentration of the parameter.

IMAC

Interim Maximum Acceptable Concentration. This is a health-related Ontario drinking water standard established for contaminants when there are insufficient toxicological data to establish a MAC with reasonable certainty, or when it is not practical to establish a MAC at the desired level

AO

Aesthetic Objectives. These are for those parameters that are not health-related, but may impair the taste, smell or colour of water.

OG

Operational Guidelines. These are established for parameters which need to be controlled to ensure efficient treatment and distribution of water.

Parameter

This is a substance that we sample and analyze for in the water.

mg/L

Milligram per litre. This is a measure of the concentration of a parameter in water, sometimes called parts per million (ppm).

Quality control methods

Residents of the City of Toronto and York Region can have complete assurance in the safety of the drinking water. Toronto's four water treatment plants have highly effective water treatment and quality assurance processes in place to ensure the absence of harmful substances and disease-causing bacteria in tap water. These processes are based on a multiple barriers concept whereby coagulation, filtration and chlorine disinfection perform complimentary roles in physically removing and inactivating disease causing organisms which might be present. The processes are monitored by continuous analyzers, which provide an immediate confirmation of process effectiveness. Back-up systems are in place to ensure that equipment malfunctions are immediately remedied in order to provide seamless treatment.

Required Testing

Water quality guidelines are established by the federal government through the *Guidelines for Canadian Drinking Water Quality* and the provincial government through *the Ontario Drinking Water Quality Standards (ODWQS).* Drinking water should not contain disease-causing organisms or hazardous concentrations of toxic chemicals or radioactive parameters.

Regulation 170/03 specifies guidelines on the number of samples to be taken, the frequency of sampling and the actions to be taken if any sample results indicate adverse water quality. Toronto's water quality sampling and monitoring program far exceeds that specified by the regulation.

How Toronto Tests its water

Toronto's Water Supply has established water quality objectives for specific parameters.

During the treatment process, samples are taken and analyzed to ensure the effectiveness of the treatment process. In addition, a number of key parameters (such as turbidity, chlorine residual, fluoride, etc.) are continuously monitored through on-line instrumentation to ensure that the desired water quality is obtained. The treated water produced at each filtration plant is sampled every four hours to confirm that water is microbiologically safe for consumption.

The drinking water quality is further monitored throughout the distribution system by a comprehensive sampling and analysis program involving weekly samples at over 100 sampling sites.

Drinking water analysis for hundreds of trace chemical compounds shows that most are not detectable and those that are detected are well below federal and provincial drinking water guidelines. Independent confirmation of water quality is provided through the MOE's Drinking Water Surveillance Program (DWSP). Currently, this program entails regular sampling from each water treatment plant and distribution system locations. MOE's DWSP has served to validate the results of our ongoing comprehensive water quality assurance program.

Results of water quality assurance program

The results of our extensive water quality assurance program confirm the excellent quality of water produced at Toronto's water treatment plants and supplied to our consumers during the past quarter.

The results of the water quality assurance tests during this quarter have been consolidated into Table A for this quarterly report. The results of tests are discussed in the following section and are grouped as microbiological, operational parameters, inorganic and organic chemicals and pesticides.

Microbiological Parameters

Microbiological quality of drinking water is the most important aspect of drinking water quality because of its association with waterborne diseases. The Regulation 170/03 recommends sampling for raw and treated water several times a week for bacteriological purposes. We sample the raw water two times per day at each plant and sample the treated water at the point of entry to the distribution system six times per day. During this quarter, the City conducted more than 11,500 bacteriological tests on samples from the filtration plants and the distribution system.

Regulation 170/03 and the ODWQS identify conditions indicating adverse water quality and require initiation of special sampling or corrective action.

During this quarter, more than 99 per cent of the treated water samples fully met the objectives for acceptable microbiological quality as defined in ODWQS.

Operational Parameters

One of the major objectives of the water treatment process is to remove turbidity. Turbidity is caused by the presence of suspended matter such as clay, silt, colloidal particles, plankton and other microscopic organisms. Outbreaks of disease traced to water supplies in other parts of the world (such as the 1993 incidence of Cryptosporidiosis in Milwaukee, Wisconsin) have been associated with high turbidity. While the Provincial standard for drinking water still remains at 1.0 Nephelometric Turbidity Unit (NTU), our operating goal for turbidity of filtered water is currently 0.1 NTU, ten times lower than the Provincial standard.

Aluminum salts (such as alum or polyaluminum chloride) are used as coagulants during the water treatment process. Coagulation is a critical step in water treatment in order to ensure that the water clarity is as high as possible. While most of the aluminum is removed during the subsequent treatment process, a small amount remains in the water.

In past studies, elevated levels of aluminum had been tentatively linked to some health problems.. Currently, there is no health-related MAC for aluminum. The ODWQS supporting document states an operational guideline of 0.1 mg/L for residual aluminum. The aluminum levels in drinking water from Toronto plants are closely monitored. The City has maintained a proactive approach to reduce residual aluminum levels in drinking water as much as possible without compromising other aspects of water quality. The average residual aluminum level in treated water at the City's plants was 0.08 mg/L or lower during the past quarter.

Inorganic Chemical Parameters

Inorganic parameters such as metals and minerals may be present in the water naturally or as a result of industrial, urban, agricultural activities or other discharges. Regulation 170/03 requires analyses of 14 inorganic parameters annually. Toronto Water Supply tested for 34 inorganic parameters during the quarter.

As indicated in Table A, the number of inorganics detected was 19, which is typical of the annual results for these parameters. The inorganic parameters, which were detected, are at extremely low levels, well below the MAC limits.

Organic Chemical Parameters

Organic parameters are present to some degree in all municipal water supplies. Industrial and municipal waste, urban and rural run off and the natural decomposition of biological matter all contribute to the organic content. Regulation 170/03 specifies that 15 organic compounds should be analyzed on at least an annual basis. Toronto Water Supply has been monitoring a significantly larger number of organics on at least a quarterly basis for over two decades. This unsurpassed level of diligence can clearly be seen in the attached tables.

Regulation 170/03 stipulates that trihalomethanes (THMs) are to be tested at least quarterly. Disinfection by-products (DBPs), which include THMs have received a lot of media attention in the recent past and are described below.

