



# WINDSOR UTILITIES COMMISSION

2019 Summary Report



**WINDSOR  
UTILITIES  
COMMISSION**



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# RENEWAL + REDUNDANCY = SAFETY + RESPONSIBILITY

In 2019, Windsor's Drinking Water System (DWS) received its eighth consecutive 100 percent rating, during its annual audit by the Ministry of the Environment, Conservation and Parks (MECP).

We are proud of that record, and proud of our 160-year history of providing safe, reliable drinking water to our community.

During the MECP audit, Windsor Utilities Commission (WUC) and its licensed water system operator, ENWIN, were evaluated for regulatory compliance in a number of areas, including management of the drinking water system, managerial best practices and commitment to asset replacement through capital investment.

The Ministry's report acknowledged the quality-focused processes and procedures at the A.H. Weeks Water Treatment Plant and throughout the distribution system, specifically highlighting the greater number of mandatory drinking water samples and increased frequency of testing beyond Ministry standards.

Managing Windsor's water system is an enormous responsibility – One we take very seriously.

We recognize our responsibility to design and maintain the complex water acquisition, filtration and distribution systems, and to conduct the testing needed to keep our community safe. That is why, in 2019, we analyzed 495 water samples for lead content – 25 percent beyond the number required to maintain our municipal drinking water license.

Our 2019 emphasis on capital investments, supported by a focus on system safety and sustainability, also enabled us to replace 16.34km of aging water mains and 11,843 water meters, and begin the refurbishment of Reservoir "D" – ensuring ample water capacity for our community for the next 50 years.

Windsor, Tecumseh and LaSalle residents can rest assured that our water supply is protected by an ongoing planning process, with a focus on providing safe, potable water to meet community needs.

And, we're doing it efficiently which directly impacts what our customers pay. As noted by the chart on page 2, the cost of water for Windsor customers is comparable or better in comparison to municipalities of similar size.

We are proud to deliver water that exceeds Ontario's water quality standards. We will continue to focus on the safety and quality of our water, now and in the future.

Sincerely,



Mayor Drew Dilkens  
Board Chair  
Windsor Utilities Commission



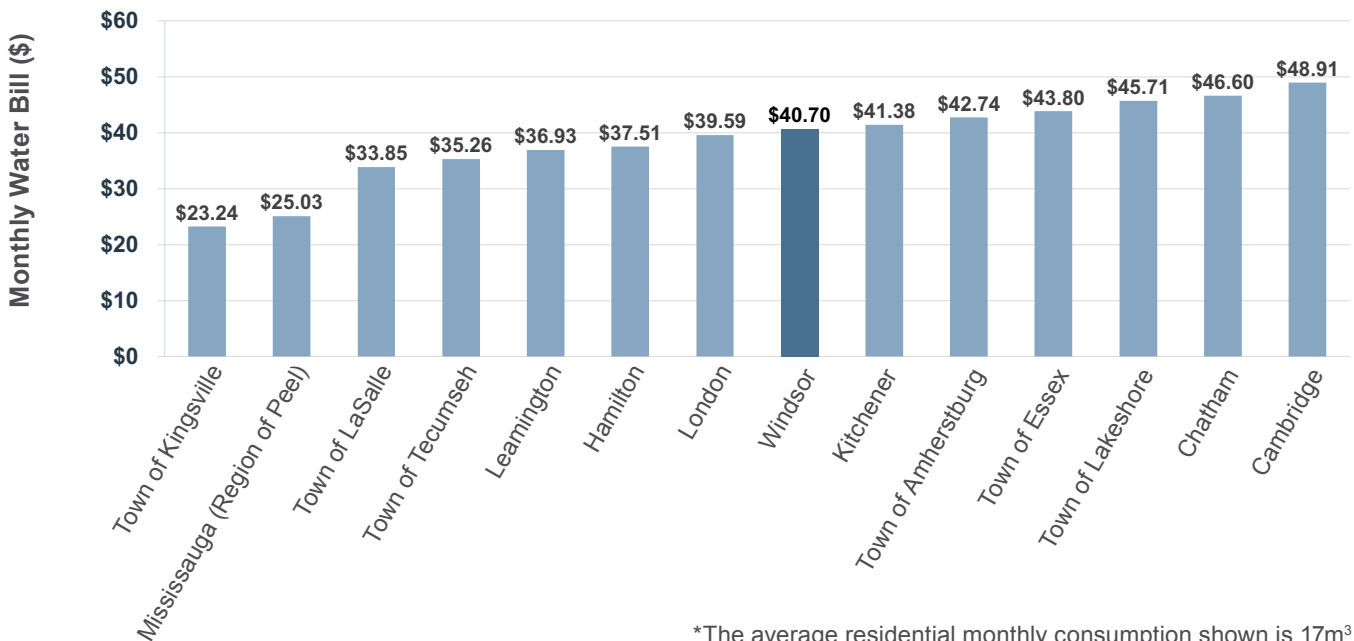
Garry Rossi  
Vice President, Water Operations  
ENWIN Utilities Ltd.

compliance + excellence = recognition



Grading and grass planting returned the George Avenue Reservoir property to green space.

### 2019 WATER (ONLY) BILL COMPARISON (MONTHLY)\*



\*The average residential monthly consumption shown is 17m<sup>3</sup>

# ENWIN = MISSION + VISION + VALUES

Our Mission is to provide safe and reliable energy and water services in a cost effective, sustainable manner. A core premise of our Strategic Direction is that the electricity service model is in the midst of significant transformation — taking on a more decentralized, customer-centric, technologically advanced and environmentally sustainable form. That is why the Board of Directors, in 2019, renewed this mission with the added priority of ensuring that our business remains “sustainable”. Sustainability means different things to different people.

To ENWIN, it means ensuring that we have the human, fiscal and capital asset resources to continue to provide existing and modernized service levels to the community while also ensuring that we assess our environmental footprint to ensure that we are balanced in our use of resources.

Our Vision is that we strive to be a trusted leader in providing exceptional value and services to our customers and stakeholders.

As the energy and water needs and options of our customers and our community evolve — and as signature projects and developments proceed — Windsor Canada Utilities Ltd., through its affiliates, will play a leading role in helping our city to transition to a smart energy future.

While we embrace our role in the service of electricity distribution we also acknowledge our expertise in the provision of potable water as a future demand, not just for our existing customers, but others.

ENWIN Water Division employees install bulk water fill station at Malden Park.

## Mission =

To provide safe and reliable energy and water services in a cost effective, sustainable manner.

## Vision =

To be a trusted leader in providing exceptional value and services to our customers and stakeholders.

## Our Core Values =

Leadership + Accountability + Integrity



### **ENWIN EQUALS LEADERSHIP, ACCOUNTABILITY AND INTEGRITY.**

Windsor Canada Utilities Ltd. and its affiliates (together – The ENWIN Group) are committed to the organizational values of leadership, accountability and integrity. These values are reflected in our Employee Code of Conduct and Conflict of Interest Policy, our organizational structure and our transparent reporting of results and challenges.

Our Boards of Directors and our Senior Management Team support an environment that fosters and demonstrates ethical business conduct at all levels, and reflects these shared values. Every employee must lead by example.

### **ENWIN EQUALS CONSIDERATION FOR STAKEHOLDERS.**

Windsor Canada Utilities Ltd. and its affiliates take into account the interests of all our stakeholders, including employees, customers, suppliers, our shareholder and the communities and environment in which we operate.

### **ENWIN EQUALS VALUING EMPLOYEES.**

The quality and diverse experiences

of our workforce is our strength. We will strive to hire and retain the best qualified people available and maximize their opportunities for success.

We are committed to maintaining a safe, secure and healthy work environment, enriched by diversity and characterized by open communication, trust and fair treatment.

### **ENWIN EQUALS PUTTING CUSTOMERS FIRST.**

Our continued success depends on the quality of our customer interactions, and we are committed to delivering value across the entire customer experience.

We are honest, open and fair in our relationships with our customers. We provide reliable, responsive and innovative products and services in compliance with legislated rights and standards for access, safety, health and environmental protection.

### **ENWIN EQUALS FAIR, HONEST RELATIONSHIPS.**

We are honest and fair in our relationships with our suppliers and contractors. We purchase equipment, supplies and services on the basis of merit, utilizing our professional procurement policy.

We pay suppliers and contractors in accordance with agreed terms, encourage them to adopt responsible business practices, and require them to adhere to - health, safety and environmental standards when working for The ENWIN Group.