Disinfection By-products

THMs are one group of disinfection by-products resulting from the use of chlorine. Chlorine is used to disinfect water to eliminate disease-causing microorganisms which may be present in raw water sources. The maximum limit for THMs in water is currently 0.1 milligrams per litre (mg/L) or parts per million (ppm). The United States Environmental Protection Agency (USEPA) lowered the maximum allowable level in US drinking water to 0.08 mg/L in November 1998. The average THM level in water produced at Toronto's water treatment plants during the past decade has been considerably below the levels of concerns. Over the past ten years, THM levels have been consistently less than 0.02 mg/L The average THMs level for this quarter was 0.0114 mg/L and the annual average of system end samples was 0.0138 mg/L.

Since 1995, we have been monitoring for other groups of chlorination by-products called haloacetic acids (HAAs) and haloacetonitriles (HANs). Currently, limits for HAAs and HANs are not stipulated by the ODWQS. The levels of these compounds in Toronto's drinking water are significantly below maximum acceptable levels stipulated by the USEPA. The average level of HAAs determined in this quarter, as indicated in Table A, was 0.0051 mg/L, which is much lower than USEPA's maximum contaminant level of 0.06 mg/L.

The primary and over-riding public health concern is to provide water that is microbiologically safe. It has in fact been stated that the use of chlorine is one of the most significant public health advances in this century. Alternate disinfectants such as ozone are known to produce other disinfection by-products, which may also be of concern.

Pesticides

Regulation 170/03 specifies 41 pesticides that should be tested for annually, compared to a 111 pesticides that the City tests for to ensure drinking water safety. As shown in Table A, which summarizes pesticide analyses during the past quarter, only 1 pesticide (atrazine) was detected. The actual concentration of atrazine detected in water is 62 times lower than the acceptable MAC specified by the ODWQS.

Did we exceed the standards?

Approximately 11,500 microbiological tests were carried out during the quarter, and 6 tests results indicated an adverse water quality condition as defined in the regulation. Results of subsequent samples and vicinity samples were clear. Table B-1 summarizes the specifics of each exceedance and action taken to remedy.

More than 1,240 samples were taken from the distribution system to measure chlorine residuals during the quarter, and only one of the sample indicated an adverse water quality condition. Samples having low chlorine residuals (less than 0.25 mg/L) indicate a possible deterioration in water quality, but not an unsafe condition. In all cases, the microbiological quality of the samples was excellent.

0.25 mg/L at any of the production facilities.

Table B-2 summarizes the specifics and action taken to address each incident.

There were no exceedances of MACs for any of the other parameters tested over the reporting period.

During the quarter, there were no occasions when the treated water total chlorine residual decreased below

Measures taken to comply with the regulation

- Because past practices by the City surpassed the requirements of the *Drinking Water Protection Regulation* in most areas, the measures required to comply were limited to:
- obtaining laboratory accreditation for analyses of specific parameters;
- implementing modified adverse water quality notification protocol and posting warning notices;
- providing water quality public information package; and
- fully implementing continuous turbidity monitoring at individual filter outlets.

Table C summarizes regulatory issues and requirements together with past practices and updates additional measures undertaken by the City to comply with the *Drinking Water Protection Regulations.* Further minor operational changes have also been implemented to ensure that the City is in compliance with Regulation 170/03.

Security measures at our facilities have been stepped up to ensure the water supply integrity.

Summary

The Water and Wastewater Services Division has taken all necessary measures to comply with the *Drinking Water Protection Regulation* and *Ontario's Drinking Water Standards.*

The contents of this report demonstrate Toronto's commitment to waterworks practices, which continue to surpass the requirements of the new regulation in many areas.

As the information in this report and previous quarterly reports indicates, consumers in the City of Toronto and the urban areas of York Region can have a high level of confidence in the safety and security of their drinking water supply.

July 29, 2003

TABLE A
SUMMARY OF ANALYTICAL RESULTS
SECOND QUARTER 2003

MICROBIOLOGICAL PARAMETERS

PARAMETER/LOCATION	STANDARD MAC/IMAC	OBJECTIVE AO/OG	SAMPLING DATE	NUMBER OF SAMPLES	METHOD DETECTION LIMIT	NUMBER OF DETECTABLE RESULTS	RESULTS MAX.	RESULTS MIN.	RESULTS MEAN	COMMENTS
Heterotrophic Plate Count (CFU/mL)	500*		04/01-06/30		1 CFU/mL					Indicates general bacterial presence.
F.J.Horgan Filtration Plant				541		76	5	0	0.12	
R.C.Harris Filtration Plant				548		58	95	0	0.09	
Island Filtration Plant				8		2	1	0	0.19	
R.L.Clark Filtration Plant				546		48	7	0	0.07	
Distribution				1244		191	140	0	0.20	
Background Bacteria (MF-CFU/100mL)	200*		04/01-06/30		1 CFU/100 mL					Indicates general bacterial presence.
F.J.Horgan Filtration Plant				541		20	2	0	0.030	
R.C.Harris Filtration Plant				548		10	4	0	0.016	
Island Filtration Plant				8		0	0	0	0	
R.L.Clark Filtration Plant				545		18	3	0	0.026	
Distribution				1244		42	500	0	0.055	
Coliform Bacteria (CFU/100mL)	0*		04/01-06/30		1 CFU/100 mL					Indicates possible contamination by fecal material.
F.J.Horgan Filtration Plant				541		1	1	0	0.0013	
R.C.Harris Filtration Plant				548		0	0	0	0	
Island Filtration Plant				8		0	0	0	0	
R.L.Clark Filtration Plant				546		0	0	0	0	
Distribution				1244		0	0	0	0	
***E. Coli* Bacteria (CFU/100mL)**	0*		04/01-06/30		1 CFU/100 mL					Indicates likely contamination by fecal material.
F.J.Horgan Filtration Plant				541		0	0	0	0	
R.C.Harris Filtration Plant				548		0	0	0	0	
Island Filtration Plant				8		0	0	0	0	
R.L.Clark Filtration Plant				546		0	0	0	0	
Distribution				1244		0	0	0	0	

Notes: * Counts exceeding these limits are indicative of adverse water qualty.
CFU = Colony Forming Units