### **ENWIN EQUALS RESPECT FOR COMMUNITY AND ENVIRONMENT.**

We are committed to being responsible corporate citizens and will contribute to making the communities in which we operate better places in which to live and do business.

We are sensitive to the community's needs and dedicated to protecting and preserving the environment in which we operate.

### **ENWIN EQUALS ACCOUNTABILITY.**

We are financially accountable to our shareholder and to the institutions that underwrite our operations. We communicate to them all matters that are financially material to our organization.

We protect our shareholder's investment and manage risks effectively. We communicate to our shareholder all matters that are material to an understanding of our corporate governance.

# WINDSOR UTILITIES COMMISSION INTRODUCTION

In 2019, Windsor Utilities Commission (WUC) produced 38,711.88 million litres of potable water for use by the citizens of the City of Windsor, the Town of LaSalle and the Town of Tecumseh.

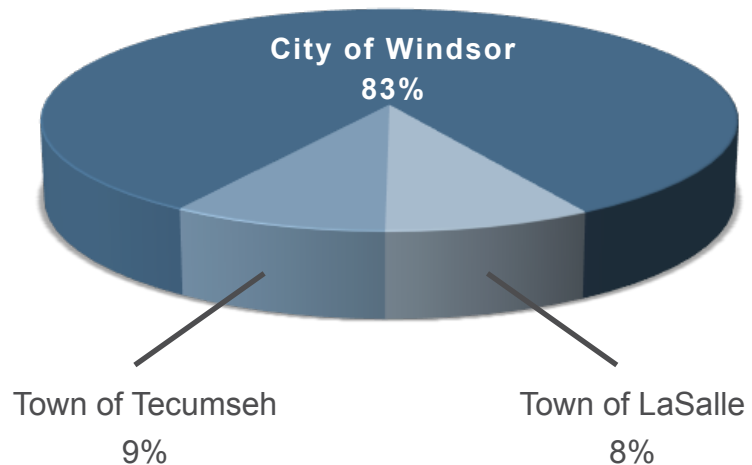
The summary contained in Appendix A, Table 1, provides a detailed breakdown of the monthly production rates, including the average day, peak day and peak hour for each of the months. The volume of water transferred to the Town of LaSalle and the Town of Tecumseh is also provided.

Under Ontario Reg. 170/03 there are a number of Schedules that outline the requirements for compliance with the Safe Drinking Water Act (SDWA). This report highlights the requirements of the applicable section of the regulation, along with a statement of compliance or, if applicable, specific areas of non-compliance with the schedule requirements.

## 2019 TOTAL TREATED WATER BY MUNICIPALITY

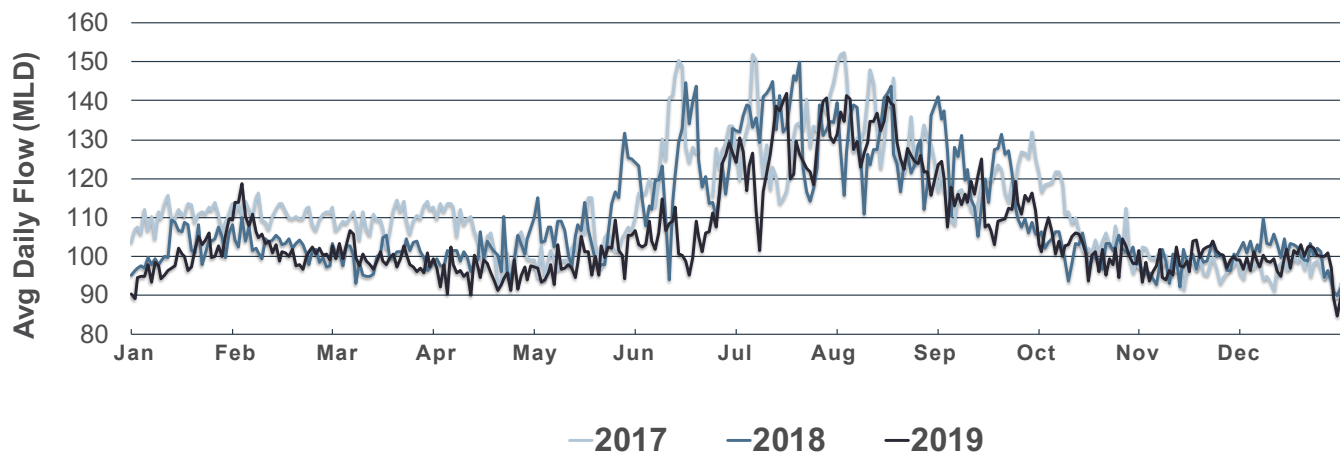
Volume in megalitres (ML)

Town of LaSalle	Town of Tecumseh	City of Windsor
3293.3	3427.9	31990.7



Percentage of water delivered to each served Municipality.

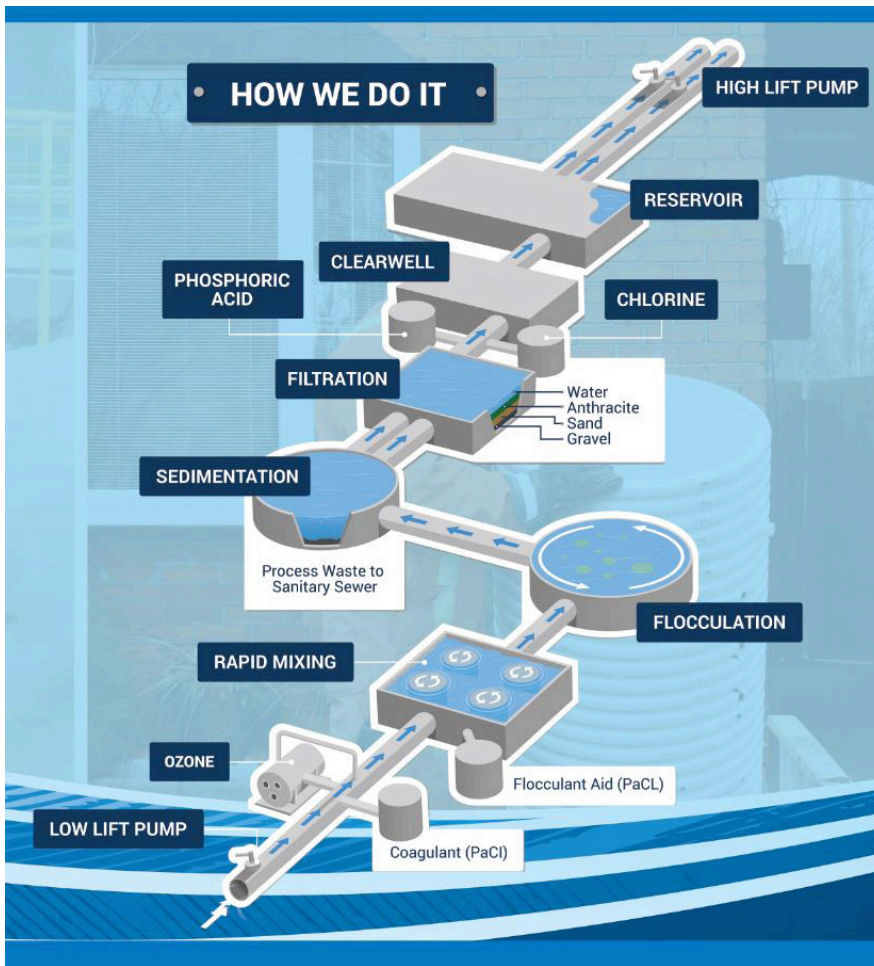
## AVERAGE DAILY FLOW VS. APPROVED PRODUCTION CAPACITY (349 ML MAXIMUM APPROVED CAPACITY)





# TREATMENT EQUIPMENT

O.Reg 170/04, Schedule 1 dictates that the owner of a drinking water system shall ensure that approved water treatment equipment, as specified in the Drinking Water Works Permit, is provided and is in operation whenever water is being supplied for potable use.



Further, the regulation requires that the equipment be operated in a manner that achieves its design capabilities and that only certified operators carry out operation of the system.

In the calendar year 2019, this section of the regulations was fully complied with.

The chart on page 5 depicts WUC's average daily water flow for the 2019 calendar year. Of particular note is the approved 349 ML daily maximum treatment capacity of WUC's treatment plants. As illustrated in the chart, WUC is operating well within the approved limits of its licence and permit.

An illustration of the water treatment process at the A.H. Weeks Water Treatment Plant.

# OPERATIONAL CHECKS: SAMPLING & TESTING - GENERAL

O.Reg 170/03, Schedule 6 outlines:

The frequency of sampling and equipment checks;

- The requirement for chlorine residual testing to be carried out at the time microbiological samples are collected;
- The location at which samples are to be collected;
- The form of sampling to be undertaken and the requirements for continuous monitoring equipment; and
- Clarification of how samples are to be handled and recorded, and the need for an appropriately accredited laboratory to carry out the sample analysis.

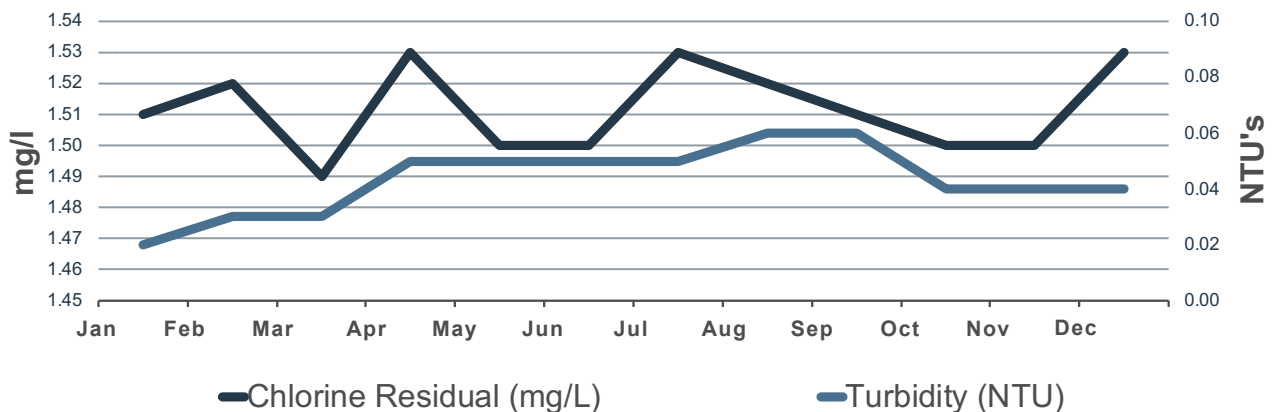
In the calendar year 2019, WUC complied fully with this section of the regulations.

## OPERATIONAL CHECKS

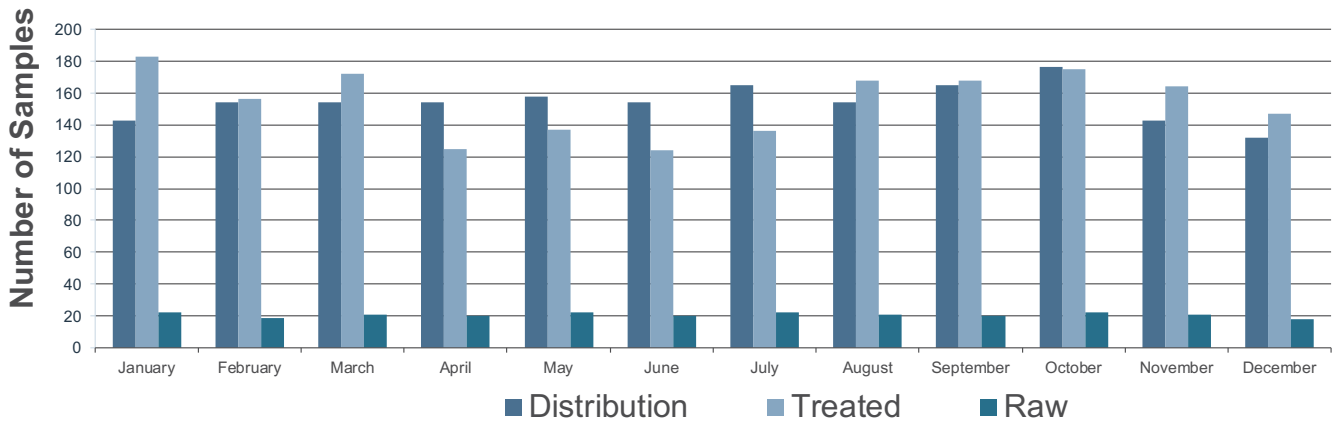
O.Reg 170/03, Schedule 7 specifies the requirements for continuous monitoring of equipment for free chlorine residual, turbidity and fluoride, and the required location for this equipment. The regulation dictates the requirement for regular collection and analysis of samples by an appropriately certified individual. The chart below summarizes the results for the above mentioned parameters.

In the calendar year 2019, WUC complied fully with this section of the regulations.

### 2019 OPERATIONAL TRENDS



**2019 Microbiological Sample Count**



**MICROBIOLOGICAL SAMPLING AND TESTING**

O.Reg 170/03, Schedule 10 provides the requirements for sampling and testing of microbiological parameters.

The schedule states that for Large Municipal Systems serving a population of more than 100,000 people, the required monthly frequency of sampling is 100 distribution samples, plus one additional sample for every 10,000 people served, with at least three samples being taken in each week.

Each of these samples are to be tested for Escherichia coli and total coliform, with a requirement that at least 25% of the samples be tested

for general bacteria population, expressed as colony counts on a heterotrophic plate count. Windsor’s required sampling frequency is 130 samples monthly.

In 2019, 1,852 samples were collected and analyzed, an average of 154 samples per month. Approximately 52% of the distribution samples were also analyzed for heterotrophic plate count. In addition, each sample was tested for free chlorine residual at the time the sample was taken.

Schedule 10 states that a treated water sample must be taken at least once per week and tested for Escherichia coli, total coliform and

general bacteria population expressed as colony counts on a heterotrophic plate count. Windsor’s treated water samples were generally collected on a daily basis and were tested by an accredited third-party laboratory.

The schedule further states that a raw water sample must be taken at least once per week, before any treatment is applied to the water, and that the sample be tested for Escherichia Coli and total coliform. Samples were collected and tested on average five days per week. The following chart indicates the number of samples taken on a monthly basis.

# CHEMICAL SAMPLING & TESTING

O.Reg 170/04, Schedule 13 provides the requirements for sample collection and testing for a variety of chemical components in drinking water. Additionally, it lists the Maximum Acceptable Concentration (MAC) for each component. The requirements are outlined below along with the status of Windsor’s sampling program.

## INORGANICS

One sample must be collected and tested every 12 months if the source is surface water and tested for every parameter set out in Schedule 23. (See page 10 for Table 13.2)

In 2019, ENWIN, on behalf of WUC collected and tested samples for every parameter set out in Schedule 23 on a quarterly basis.

## LEAD

One sample must be collected and tested every 12 months for Lead. (See page 10 for Table 13.2)

ENWIN, on behalf of WUC, collected samples and tested for lead in a treated water sample and a distribution sample on a quarterly basis.

## NITRATES AND NITRITES

The owner of a drinking water system and the operating authority for the system shall ensure that at least one water sample is taken every three months and tested for nitrate and nitrite. (See page 10 for Table 13.2)

ENWIN, on behalf of WUC, collected samples and tested for nitrates and nitrites on a quarterly basis.

## SODIUM

Schedule 13 stipulates that at least one water sample is taken every 60 months and tested for sodium. (See page 10 for Table 13.2)

On behalf of WUC, ENWIN last collected and sampled for sodium on January 23, 2019.

## ORGANICS

One sample must be collected and tested every 12 months, if the source is surface water, and tested for every parameter set out in Schedule 24. (See page 11 for Table 13.3)

During 2019, on behalf of WUC, ENWIN collected samples and tested for every parameter set out in Schedule 24 on a quarterly basis.

## TRIHALOMETHANE (THM’s)

For any system that provides chlorination, one distribution sample will be collected and tested for trihalomethanes every three months. (See page 11 for Table 13.3)

ENWIN, on behalf of WUC, collected samples and tested for trihalomethanes on a quarterly basis.