OPERATIONAL PARAMETERS

PARAMETER/LOCATION	STANDARD MAC/IMAC	OBJECTIVE AO/OG	SAMPLING DATE	NUMBER OF SAMPLES	METHOD DETECTION LIMIT	NUMBER OF DETECTABLE RESULTS	RESULTS MAX.	RESULTS MIN.	RESULTS AVG.	COMMENTS
Aluminum (mg/L)		0.1	04/01-06/30		0.005					Aluminum levels are slightly elevated during treatement as a result of
F.J.Horgan Filtration Plant				89		89	0.174	0.048	0.081	the use of alum to help in the removal of bacteria and particulates.
R.C.Harris Filtration Plant				91		91	0.173	0.051	0.074	
Island Filtration Plant										
R.L.Clark Filtration Plant				91		91	0.1	0.027	0.048	
Chlorine Residual (Total-mg/L)	3		04/01-06/30							Chloramine is the major component of the total chlorine residual.
F.J.Horgan Filtration Plant				Continuous		N/A	1.4	0.85	1.16	The maintenance of an adequate residual during water distribution is
R.C.Harris Filtration Plant				monitoring			1.97	0.52	1.21	essential to the protection of public health.
Island Filtration Plant				at plants.			1.66	0.48	1.25	
R.L.Clark Filtration Plant							1.6	0.88	1.20	
Distribution				1244		1244	1.42	0.25	1.11	
Fluoride (mg/L)	1.5		04/01-06/30							Naturally occuring fluoride levels are supplemented during treatment to
F.J.Horgan Filtration Plant				541		541	1.0	0.52	0.77	achieve the optimum level of 0.8 mg/L as recommended by the
R.C.Harris Filtration Plant				548		548	1.1	0.12	0.67	Medical Officer of Health.
Island Filtration Plant				8		8	0.39	0.17	0.24	
R.L.Clark Filtration Plant				546		546	1.2	0.4	0.67	
Turbidity (NTU)	1		04/01-06/30							Turbidity (cloudiness) of water is an indication of the presence of
F.J.Horgan Filtration Plant				Continuous		N/A	0.1	0.05	0.07	particles such as bacteria in the water. If excessive, this may interfere
R.C.Harris Filtration Plant				monitoring			0.28	0.02	0.04	with proper disinfection.
Island Filtration Plant				at plants.			0.27	0.07	0.13	
R.L.Clark Filtration Plant							0.14	0.03	0.05	

GENERAL CHEMISTRY AND PHYSICAL PARAMETERS

PARAMETER	STANDARD MAC/IMAC	OBJECTIVE AO/OG	SAMPLING DATE	NUMBER OF SAMPLES	METHOD DETECTION LIMIT	NUMBER OF DETECTABLE RESULTS	RESULTS MAX.	RESULTS MIN.	RESULTS AVG.	COMMENTS
Alkalinity		30-500	04/07-06/02	9		9	86	78	82	Due to natural mineral content.
Ammonia, Total			04/01-06/30	1090		1090	0.365	0.1	0.241	Result of water chloramination.
Carbon Dioxide, Free				0						
Colour (True Colour Units)		5	04/01-06/30	180		180	2	1	1	
Conductivity (u mho/cm)			04/07-06/02	9		9	335	306	316	Indicator of dissolved solids.
Hardness		80-100	04/15-06/16	9		9	125	119	122	Moderate hardness due to mineral content.
Nitrilotriacetic Acid (NTA)	0.4		07-Apr	4	0.05	2	0.08	0	0.033	
Organic Nitrogen		0.15	04/15-06/16	6		6	0.325	0.089	0.201	
Oxygen, Dissolved			04/17-06/26	3		3	12	11	12	
pH (pH Units)		6.5-8.5	04/01-06/30	185		185	7.6	7.3	7.5	
Temperature (deg. C Raw water)		15	04/01-06/30	Continuous			15.3	0.9	6.0	
Total Dissolved Solids		500		0						
Total Organic Carbon		5	04/15-06/02	9		9	2.8	2.2	2.50	Dissolved organic carbon is a component of the total as listed.

Notes: All parameters are measured in mg/L unless otherwise noted.
The results listed represent water from all four water treatment plants.

INORGANIC PARAMETERS

PARAMETER	STANDARD MAC/IMAC	OBJECTIVE AO/OG	SAMPLING DATE	NUMBER OF SAMPLES	METHOD DETECTION LIMIT	NUMBER OF DETECTABLE RESULTS	RESULTS MAX.	RESULTS MIN.	RESULTS AVG.	COMMENTS
Antimony			07-Apr	5	0.0005	0	0	0	0	
Arsenic	0.025		07-Apr	5	0.002	0	0	0	0	
Barium	1		07-Apr	5	0.005	5	0.025	0.022	0.0232	Common mineral constituent.
Beryllium			07-Apr	5	0.001	0	0	0	0	
Boron	5		07-Apr	5	0.005	5	0.029	0.025	0.0268	Common mineral constituent.
Cadmium	0.005		07-Apr	5	0.0001	0	0	0	0	
Calcium			07-Apr	5	0.5	5	35.1	33	34.1	Mineral largely responsible for water hardness.
Chloride		250	04/07-06/16	9	0.23	9	33	24	27	Common mineral constituent.
Chromium	0.05		07-Apr	5	0.005	0	0	0	0	
Cobalt			07-Apr	5	0.0001	0	0	0	0	
Copper		1	07-Apr	5	0.0005	5	0.0148	0.0008	0.0039	Common mineral constituent.
Cyanide	0.2		07-Apr	4	0.001	0	0	0	0	
Iron		0.3	04/07-06/12	9	0.001	7	0.005	0	0.002	Common mineral constituent.
Lead	0.01		07-Apr	5	0.0005	0	0	0	0	
Magnesium			07-Apr	5	0.05	5	8.2	8.0	8.0	Common mineral constituent.
Manganese		0.05	07-Apr	5	0.005	1	0.005	0	0.001	
Mercury	0.001		07-Apr	4	0.00005	0	0	0	0	
Molybdenum			07-Apr	5	0.001	5	0.001	0.001	0.001	
Nickel			07-Apr	5	0.001	1	0.001	0	0.0002	
Nitrate	10		04/07-06/16	9	0.02	9	0.46	0.32	0.410	Natural constituent but may be elevated in agricultural areas.
Nitrite	1		04/07-06/16	9	0.01	0	0	0	0	
Phosphorous			07-Apr	5	0.05	0	0	0	0	
Potassium			07-Apr	5	0.1	5	1.5	1.4	1.44	Common mineral constituent.
Selenium	0.01		07-Apr	5	0.002	0	0	0	0	
Silicon			07-Apr	5	0.05	5	0.61	0.51	0.53	Natural constituent increased by fluoridation.
Silver			07-Apr	5	0.0001	0	0	0	0	
Sodium		200	04/07-06/02	9	0.1	9	17	12	13.4	Natural constituent which may increase during winter snowmelt.
Strontium			07-Apr	5	0.001	5	0.172	0.166	0.169	Common mineral constituent.
Sulphate		500	04/07-06/16	9	0.36	9	36	28	31	Natural constituent increased during water dechlorination.
Thallium			07-Apr	5	0.00005	0	0	0	0	
Titanium			07-Apr	5	0.005	0	0	0	0	
Uranium	0.1		07-Apr	5	0.0001	5	0.0003	0.0003	0.0003	Common mineral constituent.
Vanadium			07-Apr	5	0.0005	3	0.001	0	0.0004	Common mineral constituent.
Zinc		5	07-Apr	5	0.005	2	0.037	0	0.014	

Notes: All parameters are measured in mg/L unless otherwise noted.
The results listed represent water from all four water treatment plants.
Lead results presented include a sample representing maximum residence time in the distribution system.