**TABLE 13.1 - BROMATE SAMPLE RESULTS**

Date of legal instrument issued	Parameter	Date Sampled	Result	Unit of Measure
MDWL 025-101	*Bromate - Treated	1-Jan-19 to 31-Dec-19	0.003	mg/L
MDWL 025-101	*Bromate - Distribution	1-Jan-19 to 31-Dec-19	0.003	mg/L

\* Reported as running Annual Average

**TABLE 13.2 - INORGANICS, LEAD, NITRATES, NITRITES, AND SODIUM SAMPLE RESULTS**

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	October 2, 2019	0.00011	mg/L	No
Arsenic	October 2, 2019	0.0003	mg/L	No
Barium	October 2, 2019	0.0151	mg/L	No
Boron	October 2, 2019	0.018	mg/L	No
Cadmium	October 2, 2019	0.000003 <MDL	mg/L	No
Chromium	October 2, 2019	0.00018	mg/L	No
*Lead	October 2, 2019	0.00002	mg/L	No
Mercury	October 2, 2019	0.00001 <MDL	mg/L	No
Selenium	October 2, 2019	0.0001	mg/L	No
Sodium	January 23, 2019	7.71	mg/L	No
Uranium	October 2, 2019	0.000032	mg/L	No
Fluoride	January 23, 2019	0.10	mg/L	No
Nitrite	October 2, 2019	0.003 <MDL	mg/L	No
Nitrate	October 2, 2019	0.216	mg/L	No

**TABLE 13.3 - ORGANICS AND THM SAMPLE RESULTS**

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	October 2, 2019	0.00002 <MDL	mg/L	No
Atrazine + N-dealkylated metabolites	October 2, 2019	0.00002	mg/L	No
Azinphos-methyl	October 2, 2019	0.00005 <MDL	mg/L	No
Benzene	October 2, 2019	0.00032 <MDL	mg/L	No
Benzo(a)pyrene	October 2, 2019	0.000004 <MDL	mg/L	No
Bromoxynil	October 2, 2019	0.00033 <MDL	mg/L	No
Carbaryl	October 2, 2019	0.00005 <MDL	mg/L	No
Carbofuran	October 2, 2019	0.00001 <MDL	mg/L	No
Carbon Tetrachloride	October 2, 2019	0.00017 <MDL	mg/L	No
Chlorpyrifos	October 2, 2019	0.00002 <MDL	mg/L	No
Diazinon	October 2, 2019	0.00002 <MDL	mg/L	No
Dicamba	October 2, 2019	0.00020 <MDL	mg/L	No
1,2-Dichlorobenzene	October 2, 2019	0.00041 <MDL	mg/L	No
1,4-Dichlorobenzene	October 2, 2019	0.00036 <MDL	mg/L	No
1,2-Dichloroethane	October 2, 2019	0.00035 <MDL	mg/L	No
1,1-Dichloroethylene (vinylidene chloride)	October 2, 2019	0.00033 <MDL	mg/L	No
Dichloromethane	October 2, 2019	0.00035 <MDL	mg/L	No
2,4-Dichlorophenol	October 2, 2019	0.00015 <MDL	mg/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	October 2, 2019	0.00019 <MDL	mg/L	No
Diclofop-methyl	October 2, 2019	0.0004 <MDL	mg/L	No
Dimethoate	October 2, 2019	0.00006 <MDL	mg/L	No
Diquat	October 2, 2019	0.001 <MDL	mg/L	No
Diuron	October 2, 2019	0.00003 <MDL	mg/L	No
Glyphosate	October 2, 2019	0.001 <MDL	mg/L	No
Haloacetic Acids (running Annual Average)	Avg.	0.0053	mg/L	No
Q1 2019 = 0.0053 mg/L	January 23, 2019			No
Q2 2019 = 0.0053 mg/L	May 1, 2019			No
Q3 2019 = 0.005575 mg/L	July 3, 2019			No
Q4 2019 = 0.011 mg/L	October 2, 2019			No

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Malathion	October 2, 2019	0.00002 <MDL	mg/L	No
MCPA	October 2, 2019	0.00012 <MDL	mg/L	No
Metolachlor	October 2, 2019	0.00001 <MDL	mg/L	No
Metribuzin	October 2, 2019	0.00002 <MDL	mg/L	No
Monochlorobenzene	October 2, 2019	0.0003 <MDL	mg/L	No
Paraquat	October 2, 2019	0.001 <MDL	mg/L	No
Pentachlorophenol	October 2, 2019	0.00015 <MDL	mg/L	No
Phorate	October 2, 2019	0.00001 <MDL	mg/L	No
Picloram	October 2, 2019	0.001 <MDL	mg/L	No
Polychlorinated Biphenyls (PCB)	October 2, 2019	0.00004 <MDL	mg/L	No
Prometryne	October 2, 2019	0.00003 <MDL	mg/L	No
Simazine	October 2, 2019	0.00001 <MDL	mg/L	No
THM (running Annual Average)	Avg.	0.0099	mg/L	No
Q1 2019 = 0.0045 mg/L	January 23, 2019			No
Q2 2019 = 0.0044 mg/L	May 1, 2019			No
Q3 2019 = 0.013 mg/L	July 3, 2019			No
Q4 2019 = 0.0085 mg/L	October 2, 2019			No
Terbofos	October 2, 2019	0.00001 <MDL	mg/L	No
Tetrachlorethylene	October 2, 2019	0.00035 <MDL	mg/L	No
2,3,4,6-Tetrachlorophenol	October 2, 2019	0.00020 <MDL	mg/L	No
Triallate	October 2, 2019	0.00001 <MDL	mg/L	No
Trichloroethylene	October 2, 2019	0.00044 <MDL	mg/L	No
2,4,6-Trichlorophenol	October 2, 2019	0.00025 <MDL	mg/L	No
Trifluralin	October 2, 2019	0.00002 <MDL	mg/L	No
Vinyl Chloride	October 2, 2019	0.00017 <MDL	mg/L	No

## SAMPLING AND TESTING - LEAD

The Municipal Drinking Water Licence requires 60 samples annually to monitor corrosion control effectiveness. Sample locations include private, non-private and distribution. Each of these samples are to be tested for lead.

A total of 495 lead sample locations have been collected and tested in 2019: 275 private and non-private samples and 216 samples in distribution.

In the calendar year 2019, WUC complied fully with the requirements of the Licence.

## REPORTING ADVERSE TEST RESULTS AND OTHER PROBLEMS

If a sample collected and tested indicates an adverse result, as outlined in the regulations, the owner of a drinking water system must report the result to the Medical Officer of Health (MOH) and the Spills Action Centre (SAC) of the Ministry of Environment, Parks and Conservation (MECP). If an observation other than an adverse test result indicates that a drinking water system is directing

water that may not be adequately disinfected to users of the water system, the observation must be reported to the MOH and the SAC.

If a report is required under this section, a verbal report must be provided to the MOH by speaking directly to a person at the Windsor Essex County Health Unit (WECHU) or the designated on call representative. In addition, a verbal report must be provided to the Ministry by contacting the SAC.

These verbal reports of adverse water conditions must be verified by written notice within 24 hours to the MOH and the SAC specifying the nature of the adverse result, actions being taken or observation and what corrective action is being taken.

Within seven days of resolution of a problem, a follow up written notice is to be provided outlining the resolution that gave rise to the adverse result report.

In 2019, there were three adverse incidents requiring notification of the MOH and the SAC. Details are as follows:

- Total Coliform within the distribution system (Total Coliform detected)

- Low chlorine in distribution
- Lead sampling result greater than 10 ug/L at a hydrant

In all situations where it was determined that there was an adverse result, notification was made to the MOH and the SAC.

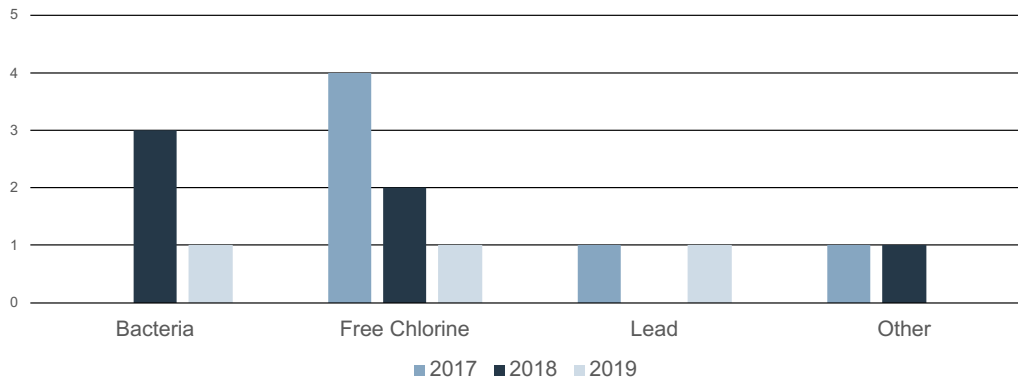
## CORRECTIVE ACTION - SCHEDULE 17

This schedule outlines required corrective action to be followed with the determination of an adverse result requiring notification.

In all cases, the required corrective action was followed, as directed by the Medical Officer of Health.



## ADVERSE WATER QUALITY INCIDENTS



## SUMMARY REPORT FOR MUNICIPALITIES - SCHEDULE 22

Not later than March 31 of each year, a summary report must be prepared for the preceding calendar year and submitted to members of municipal council and members of a municipal services board, if one exists.

The submission of this report fulfills the requirement for this section of the regulations.

Summarizing tables are attached for review: (pages 17-27)

Table 1 - 2019 Treated Water Volume (page 18)

Table 2 - 2019 Volume as a Percentage of Approved Plant Capacity (pages 19-20)

Table 3 - 2019 Microbiological Sample Count (page 21)

Table 4 - 2019 Distribution Chlorine Residuals (pages 22-23)

Table 5 - 2019 Operational Parameters (pages 24-25)

A copy of Schedule 23 (Inorganic Test Parameters) and Schedule 24 (Organic Test Parameters) are attached for information as previously submitted and as required by the regulation. (Pages 26-27)

# CAPITAL RENEWAL PROGRAM

## WATER METER REPLACEMENT PROGRAM

The goal of WUC's Water Meter Replacement Program is to replace all damaged, frozen, defective, aging and obsolete water meters, both in residential and industrial, commercial and institutional (ICI) settings.

New meters provide benefits that include:

- Increased accuracy in billing for our customers;
- Improved efficiency in meter reading, as reads can be obtained via radio frequency (RF); and
- Enhanced ability to identify the sources and manage the causes of non-revenue water, thereby limiting revenue loss for both WUC and its ratepayers.

WUC installed 11,843 new meters in 2019. A small number of non-RF meters remain in the field at year end. The remaining meters are either located in vacant properties or conditions at the customer site require additional attention prior to replacement. These replacements will be coordinated with customers on a case by case basis going forward.

At year end, the average age of WUC's total meter population is 4 years. For ICIs only, the average age is 6.6 years.

All meter reading routes are now using the drive-by (RF) method to collect meter reads.

The Water Meter Replacement Program is now considered complete.

## WATERMAIN REPLACEMENT PROGRAM

The WUC capital renewal program involved the replacement of approximately 16.34 km of existing cast and ductile iron watermains, as well as water services, with new PVC pipelines and polyethylene/copper tubing, respectively.

Water services are typically replaced from the new main to the property line.

This project included watermains which no longer provided adequate service, and which were deemed to have the highest risk to public health.

The Ministry and Ontario Fire Codes (OFC) mandate minimum levels of performance required throughout the water distribution system. In 2019, 116 water hydrants were installed and 60 old public use hydrants were removed.

WUC projects, such as renewal of cast iron watermain, are prioritized based on a scoring system algorithm. A point score is assigned to the seven criteria listed below to determine the priority of the project.

The higher the risk to public health and safety, the higher the score, hence, the higher the priority status assigned. The algorithm uses the following priority:

- Anticipated percentage or total number of lead services.
- Deficient hydrant spacing
- Low fire flow
- Pipe Diameter
- Breaks per 100m with an emphasis on recency
- Disturbed water per 100m
- Age (life cycle of pipe type)

## RESERVOIRS

Reservoir "G" (George Avenue Reservoir) was commissioned and placed in service in April 2019

Reservoir "D", was drained for cleaning and inspection. This included inspection of the 60 inch valve that held back the water from the piping outside. Rehabilitation work is being engineered for construction in 2020.

## FEEDER VALVE REPLACEMENT

A 24 inch feeder main valve on Shepherd Street West would not seal. ENWIN and its contractor drained the feeder main and replaced the valve.

A 24 inch feeder main valve at Isabelle and Tranby was replaced. The valve was broken and could not be turned to open or close.

## GENERATOR EXCITATION UPGRADE

The four 1 MW natural gas generators at the A.H. Weeks plant underwent upgrades to their excitation and voltage regulation systems, resulting in improved reliability and load sharing of the generators.

## RESERVOIR “D” REHAB

WUC’s main water storage tank, Reservoir “D”, was drained for cleaning and inspection. This included inspection of the 60 inch valve that held back the water from the piping outside. Rehabilitation work is being engineered for construction in 2020.

## FILTER BED REPLACEMENT

ENWIN continues replacement of old filter bed underdrains and filter media. The old plastic system was removed and the walls of the bed were coated to protect the concrete. New stainless steel underdrains were installed and new anthracite media was placed into the bed. This new system will increase performance of the filter beds.

Replacement of a 24 inch feeder main valve at Isabelle and Tranby.



# Appendix A - Operational Charts

Windsor Utilities Commission

**Table 1 - 2019 Treated Water Volume**

MONTH	Total Pumped Volume		Daily Average Volume		Maximum Daily Volume		Minimum Daily Volume		Instantaneous Peak Volume		Town of LaSalle Volume	Town of Tecumseh Volume	City of Windsor Volume
	ML	ML	ML	ML	ML	ML	ML	ML	ML	ML	ML	ML	ML
JANUARY	3075.0	111.2	30	109.8	2	89.3	25	236.9	241.0	234.0	2599.9		
FEBRUARY	2905.1	116.2	3	118.6	21	96.7	3	177.5	219.7	219.7	2465.7		
MARCH	3089.9	111.5	7	106.5	29	95.8	2	148.7	250.3	236.1	2603.5		
APRIL	2869.1	99.2	6	102.4	12	89.9	18	241.9	360.7	245.0	2263.4		
MAY	3080.5	107.6	25	109.2	7	92.9	25	158.8	147.0	285.0	2648.5		
JUNE	3268.6	127.1	28	129.3	16	95.1	27	178.7	225.1	290.9	2752.6		
JULY	3945.9	145.1	15	141.9	7	101.7	11	241.6	464.2	399.0	3082.8		
AUGUST	3995.3	145.7	2	141.4	27	115.7	15	199.9	401.8	406.6	3186.8		
SEPTEMBER	3368.3	129.2	11	125.2	29	101.1	1	239.1	312.8	346.7	2708.9		
OCTOBER	3120.5	106.0	1	109.9	29	93.4	14	163.4	263.0	300.6	2556.9		
NOVEMBER	2976.6	97.7	14	104.3	26	94.0	1	239.1	204.3	234.8	2537.4		
DECEMBER	3017.2	98.3	15	102.9	26	84.7	1	239.1	203.4	229.4	2584.4		
<b>TOTAL</b>	<b>38,711.9</b>								<b>3293.3</b>	<b>3427.9</b>	<b>31990.7</b>		
<b>AVERAGE</b>	<b>3,226.0</b>								<b>274.4</b>	<b>285.7</b>	<b>2665.9</b>		