ORGANIC PARAMETERS

PARAMETER	STANDARD MAC/IMAC	OBJECTIVE AO/OG	SAMPLING DATE	NUMBER OF SAMPLES	METHOD DETECTION LIMIT	NUMBER OF DETECTABLE RESULTS	RESULTS MAX.	RESULTS MIN.	RESULTS AVG.	COMMENTS
Acenaphthene			07-Apr	4	0.0003	0				
Acenaphthylene			07-Apr	4	0.0004	0				
Acrolein			04/07-06/02	15	0.001	0				
Acrylonitrile			04/07-06/02	15	0.001	0				
Anisole			07-Apr	4	0.00001	0				
Anthanthrene			07-Apr	4	0.0009	0				
Anthracene			07-Apr	4	0.0001	0				
Aroclor1016	0.003		07-Apr	4	0.00002	0				
Aroclor1221	0.003		07-Apr	4	0.00002	0				
Aroclor1232	0.003		07-Apr	4	0.00002	0				
Aroclor1242	0.003		07-Apr	4	0.00002	0				
Aroclor1248	0.003		07-Apr	4	0.00002	0				
Aroclor1254	0.003		07-Apr	4	0.00002	0				
Aroclor1260	0.003		07-Apr	4	0.00002	0				
Benzene	0.005		04/07-06/02	15	0.0001	0				
Benzidine			07-Apr	4	0.0028	0				
Benzo(a)anthracene			07-Apr	4	0.0002	0				
Benzo(a)pyrene	0.00001		07-Apr	4	0.00001	0				
Benzo(b)chrysene			07-Apr	4	0.0009	0				
Benzo(b/j)fluoranthene			07-Apr	4	0.0004	0				
Benzo(e)pyrene			07-Apr	4	0.0005	0				
Benzo(g,h,i)perylene			07-Apr	4	0.0008	0				
Benzo(k)fluoranthene			07-Apr	4	0.0005	0				
Biphenyl			07-Apr	4	0.0006	0				
Bromobenzene			04/07-06/02	15	0.0004	0				
Bromochloromethane			04/07-06/02	15	0.0004	0				
4-Bromophenyl-phenylether			07-Apr	4	0.0005	0				
n-Butylbenzene			04/07-06/02	15	0.0003	0				
sec-Butylbenzene			04/07-06/02	15	0.0002	0				
tert-Butylbenzene			04/07-06/02	15	0.0002	0				
Butylbenzylphthalate			07-Apr	4	0.0002	0				
Camphene			07-Apr	4	0.0005	0				
Carbon tetrachloride	0.005		04/07-06/02	15	0.0005	0				
4-Chloro-3-methylphenol			07-Apr	4	0.0005	0				
Chlorobenzene	0.08	0.03	04/07-06/02	15	0.0002	0				
Bis(2-Chloroethoxy)methane			07-Apr	4	0.0005	0				
Bis(2-Chloroethyl)ether			07-Apr	4	0.0004	0				
Bis(2-Chloroisopropyl)ether			07-Apr	4	0.0007	0				
1-Chloronaphthalene			07-Apr	4	0.0006	0				
2-Chloronaphthalene			07-Apr	4	0.0004	0				
2-Chlorophenol			07-Apr	4	0.0003	0				
4-Chlorophenyl-phenylether			07-Apr	4	0.0005	0				
2-Chlorotoluene			04/07-06/02	15	0.0002	0				
4-Chlorotoluene			04/07-06/02	15	0.0005	0				
Chrysene			07-Apr	4	0.0003	0				
Coronene			07-Apr	4	0.0009	0				
Di-n-butylphthalate			07-Apr	4	0.0005	0				
Di-n-octylphthalate			07-Apr	4	0.0006	0				
Dibenz(a,h)anthracene			07-Apr	4	0.0008	0				
1,2-Dibromo-3-chloropropane			04/07-06/02	15	0.0006	0				
1,2-Dibromoethane			04/07-06/02	15	0.0004	0				
Dibromomethane			04/07-06/02	15	0.0004	0				
2,4-Dichloroanisole			07-Apr	4	0.00001	0				
1,2-Dichlorobenzene	0.2	0.003	04/07-06/02	15	0.0003	0				
1,3-Dichlorobenzene			04/07-06/02	15	0.0002	0				
1,4-Dichlorobenzene	0.005	0.001	04/07-06/02	15	0.0004	0				
3,3-Dichlorobenzidine			07-Apr	4	0.0006	0				
1,1-Dichloroethane			04/07-06/02	15	0.0002	0				
1,2-Dichloroethane	0.005		04/07-06/02	15	0.0002	0				
1,1-Dichloroethylene	0.014		04/07-06/02	15	0.0002	0				
cis-1,2-Dichloroethylene			04/07-06/02	15	0.0005	0				
trans-1,2-Dichloroethylene			04/07-06/02	15	0.0002	0				

ORGANIC PARAMETERS

PARAMETER	STANDARD MAC/IMAC	OBJECTIVE AO/OG	SAMPLING DATE	NUMBER OF SAMPLES	METHOD DETECTION LIMIT	NUMBER OF DETECTABLE RESULTS	RESULTS MAX.	RESULTS MIN.	RESULTS AVG.	COMMENTS
Dichloromethane	0.05		04/07-06/02	15	0.0003	0				
2,4-Dichlorophenol	0.9	0.0003	07-Apr	5	0.0009	0				
2,6-Dichlorophenol			07-Apr	4	0.0004	0				
1,2-Dichloropropane			04/07-06/02	15	0.0002	0				
1,3-Dichloropropane			04/07-06/02	15	0.0003	0				
2,2-Dichloropropane			04/07-06/02	15	0.0005	0				
1,1-Dichloropropene			04/07-06/02	15	0.0002	0				
cis-1,3-Dichloropropene			04/07-06/02	15	0.0002	0				
trans-1,3-Dichloropropene			04/07-06/02	15	0.0002	0				
Diethylphthalate			07-Apr	4	0.0004	0				
7,12-Dimethylbenz(a)anthracene			07-Apr	4	0.0003	0				
2,4-Dimethylphenol			07-Apr	4	0.0005	0				
Dimethylphthalate			07-Apr	4	0.0006	0				
4,6-Dinitro-2-methylphenol			07-Apr	4	0.0004	0				
2,4-Dinitrophenol			07-Apr	4	0.001	0				
2,4-Dinitrotoluene			07-Apr	4	0.0005	0				
2,6-Dinitrotoluene			07-Apr	4	0.0004	0				
Dioxin & Furan	0.000000015									Not previoulsy found in any samples analyzed to date.
Diphenyl ether			07-Apr	4	0.0005	0				
1,2-Diphenylhydrazine(Azobenzene)			07-Apr	4	0.0003	0				
Ethylbenzene		0.0024	04/07-06/02	15	0.0001	0				
Bis(2-Ethylhexyl)phthalate			07-Apr	4	0.001	0				
Fluoranthene			07-Apr	4	0.0002	0				
Fluorene			07-Apr	4	0.0004	0				
Geosmin			07-Apr	4	0.00001	0				
Hexachlorobenzene			07-Apr	4	0.000002	0				
Hexachlorobutadiene			07-Apr	4	0.000002	0				
Hexachlorocyclopentadiene			07-Apr	4	0.000005	0				
Hexachloroethane			07-Apr	4	0.000005	0				
Indeno(1,2,3-cd)pyrene			07-Apr	4	0.0008	0				
Indole			07-Apr	4	0.0006	0				
2-Isobutyl-3-methoxypyrazine			07-Apr	4	0.00001	0				
Isophorone			07-Apr	4	0.0003	0				
2-Isopropyl-3-methoxypyrazine			07-Apr	4	0.00001	0				
Isopropylbenzene			04/07-06/02	15	0.0002	0				
p-Isopropyltoluene			04/07-06/02	15	0.0004	0				
2-Methylisoborneol (MIB)			07-Apr	4	0.00001	0				
1-Methylnaphthalene			07-Apr	4	0.0007	0				
2-Methylnaphthalene			07-Apr	4	0.0006	0				
2-Methylphenol (o-Cresol)			07-Apr	4	0.0004	0				
4 & 3-Methylphenol (p & m-Cresol)			07-Apr	4	0.0005	0				
Methyl-tert-butyl ether (MTBE)			04/07-06/02	15	0.0002	0				
Naphthalene			04/07-06/02	15	0.0004	0				
5-Nitroacenaphthene			07-Apr	4	0.0006	0				
Nitrobenzene			07-Apr	4	0.0005	0				
2-Nitrophenol			07-Apr	4	0.0004	0				
4-Nitrophenol			07-Apr	4	0.0015	0				
n-Nitroso-di-n-propylamine			07-Apr	4	0.0004	0				
n-Nitrosodimethylamine (NDMA)	0.000009		07-Apr	4	0.0000004	3	0.0000043	0	0.0000022	Possible source under investigation.
n-Nitrosodiphenylamine/Diphenylamine			07-Apr	4	0.0005	0				
Nonylphenol			07-Apr	4	0.0004	0				
Pentachlorobenzene			07-Apr	4	0.000002	0				
Pentachlorophenol	0.06	0.03	07-Apr	5	0.0001	0				
Perylene			07-Apr	4	0.0005	0				
Phenanthrene			07-Apr	4	0.0002	0				
Phenol			07-Apr	4	0.0004	0				
n-Propylbenzene			04/07-06/02	15	0.0002	0				
Pyrene			07-Apr	4	0.0002	0				

ORGANIC PARAMETERS

PARAMETER	STANDARD MAC/IMAC	OBJECTIVE AO/OG	SAMPLING DATE	NUMBER OF SAMPLES	METHOD DETECTION LIMIT	NUMBER OF DETECTABLE RESULTS	RESULTS MAX.	RESULTS MIN.	RESULTS AVG.	COMMENTS
Styrene			04/07-06/02	15	0.0002	0				
2,3,4,6-Tetrachloroanisole			07-Apr	4	0.00001	0				
1,2,3,4-Tetrachlorobenzene			07-Apr	4	0.000002	0				
1,2,3,5-Tetrachlorobenzene			07-Apr	4	0.000002	0				
1,2,4,5-Tetrachlorobenzene			07-Apr	4	0.000002	0				
1,1,1,2-Tetrachloroethane			04/07-06/02	15	0.0003	0				
1,1,2,2-Tetrachloroethane			04/07-06/02	15	0.0004	0				
Tetrachloroethylene	0.03		04/07-06/02	15	0.0004	0				
2,3,4,5-Tetrachlorophenol			07-Apr	4	0.0006	0				
2,3,4,6-Tetrachlorophenol	0.1	0.001	07-Apr	5	0.0001	0				
2,3,5,6-Tetrachlorophenol			07-Apr	4	0.0005	0				
Toluene		0.024	04/07-06/02	15	0.0001	0				
2,4,6-Trichloroanisole			07-Apr	4	0.00001	0				
2,3,6-Trichloroanisole			07-Apr	4	0.00001	0				
1,2,3-Trichlorobenzene			07-Apr	4	0.000005	0				
1,2,4-Trichlorobenzene			07-Apr	4	0.000005	0				
1,3,5-Trichlorobenzene			07-Apr	4	0.000003	0				
1,1,1-Trichloroethane			04/07-06/02	15	0.0003	0				
1,1,2-Trichloroethane			04/07-06/02	15	0.0003	0				
Trichloroethylene	0.05		04/07-06/02	15	0.0002	0				
2,4,6-Trichlorophenol	0.005	0.002	07-Apr	5	0.0002	0				
2,3,4-Trichlorophenol			07-Apr	4	0.0006	0				
2,3,5-Trichlorophenol			07-Apr	4	0.0005	0				
2,4,5-Trichlorophenol			07-Apr	4	0.0007	0				
1,2,3-Trichloropropane			04/07-06/02	15	0.0004	0				
2,3,6-Trichlorotoluene			07-Apr	4	0.000002	0				
2,4,5-Trichlorotoluene			07-Apr	4	0.000002	0				
a,2,6-Trichlorotoluene			07-Apr	4	0.000002	0				
1,2,4-Trimethylbenzene			04/07-06/02	15	0.0003	0				
1,3,5-Trimethylbenzene			04/07-06/02	15	0.0005	0				
Vinyl Chloride	0.002		07-Apr	3	0.0002	0				
m- & p-Xylene		0.3	04/07-06/02	15	0.0002	0				
o-Xylene		0.3	04/07-06/02	15	0.0002	0				