**Table 2 - 2019 Volume as a Percentage of Approved Plant Capacity  
(Part 1 - January to June)**

Date	January		February		March		April		May		June	
	Average Daily Flow (MLD)	Plant Capacity %	Average Daily Flow (MLD)	Plant Capacity %	Average Daily Flow (MLD)	Plant Capacity %	Average Daily Flow (MLD)	Plant Capacity %	Average Daily Flow (MLD)	Plant Capacity %	Average Daily Flow (MLD)	Plant Capacity %
1	90.3	26%	114.0	33%	99.1	28%	99.5	29%	97.3	28%	103.1	30%
2	89.3	26%	113.9	33%	102.8	29%	96.9	28%	96.9	28%	102.3	29%
3	94.7	27%	118.6	34%	99.5	29%	92.2	26%	93.3	27%	103.1	30%
4	94.9	27%	110.3	32%	103.3	30%	98.0	28%	94.0	27%	109.0	31%
5	94.8	27%	107.9	31%	99.4	28%	90.5	26%	95.9	27%	104.0	30%
6	97.9	28%	110.7	32%	102.9	29%	102.4	29%	98.0	28%	101.8	29%
7	93.3	27%	106.3	30%	106.5	31%	97.9	28%	92.9	27%	105.9	30%
8	98.6	28%	104.9	30%	105.8	30%	95.7	27%	103.0	30%	114.9	33%
9	97.4	28%	105.7	30%	99.8	29%	96.4	28%	96.7	28%	106.7	31%
10	94.4	27%	103.4	30%	97.6	28%	94.8	27%	96.8	28%	108.5	31%
11	95.3	27%	103.9	30%	100.6	29%	95.7	27%	98.0	28%	108.9	31%
12	96.3	28%	100.9	29%	98.8	28%	89.9	26%	97.1	28%	112.7	32%
13	96.9	28%	103.0	30%	97.8	28%	100.4	29%	94.6	27%	100.6	29%
14	97.6	28%	98.9	28%	96.8	28%	97.3	28%	98.3	28%	100.3	29%
15	102.0	29%	101.1	29%	98.8	28%	94.7	27%	105.1	30%	98.8	28%
16	100.7	29%	100.8	29%	101.4	29%	99.2	28%	101.1	29%	95.1	27%
17	100.1	29%	99.9	29%	98.9	28%	98.1	28%	101.2	29%	99.6	29%
18	96.3	28%	101.8	29%	97.9	28%	95.7	27%	95.2	27%	109.2	31%
19	97.3	28%	97.5	28%	99.8	29%	93.8	27%	99.9	29%	105.0	30%
20	101.8	29%	97.8	28%	100.6	29%	91.2	26%	95.2	27%	101.1	29%
21	105.0	30%	96.7	28%	97.4	28%	92.8	27%	102.6	29%	106.1	30%
22	102.9	29%	99.9	29%	99.3	28%	94.4	27%	99.8	29%	106.4	30%
23	104.2	30%	101.1	29%	102.7	29%	95.7	27%	102.5	29%	111.1	32%
24	106.1	30%	102.6	29%	100.5	29%	91.3	26%	102.2	29%	107.7	31%
25	99.6	29%	100.6	29%	97.9	28%	99.1	28%	109.2	31%	117.3	34%
26	100.1	29%	102.0	29%	97.3	28%	91.6	26%	101.7	29%	123.8	35%
27	102.6	29%	100.3	29%	96.1	28%	95.3	27%	100.4	29%	126.1	36%
28	100.1	29%	100.7	29%	96.9	28%	97.4	28%	94.4	27%	129.3	37%
29	105.3	30%			95.8	27%	94.0	27%	105.4	30%	126.5	36%
30	109.8	31%			100.9	29%	97.7	28%	105.3	30%	124.1	36%
31	109.4	31%			97.4	28%			106.8	31%		

**Table 2 - 2019 Volume as a Percentage of Approved Plant Capacity  
(Part 2 - July to December)**

Date	July		August		September		October		November		December	
	Average Daily Flow (MLD)	Plant Capacity %	Average Daily Flow (MLD)	Plant Capacity %	Average Daily Flow (MLD)	Plant Capacity %	Average Daily Flow (MLD)	Plant Capacity %	Average Daily Flow (MLD)	Plant Capacity %	Average Daily Flow (MLD)	Plant Capacity %
1	130.6	37%	134.7	39%	107.5	31%	109.9	31%	96.2	28%	101.2	29%
2	126.9	36%	141.4	41%	117.9	34%	106.3	30%	97.5	28%	98.4	28%
3	116.9	33%	140.4	40%	113.0	32%	100.6	29%	101.8	29%	97.2	28%
4	123.1	35%	127.3	36%	115.9	33%	104.1	30%	94.6	27%	100.2	29%
5	126.4	36%	129.4	37%	113.3	32%	100.0	29%	94.0	27%	98.8	28%
6	111.9	32%	122.8	35%	116.0	33%	102.6	29%	96.4	28%	98.5	28%
7	101.7	29%	126.4	36%	113.8	33%	103.1	30%	95.1	27%	99.3	28%
8	116.7	33%	129.2	37%	119.4	34%	105.1	30%	102.3	29%	96.0	27%
9	121.5	35%	134.7	39%	116.1	33%	106.2	30%	97.5	28%	94.9	27%
10	126.2	36%	134.6	39%	120.8	35%	105.8	30%	97.2	28%	99.8	29%
11	130.9	37%	136.8	39%	125.2	36%	103.7	30%	98.8	28%	101.8	29%
12	138.7	40%	132.3	38%	107.4	31%	100.6	29%	96.2	28%	96.9	28%
13	137.4	39%	134.7	39%	108.0	31%	93.8	27%	104.1	30%	101.4	29%
14	139.8	40%	141.2	40%	106.7	31%	100.2	29%	104.3	30%	100.6	29%
15	<b>141.9</b>	<b>41%</b>	139.1	40%	102.9	29%	101.1	29%	99.7	29%	102.9	29%
16	120.0	34%	138.8	40%	109.1	31%	96.1	28%	101.9	29%	99.9	29%
17	121.1	35%	129.3	37%	109.3	31%	101.7	29%	102.5	29%	102.5	29%
18	129.7	37%	125.1	36%	109.7	31%	95.2	27%	102.8	29%	102.8	29%
19	126.3	36%	122.2	35%	112.3	32%	99.4	28%	104.0	30%	102.2	29%
20	124.6	36%	127.8	37%	112.1	32%	97.9	28%	101.4	29%	100.4	29%
21	122.8	35%	126.0	36%	119.2	34%	102.0	29%	100.5	29%	100.0	29%
22	121.6	35%	124.4	36%	113.7	33%	94.6	27%	100.2	29%	100.0	29%
23	118.3	34%	123.9	36%	110.8	32%	104.6	30%	97.1	28%	101.0	29%
24	128.4	37%	126.0	36%	115.7	33%	102.8	29%	99.2	28%	97.1	28%
25	134.1	38%	121.6	35%	114.1	33%	99.9	29%	100.1	29%	89.2	26%
26	139.8	40%	121.8	35%	116.3	33%	98.1	28%	99.2	29%	84.7	24%
27	140.8	40%	115.7	33%	111.7	32%	98.3	28%	99.0	28%	89.5	26%
28	130.6	37%	119.5	34%	102.9	29%	101.5	29%	96.7	28%	91.8	26%
29	129.2	37%	123.5	35%	101.1	29%	93.4	27%	99.8	29%	90.5	26%
30	131.3	38%	124.5	36%	106.7	31%	98.6	28%	96.5	28%	90.8	26%
31	137.0	39%	120.3	34%	106.7	31%	93.6	27%	96.5	28%	87.2	25%

**Table 3 - 2019 Microbiological Sample Count**

Month	January	February	March	April	May	June	July	August	September	October	November	December
DISTRIBUTION	143	154	154	154	158	154	165	154	165	176	143	132
TREATED	183	156	172	125	137	124	136	168	168	175	164	147
RAW	22	19	21	20	22	20	22	21	20	22	21	18
TOTAL	348	329	347	299	317	298	323	343	353	373	328	297



**Table 4 - 2019 Distribution Chlorine Residuals**

**JANUARY TO MARCH 2019**

	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15	D16	D17	D18	D20	D21	D22
Jan	LOW	0.89	1.31	1.08	1.13	1.04	1.21	0.71	1.15	1.41	1.20	1.29	0.97	1.29	1.23	1.26	1.12	1.15	1.14	1.04	1.04
	HIGH	1.43	1.48	1.26	1.38	1.28	1.51	1.16	1.46	1.40	1.60	1.41	1.36	1.37	1.41	1.45	1.42	1.43	1.30	1.30	1.23
	AVG	1.25	1.39	1.18	1.30	1.18	1.39	0.96	1.31	1.24	1.52	1.30	1.35	1.13	1.34	1.30	1.35	1.30	1.34	1.23	1.19
Feb	LOW	0.86	1.30	1.11	1.01	1.11	1.11	0.81	0.89	1.42	1.21	1.21	1.00	1.26	1.08	1.36	1.23	1.17	1.06	0.97	0.92
	HIGH	1.52	1.45	1.35	1.37	1.36	1.47	1.19	1.46	1.30	1.59	1.44	1.38	1.38	1.39	1.46	1.48	1.42	1.34	1.31	1.29
	AVG	1.30	1.38	1.22	1.18	1.21	1.32	0.95	1.28	1.18	1.52	1.31	1.30	1.20	1.33	1.26	1.40	1.36	1.26	1.13	1.15
Mar	LOW	0.94	1.05	1.07	1.10	1.00	1.12	0.85	1.16	1.13	1.30	1.13	0.94	1.14	1.11	1.09	1.15	1.04	0.95	1.00	0.92
	HIGH	1.49	1.43	1.32	1.35	1.23	1.43	0.96	1.36	1.32	1.61	1.38	1.35	1.41	1.40	1.46	1.40	1.39	1.39	1.23	1.25
	AVG	1.26	1.32	1.20	1.23	1.12	1.29	0.82	1.28	1.23	1.49	1.26	1.27	1.11	1.26	1.29	1.28	1.21	1.20	1.14	1.09
Quarterly Avg	1.27	1.36	1.20	1.24	1.17	1.33	0.91	1.29	1.22	1.51	1.29	1.31	1.15	1.31	1.27	1.35	1.31	1.28	1.23	1.15	1.13