DISINFECTION BYPRODUCTS

PARAMETER	STANDARD MAC/IMAC	OBJECTIVE AO/OG	SAMPLING DATE	NUMBER OF SAMPLES	METHOD DETECTION LIMIT	NUMBER OF DETECTABLE RESULTS	RESULTS MAX.	RESULTS MIN.	RESULTS AVG.	COMMENTS
a) TRIHALOMETHANES										
Bromodichloromethane			04/07-06/02	15	0.0004	15	0.0056	0.0029	0.0041	These byproducts are formed by chemical reaction of chlorine with
Bromoform			04/07-06/02	15	0.0009	0				naturally occuring organic matter. The maintenance of a chloramine
Chloroform			04/07-06/02	15	0.0004	15	0.0058	0.0029	0.0043	residual within the City's distribution system provides protection
Dibromochloromethane			04/07-06/02	15	0.0006	15	0.0038	0.0022	0.0030	from microbiological contamination while minimizing further formation
Total THM (all samples this quarter)			04/07-06/02	15		15	0.0152	0.0083	0.0114	of these chemicals.
Total THM (system end, past 12 mo.)	0.1			12		12	0.0204	0.0103	0.0138	Standard is based on running annual average of system end samples.
b) HALOACETIC ACIDS										
Bromoacetic acid			07-Apr	5	0.0003	0				While this group of disinfection byproducts is not regulated in Ontario,
Bromochloroacetic acid			07-Apr	5	0.0006	5	0.0014	0.0009	0.0012	the US-EPA has set a maximum contaminant level of 0.06 mg/L
Bromodichloroacetic acid			07-Apr	5	0.0006	5	0.0013	0.0009	0.0010	for a sum of 5 of these compounds.
Chloroacetic acid			07-Apr	5	0.001	0				
Chlorodibromoacetic acid			07-Apr	5	0.0007	0				
Dibromoacetic acid			07-Apr	5	0.0002	5	0.0005	0.0005	0.0005	
Dichloroacetic acid			07-Apr	5	0.0004	5	0.0020	0.0013	0.0016	
Tribromoacetic acid			07-Apr	5	0.0009	0				
Trichloroacetic acid			07-Apr	5	0.0004	5	0.0015	0.0005	0.0008	
Total HAA-9			07-Apr	5		5	0.0066	0.0041	0.0051	
c) OTHERS										
Bromochloroacetonitrile			07-Apr	4	0.0002	4	0.0005	0.0004	0.0004	These chlorination byproducts are not currently regulated.
Chloropicrin			07-Apr	4	0.0002	0				
Dibromoacetonitrile			07-Apr	4	0.0002	4	0.0005	0.0004	0.0004	
1,1-Dichloro-2-propanone			07-Apr	4	0.0002	0				
Dichloroacetonitrile			07-Apr	4	0.0002	3	0.0004	0.0000	0.0002	
1,1,1-Trichloro-2-propanone			07-Apr	4	0.0002	0				
Trichloroacetonitrile			07-Apr	4	0.0002	0				

Notes: All parameters are measured in mg/L unless otherwise noted.
The results listed represent water from all four water treatment plants.

PESTICIDES

PARAMETER	STANDARD MAC/IMAC	OBJECTIVE AO/OG	SAMPLING DATE	NUMBER OF SAMPLES	METHOD DETECTION LIMIT	NUMBER OF DETECTABLE RESULTS	RESULTS MAX.	RESULTS MIN.	RESULTS AVG.	COMMENTS
Acifluorfen			07-Apr	4	0.0005	0				
Alachlor	0.005		07-Apr	4	0.000005	0				
Aldicarb	0.009		07-Apr	4	0.0004	0				
Aldrin	0.0007		07-Apr	4	0.000002	0				
Ametryn			07-Apr	4	0.00006	0				
Aminocarb			07-Apr	4	0.0003	0				
Atraton			07-Apr	4	0.0002	0				
Atrazine	0.005		07-Apr	4	0.00007	4	0.00009	0.00007	0.00008	Commonly used agricultural pesticide.
Azinphos Methyl	0.02		07-Apr	4	0.00005	0				
Bendiocarb	0.04		07-Apr	4	0.0004	0				
Bentazon			07-Apr	4	0.0006	0				
alpha BHC			07-Apr	4	0.000002	0				
beta BHC			07-Apr	4	0.000002	0				
delta BHC			07-Apr	4	0.000002	0				
gamma BHC (Lindane)	0.004		07-Apr	4	0.000002	0				
Bromoxynil	0.005		07-Apr	4	0.0002	0				
Butylate			07-Apr	4	0.0002	0				
Carbaryl	0.09		07-Apr	4	0.00004	0				
Carbofuran	0.09		07-Apr	4	0.00003	0				
Carbophenothion			07-Apr	4	0.000002	0				
alpha Chlordane			07-Apr	4	0.000002	0				
gamma Chlordane			07-Apr	4	0.000002	0				
Oxy Chlordane			07-Apr	4	0.000002	0				
Chlordane	0.007		07-Apr	4	0.00002	0				
Chlorpyrifos (Dursban)	0.09		07-Apr	4	0.00002	0				
Chlorpyrifos methyl (Reldan)			07-Apr	4	0.00001	0				
Coumaphos			07-Apr	4	0.00005	0				
Cyanazine (Bladex)	0.01		07-Apr	4	0.0001	0				
Dalapon			07-Apr	4	0.0004	0				
DCPA (Dacthal)			07-Apr	4	0.000002	0				
DCPA, di acid			07-Apr	4	0.0005	0				
2,4-D	0.1		07-Apr	4	0.0004	0				
2,4-DB			07-Apr	4	0.0009	0				
2,4'-DDD	0.03		07-Apr	4	0.000002	0				
4,4'-DDD	0.03		07-Apr	4	0.000002	0				
2,4'-DDE	0.03		07-Apr	4	0.000002	0				
4,4'-DDE	0.03		07-Apr	4	0.000002	0				
O,P'-DDT (2,4'-DDT)	0.03		07-Apr	4	0.000002	0				
4,4'-DDT	0.03		07-Apr	4	0.000002	0				
Demeton-S			07-Apr	4	0.0002	0				
Desethylatrazine			07-Apr	4	0.0002	0				
Diallate,cis			07-Apr	4	0.00001	0				
Diallate,trans			07-Apr	4	0.00002	0				
Diazinon	0.02		07-Apr	4	0.00001	0				
Dicamba	0.12		07-Apr	4	0.0004	0				
Dichlofenthion			07-Apr	4	0.00002	0				
Dichloran			07-Apr	4	0.000002	0				
3,5-Dichlorobenzoic acid			07-Apr	4	0.0005	0				
Dichlorprop			07-Apr	4	0.0004	0				
Dichlorvos			07-Apr	4	0.0002	0				
Diclofop-methyl	0.009		07-Apr	4	0.00002	0				
Dicofol			07-Apr	4	0.00001	0				
Dieldrin	0.0007		07-Apr	4	0.000002	0				
Dimethoate	0.02		07-Apr	4	0.0001	0				
Dinoseb	0.01		07-Apr	4	0.0004	0				
Dioxathion			07-Apr	4	0.00006	0				
Diquat	0.07		01-Apr	10	0.0001	0				
Disulfoton			07-Apr	4	0.00002	0				
Diuron	0.15		07-Apr	4	0.00002	0				
Endosulfan I			07-Apr	4	0.000002	0				
Endosulfan II			07-Apr	4	0.000002	0				

PESTICIDES

PARAMETER	STANDARD MAC/IMAC	OBJECTIVE AO/OG	SAMPLING DATE	NUMBER OF SAMPLES	METHOD DETECTION LIMIT	NUMBER OF DETECTABLE RESULTS	RESULTS MAX.	RESULTS MIN.	RESULTS AVG.	COMMENTS
Endosulfan sulfate			07-Apr	4	0.000002	0				
Endrin			07-Apr	4	0.000002	0				
Endrin aldehyde			07-Apr	4	0.000002	0				
Endrin ketone			07-Apr	4	0.000002	0				
Ethion			07-Apr	4	0.00001	0				
Glyphosate	0.28		07-Apr	3	0.007	0				
Heptachlor	0.003		07-Apr	4	0.000002	0				
Heptachlor epoxide	0.003		07-Apr	4	0.000002	0				
Isodrin			07-Apr	4	0.000002	0				
Linuron			07-Apr	4	0.0004	0				
Malathion	0.19		07-Apr	4	0.00003	0				
Methoxychlor	0.9		07-Apr	4	0.000003	0				
Metolachlor	0.05		07-Apr	4	0.0003	0				
Metribuzin (Sencor)	0.08		07-Apr	4	0.0001	0				
Mevinphos (Phosdrin)			07-Apr	4	0.00007	0				
Mexacarbate			07-Apr	4	0.0002	0				
Mirex			07-Apr	4	0.000002	0				
Octachlorostyrene			07-Apr	4	0.000002	0				
Paraquat	0.01		01-Apr	10	0.0001	0				
Parathion ethyl	0.05		07-Apr	4	0.00001	0				
Parathion methyl			07-Apr	4	0.00002	0				
PCNB(Pentachloronitrobenzene)			07-Apr	4	0.000002	0				
Perthane			07-Apr	4	0.00001	0				
Phorate	0.002		07-Apr	4	0.00002	0				
Picloram	0.19		07-Apr	4	0.0007	0				
Prometon			07-Apr	4	0.0001	0				
Prometryn	0.001		07-Apr	4	0.00006	0				
Propazine			07-Apr	4	0.00006	0				
Propham			07-Apr	4	0.0001	0				
Propoxur(Baygon)			07-Apr	4	0.00005	0				
Ronnel (Fenchlorophos)			07-Apr	4	0.00004	0				
Secbumeton			07-Apr	4	0.0002	0				
Siduron			07-Apr	4	0.0002	0				
Simazine	0.01		07-Apr	4	0.00008	0				
Strobane			07-Apr	4	0.00005	0				
SWEP			07-Apr	4	0.0004	0				
2,4,5-T	0.28	0.02	07-Apr	4	0.0002	0				
Temephos (Abates)	0.28		07-Apr	4	0.00009	0				
Terbufos	0.001		07-Apr	4	0.00002	0				
Terbuthylazine			07-Apr	4	0.0002	0				
Terbutryn			07-Apr	4	0.00006	0				
Toxaphene			07-Apr	4	0.00005	0				
2,4,5-TP(Silvex)			07-Apr	4	0.0002	0				
Tri-m-cresylphosphate			07-Apr	4	0.00006	0				
Tri-o-cresylphosphate			07-Apr	4	0.00006	0				
Tri-p-cresylphosphate			07-Apr	4	0.00006	0				
Triallate	0.23		07-Apr	4	0.00006	0				
Triethylphosphate			07-Apr	4	0.0001	0				
Trifluralin	0.045		07-Apr	4	0.000003	0				
Triphenylphosphate			07-Apr	4	0.0002	0				

Notes: All parameters are measured in mg/L unless otherwise noted.
The results listed represent water from all four water treatment plants.

TABLE B-1
SAMPLES INDICATING ADVERSE WATER QUALITY
MICROBIOLOGICAL
SECOND QUARTER (APRIL TO JUNE) - 2003

SAMPLE DATE	SAMPLE LOCATION	MICROBIOLOGICAL INDICATOR	MAC	TEST RESULT	ACTION TAKEN: NOTIFICATION MOE	NOTIFICATION MOH	RESAMPLE	VICINITY SAMPLES	TEST RESULTS	COMMENTS
PRODUCTION - During this quarter 6,571 samples met bacteriological standards. Only one samples indicated adverse water quality.										
02-Jun	F.J. Horgan F.P. Output	Total Coliform	0	1	X	X	X	X	0	Anomalous total coliform presence in the plant treated water sample. Subsequent samples clear. Sampling error suspected.
DISTRIBUTION - During the quarter, 4971 samples met bacteriological standards. Five samples indicated adverse water quality.										
07-May	Shell Station - 815 751 Don Mills Road	Total Coliform Background Colonies	200	500	X	X	X	X	0	Vicinity and resamples clear.
13-May	218 Yonge Street	Total Coliform	0	29	X	X	X	X	0	Vicinity samples and first resample clear, second resample found TC of 1, indicating a local plumbing issue.
16-May	350 Garyray Drive	Total Coliform	0	16	X	X	X	X	0	Vicinity and resamples clear.
22-May	218 Yonge Street	Total Coliform	0	2	X	X	X	X	0	Vicinity and resamples clear.
20-Jun	150 Carnforth Road Jean-Lajoie French School	Heterotrophic Plate Count	500	1000	X	X	X	X	0	Vicinity and resamples clear.