NOTE: All values in mg/l unless otherwise stated

**APRIL TO JUNE 2019**

	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15	D16	D17	D18	D20	D21	D22
Apr	LOW	1.21	1.23	1.10	1.00	0.93	1.09	0.50	0.91	1.41	0.95	1.18	0.91	0.68	1.11	1.17	0.72	1.16	1.10	0.83	0.73
	HIGH	1.41	1.45	1.27	1.35	1.21	1.48	1.08	1.30	1.24	1.55	1.44	1.18	1.39	1.38	1.48	1.39	1.42	1.34	1.18	1.18
	AVG	1.35	1.34	1.18	1.17	1.03	1.27	0.78	1.21	1.14	1.50	1.26	1.30	1.07	1.26	1.29	1.34	1.23	1.22	1.03	1.06
May	LOW	0.87	1.10	0.95	0.99	0.79	1.06	0.21	1.08	0.83	1.35	0.91	0.63	0.98	1.00	0.92	1.05	1.11	0.91	0.87	0.74
	HIGH	1.33	1.31	1.05	1.13	1.02	1.35	1.00	1.24	1.20	1.55	1.09	0.90	1.14	1.15	1.10	1.19	1.29	1.06	1.31	0.95
	AVG	1.16	1.22	1.00	1.07	0.88	1.20	0.69	1.19	1.07	1.44	0.98	1.06	0.81	1.07	1.04	1.12	1.20	1.00	1.06	0.88
Jun	LOW	1.06	1.10	0.81	0.72	0.66	0.91	0.77	0.82	1.33	0.82	0.91	0.67	0.91	1.01	0.75	0.96	1.00	0.84	0.68	0.72
	HIGH	1.40	1.32	1.11	1.24	0.90	1.24	1.00	1.32	1.06	1.75	1.03	0.96	1.17	1.19	1.17	1.11	1.30	1.06	1.11	1.04
	AVG	1.17	1.21	0.95	1.00	0.81	1.13	0.91	1.09	0.94	1.46	0.94	0.98	0.77	1.03	1.07	0.98	1.13	0.94	0.92	0.84
Quarterly Avg	1.23	1.26	1.04	1.08	0.91	1.20	0.79	1.16	1.05	1.47	1.06	1.11	0.89	1.12	1.14	1.12	1.13	1.22	1.05	1.00	0.93

NOTE: All values in mg/l unless otherwise stated

(0.05 mg/L - minimum standard per Ministry of Environment)  
(0.20 mg/L - minimum WUC standard)

**Table 4 - 2019 Distribution Chlorine Residuals**

**JULY TO SEPTEMBER 2019**

	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15	D16	D17	D18	D20	D21	D22	
<b>Jul</b>																						
LOW	1.33	1.07	1.13	1.01	0.94	1.16	0.88	1.01	1.00	1.38	1.08	1.10	0.87	1.14	1.11	1.14	1.19	1.23	1.10	0.96	0.95	
HIGH	1.53	1.59	1.31	1.57	1.25	1.42	1.22	1.28	1.25	1.62	1.28	1.37	1.29	1.36	1.35	1.49	1.37	1.62	1.25	1.22	1.16	
AVG	1.40	1.38	1.19	1.22	1.07	1.29	0.98	1.15	1.14	1.48	1.15	1.24	1.07	1.25	1.23	1.28	1.26	1.39	1.18	1.10	1.05	
<b>Aug</b>																						
LOW	1.04	1.03	0.89	0.92	0.89	0.94	0.76	1.01	0.92	1.21	1.01	1.10	1.12	1.01	1.16	1.16	1.18	1.15	0.95	0.99	0.95	
HIGH	1.32	1.43	1.16	1.24	1.05	1.33	1.03	1.15	1.14	1.59	1.37	1.44	1.39	1.42	1.43	1.35	1.46	1.41	1.21	1.18	1.06	
AVG	1.22	1.31	1.05	1.09	0.95	1.23	0.91	1.07	1.01	1.41	1.19	1.25	1.23	1.25	1.21	1.22	1.27	1.31	1.11	1.06	1.00	
<b>Sep</b>																						
LOW	1.11	1.16	0.91	0.99	0.81	1.11	0.80	0.95	0.96	1.38	1.05	1.13	1.09	1.04	1.00	1.12	1.17	1.25	0.94	0.94	0.92	
HIGH	1.52	1.43	1.25	1.29	1.01	1.32	0.95	1.26	1.11	1.58	1.43	1.36	1.33	1.36	1.33	1.27	1.39	1.54	1.27	1.20	1.12	
AVG	1.32	1.36	1.09	1.13	0.92	1.27	0.90	1.11	1.07	1.51	1.23	1.25	1.23	1.24	1.19	1.21	1.29	1.42	1.13	1.08	1.02	
<b>Quarterly Avg</b>	<b>1.31</b>	<b>1.35</b>	<b>1.11</b>	<b>1.14</b>	<b>0.98</b>	<b>1.26</b>	<b>0.93</b>	<b>1.11</b>	<b>1.07</b>	<b>1.47</b>	<b>1.19</b>	<b>1.25</b>	<b>1.18</b>	<b>1.25</b>	<b>1.21</b>	<b>1.24</b>	<b>1.28</b>	<b>1.37</b>	<b>1.14</b>	<b>1.08</b>	<b>1.02</b>	

NOTE: All values in mg/l unless otherwise stated

**OCTOBER TO DECEMBER 2019**

	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15	D16	D17	D18	D20	D21	D22	
<b>Oct</b>																						
LOW	1.23	1.29	1.08	1.11	0.81	1.30	0.91	0.95	0.94	1.52	1.04	1.18	1.10	1.03	1.13	1.08	1.16	1.29	1.03	1.03	0.80	
HIGH	1.49	1.47	1.28	1.32	1.06	1.45	1.15	1.38	1.13	1.54	1.29	1.38	1.32	1.35	1.40	1.40	1.35	1.49	1.22	1.21	1.14	
AVG	1.33	1.36	1.18	1.24	0.98	1.38	1.03	1.25	1.07	1.49	1.25	1.31	1.21	1.25	1.28	1.30	1.30	1.39	1.15	1.15	1.00	
<b>Nov</b>																						
LOW	1.19	1.22	1.09	0.89	0.96	1.17	0.80	1.12	1.01	1.32	1.11	1.15	1.12	1.18	1.12	1.17	1.17	1.24	0.95	1.03	0.89	
HIGH	1.44	1.53	1.29	1.28	1.22	1.41	1.00	1.41	1.23	1.71	1.35	1.34	1.39	1.37	1.34	1.46	1.37	1.43	1.19	1.22	1.03	
AVG	1.36	1.39	1.20	1.05	1.12	1.29	0.92	1.32	1.12	1.46	1.22	1.23	1.26	1.25	1.24	1.31	1.24	1.33	1.11	1.12	0.96	
<b>Dec</b>																						
LOW	0.91	1.17	1.11	1.00	0.99	1.13	0.87	1.14	1.08	1.10	1.13	1.16	1.22	1.14	1.14	1.26	1.17	1.33	1.09	1.02	1.01	
HIGH	1.47	1.55	1.36	1.20	1.20	1.51	1.13	1.38	1.34	1.61	1.35	1.32	1.27	1.42	1.39	1.33	1.37	1.43	1.16	1.22	1.14	
AVG	1.23	1.31	1.21	1.09	1.05	1.29	1.02	1.28	1.17	1.43	1.22	1.26	1.25	1.29	1.28	1.30	1.29	1.39	1.13	1.12	1.08	
<b>Quarterly Avg</b>	<b>1.30</b>	<b>1.35</b>	<b>1.20</b>	<b>1.13</b>	<b>1.05</b>	<b>1.32</b>	<b>0.99</b>	<b>1.28</b>	<b>1.12</b>	<b>1.46</b>	<b>1.23</b>	<b>1.27</b>	<b>1.24</b>	<b>1.26</b>	<b>1.27</b>	<b>1.30</b>	<b>1.28</b>	<b>1.37</b>	<b>1.13</b>	<b>1.13</b>	<b>1.01</b>	