NOTES: For Microbiological Indicators, MAC (Maximum Acceptable Concentration) and Test Results units are:
Total Coliform Bacteria (CFU/100 mL)
Fecal Coliform Bacteria (CFU/100 ml)
Background Colonies (CFU/100 mL)
Heterotrophic Plate Count (CFU/mL)

TABLE B-2
SAMPLES INDICATING ADVERSE WATER QUALITY
CHLORINE RESIDUAL

SAMPLE DATE	SAMPLE LOCATION	TEST RESULT	ACTION TAKEN: NOTIFICATION MOE	NOTIFICATION MOH	RESAMPLE	VICINITY SAMPLES	TEST RESULTS	COMMENTS
PRODUCTION - During the quarter, none of the samples had total chlorine residual in the treated water less than 0.25 mg/L.								
DISTRIBUTION - During the quarter, 1,243 samples met residual chlorine standards. Only one sample had a total chlorine residual less than 0.25 mg/L.								
20-Jun	150 Carnforth Road Jean-Lajoie French School	0.13	X	X	X	X	0.45	Flushing carried out. Resample and vincinity samples showed total chlorine above 0.25

TABLE C

MEASURES TAKEN TO COMPLY WITH REGULATIONS

REGULATION ISSUE	REQUIREMENT	PAST PRACTICES	ADDITIONAL MEASURES TAKEN	COMMENTS
Minimum level of treatment	Chemically assisted filtration and continuous chlorination	All water treatment plants employ continuous coagulation, filtration and continuous two-stage chlorination processes.	None required.	Level of treatment surpasses minimum level defined in regulations.
Microbiological Sampling and Analysis	**Parameters**: - Total Coliform - Fecal Coliform or EColi - Heterotophic Plate Count or Background Colonies on 25% of samples **Frequency**: - Raw water Source - weekly - Plant treated water - weekly - Distribution system - 340 monthly	 - Total Coliform - Fecal Coliform; E. Coli since December 2001 - Background Colonies - Heterotophic Plate Count on all samples. - twice daily - every four hours - 400 monthly	None required.	Sampling and analytical program scope surpasses regulatory requirements.
Operational Parameter Analysis	- **Individual Filter Turbidity** - continuous monitoring or grab sample every 4 hours - **Chlorine Residual** - continuous monitoring - simultaneous sampling with microbiological sampling - **Fluoride** - continuous monitoring or daily grab samples	Continuous monitoring at Horgan, Clark and Island Plants - Continuous monitoring - Simultaneous sampling with microbiological sampling - Continuous monitoring and grab samples six times daily	Grab samples every 4 hours at Harris Plant until continuous monitoring system operational None required. None required. None required.	Installation of filter turbidimeters at Harris Plant to enable continuous monitoring was completed in 2001
Inorganic Analysis	14 parameters annually	34 parameters quarterly	None required.	Surpasses regulatory requirements.
Nitrates/Nitrites Analysis	Quarterly	Quarterly	None required.	
Organics Analysis	14 volatile organic parameters quarterly	over 50 volatile organics quarterly over 95 additional organics quarterly	None required.	Surpasses regulatory requirements.
Disinfection By-Products Analysis	Trihalomethanes quarterly at end of distribution system	- Trihalomethanes monthly including distribution system end - 9 Haloacetic Acids quarterly - 7 additional DBP's quarterly	None required.	Surpasses regulatory requirements.
Pesticides & PCB Analysis	44 parameters quarterly	over 110 parameters quarterly	None required.	Surpasses regulatory requirements.

REGULATION ISSUE	REQUIREMENT	PAST PRACTICES	ADDITIONAL MEASURES TAKEN	COMMENTS
Laboratory Accreditation	- All microbiological analyses required to be carried out by an accredited laboratory.	All microbiological analyses conducted by in-house laboratories.	Accreditation obtained by in-house Central Lab for carrying out all microbiological analyses and a range of organic compounds.	
	- Mandatory laboratory accreditation required for analyses of specific parameters effective 31 Oct. 2000 and 28 Feb. 2001.	Analyses of other parameters carried out by in-house and external laboratories	All targets for obtaining accreditation of in-house Central Lab for additional parameters have been met.	
Licensing of Waterworks Staff	Personnel performing analyses of regulated operational parameters must possess a Water Treatment or Water Distribution licence.	Analyses of operational parameters are carried out by plant operators who possess Water Treatment licences.	None required.	
Adverse Water Quality	Immediate verbal notification by laboratory to owner, Medical Officer of Health (MOH) and Ministry of the Environment(MOE) of sample results indicating adverse water quality condition or MAC exceedance. Owner must also verbally notify MOH and MOE, followed by written report within 24 hours. Owner to undertake corrective action in consultation with MOH.	In-house laboratory notifies owner and MOH/MOE on behalf of owner. Owner undertakes corrective action in consultation with MOH.	Owner now also notifies MOH and MOE and issues written follow-up report.	
Posting Warning Notice	Warning notice to be posted if owner does not comply with microbiological sampling and analysis requirements or if corrective action not taken.	Verbal or written notification to affected public if water should not be consumed as a precaution. Written notification if water deemed unsafe.	Warning notices to be posted as required by regulation.	
Public Information	Water quality information package containing a copy of each report or record of water sample analysis by accredited laboratory or licenced operator, approval and order or direction under the Act and every quarterly report must be made available for inspection by the public.	Annual summary of water quality available to the public on request.	Water Quality Public Information binder meeting the requirements is available for review on request by the public, effective August 26, 2000.	Information binder continues to be updated on a daily basis and is available in Metro Hall, 18th Floor, 55 John Street, Toronto.
Quarterly Reports	Reports to consumers on operation of waterworks and quality of drinking water required - starting with the third quarter of 2000 and each quarter thereafter.		Notification to consumers about availability of quarterly reports through distribution of Waterwatch publication, posting of notices and posting on Internet.	
Engineer's Reports	Reports prepared by independent engineer required every three years to include results of assessment of waterworks infrastructure, operational procedures, water source, potential for contamination, monitoring program and recommendations for improvements.	Engineering studies are undertaken on an ongoing basis to address strategic as well as specific water supply operational and quality issues.	Engineers' Reports for four water treatment plants submitted to MOE on May 31, 2001 as required by regulations.	Subsequent Engineers' Reports for four water treatment plants are due on November 30, 2006.