NOTE: All values in mg/l unless otherwise stated

(0.05 mg/L - minimum standard per Ministry of Environment)  
(0.20 mg/L - minimum WUC standard)

**Table 5 - 2019 Operational Parameters**

	JANUARY			FEBRUARY			MARCH			PLANT PARAMETERS HIGH LOW VALUES		MINISTRY MAC	
	HIGH	LOW	AVG.	HIGH	LOW	AVG.	HIGH	LOW	AVG.	HIGH	LOW	HIGH <sup>(1)</sup>	LOW
	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)
COLOUR <sup>(2)</sup>													
ALUMINUM <sup>(3)</sup>	11	5	8	44	5	10	17	5	9	5.00	0.00	N/A	N/A
pH <sup>(2)</sup>	7.18	6.97	7.08	7.27	6.83	7.06	7.14	7.00	7.07	100.0	0.0	N/A	N/A
TURBIDITY <sup>(1)</sup>	0.03	0.02	0.02	0.03	0.02	0.03	0.03	0.02	0.03	7.30	6.50	N/A	N/A
HARDNESS <sup>(2)</sup>	160	104	124	156	100	111	130	100	111	1.00	0.00	1.00	0.00
TEMPERATURE	4.0	1.2	2.3	2.4	1.6	2.0	7.0	1.8	3.2	100	80	N/A	N/A
ODOUR/TASTE	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	in-offensive		N/A	N/A
ALKALINITY <sup>(2 and 3)</sup>	100	74	82	86	70	78	90	72	80	500	30	N/A	N/A
CHLORINE RESIDUAL <sup>(1)</sup>	1.67	1.38	1.51	1.63	1.43	1.52	1.64	1.35	1.49	1.50	0.80	N/A	0.05

	APRIL			MAY			JUNE			PLANT PARAMETERS HIGH LOW VALUES		MINISTRY MAC	
	HIGH	LOW	AVG.	HIGH	LOW	AVG.	HIGH	LOW	AVG.	HIGH	LOW	HIGH <sup>(1)</sup>	LOW
	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)
COLOUR <sup>(2)</sup>													
ALUMINUM <sup>(3)</sup>	36	8	16	37	20	27	38	19	28	5.00	0.00	N/A	N/A
pH <sup>(2)</sup>	7.15	6.90	7.04	7.12	6.97	7.07	7.23	6.98	7.06	100.0	0.0	N/A	N/A
TURBIDITY <sup>(1)</sup>	0.26	0.03	0.05	0.06	0.05	0.05	0.07	0.04	0.05	7.30	6.50	N/A	N/A
HARDNESS <sup>(2)</sup>	150	96	116	162	94	121	122	96	105	1.00	0.00	1.00	0.00
TEMPERATURE	10.9	4.4	8.4	16.2	10.5	12.9	24.8	15.0	17.8	100	80	N/A	N/A
ODOUR/TASTE	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	in-offensive		N/A	N/A
ALKALINITY <sup>(2 and 3)</sup>	98	76	83	116	79	90	94	72	82	500	30	N/A	N/A
CHLORINE RESIDUAL <sup>(1)</sup>	1.69	1.43	1.53	1.73	1.23	1.50	1.63	1.37	1.50	1.50	0.80	N/A	0.05

(1) MAC - Maximum Allowable Concentration

(2) Health Canada Operational Guideline (O.G.)

(3) Recommended in coagulant treated drinking water

**Table 5 - 2019 Operational Parameters**

	JULY			AUGUST			SEPTEMBER			PLANT PARAMETERS		MINISTRY MAC	
	HIGH	LOW	AVG.	HIGH	LOW	AVG.	HIGH	LOW	AVG.	HIGH LOW VALUES	HIGH <sup>(1)</sup>	LOW	
	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	5.00 100.0	0.00 0.0	N/A N/A	
COLOUR <sup>(2)</sup>	62	29	43	78	40	54	62	34	47	5.00	0.00	N/A	
ALUMINUM <sup>(3)</sup>	7.21	6.96	7.04	7.11	6.89	7.00	7.10	6.91	7.02	100.0	0.0	N/A	
pH <sup>(2)</sup>	0.07	0.05	0.05	0.08	0.05	0.06	0.07	0.05	0.06	7.30	6.50	N/A	
TURBIDITY <sup>(1)</sup>	110	72	98	102	78	96	106	84	97	1.00	0.00	1.00	
HARDNESS <sup>(2)</sup>	24.8	21.2	23.7	25.3	22.6	24.2	22.3	18.7	21.4	100	80	N/A	
TEMPERATURE	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	in-offensive			N/A
ODOUR/TASTE	102	72	79	84	68	75	80	70	76	500	30	N/A	
ALKALINITY <sup>(2 and *3)</sup>	1.68	1.39	1.53	1.66	1.40	1.52	1.67	1.38	1.51	1.50	0.80	N/A	
CHLORINE RESIDUAL <sup>(1)</sup>													0.05

	OCTOBER			NOVEMBER			DECEMBER			PLANT PARAMETERS		MINISTRY MAC	
	HIGH	LOW	AVG.	HIGH	LOW	AVG.	HIGH	LOW	AVG.	HIGH LOW VALUES	HIGH <sup>(1)</sup>	LOW	
	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	5.00 100.0	0.00 0.0	N/A N/A	
COLOUR <sup>(2)</sup>	48	14	29	19	7	12	12	9	11	5.00	0.00	N/A	
ALUMINUM <sup>(3)</sup>	7.23	6.96	7.04	7.18	6.80	7.04	7.20	6.86	7.04	100.0	0.0	N/A	
pH <sup>(2)</sup>	0.09	0.03	0.04	0.06	0.03	0.04	0.06	0.03	0.04	7.30	6.50	N/A	
TURBIDITY <sup>(1)</sup>	112	78	98	130	92	106	122	94	107	1.00	0.00	1.00	
HARDNESS <sup>(2)</sup>	19.7	12.2	15.2	11.4	3.5	6.3	5.4	1.8	3.7	100	80	N/A	
TEMPERATURE	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	in-offensive			N/A
ODOUR/TASTE	100	72	80	104	74	82	90	74	80	500	30	N/A	
ALKALINITY <sup>(2 and *3)</sup>	1.71	1.42	1.50	1.63	1.36	1.50	1.69	1.43	1.53	1.50	0.80	N/A	
CHLORINE RESIDUAL <sup>(1)</sup>													0.05

(1) MAC - Maximum Allowable Concentration

(2) Health Canada Operational Guideline (O.G.)

(3) Recommended in coagulant treated drinking water

**SCHEDULE 23**  
**INORGANIC PARAMETERS**

Item	Parameter
1.	Antimony
2.	Arsenic
3.	Barium
4.	Boron
5.	Cadmium
6.	Chromium
7.	Mercury
8.	Selenium
9.	Uranium

**SCHEDULE 24**  
**ORGANIC PARAMETERS**

Item	Parameter
1.	Alachlor
2.	Atrazine + N-dealkylated metabolites
3.	Azinphos-methyl
4.	Benzene
5.	Benzo(a)pyrene
6.	Bromoxynil
7.	Carbaryl
8.	Carbofuran
9.	Carbon Tetrachloride
10.	Chlorpyrifos
11.	Diazinon
12.	Dicamba
13.	1,2-Dichlorobenzene
14.	1,4-Dichlorobenzene
15.	1,2-Dichloroethane
16.	1,1-Dichloroethylene (vinylidene chloride)
17.	Dichloromethane
18.	2,4-Dichlorophenol
19.	2,4-Dichlorophenoxy acetic acid (2,4-D)
20.	Diclofop-methyl
21.	Dimethoate
22.	Diquat
23.	Diuron
24.	Glyphosate
25.	Malathion
26.	2-Methyl-4-chlorophenoxyacetic acid
27.	Metolachlor

Item	Parameter
28.	Metribuzin
29.	Monochlorobenzene
30.	Paraquat
31.	Pentachlorophenol
32.	Phorate
33.	Picloram
34.	Polychlorinated Biphenyls (PCB)
35.	Prometryne
36.	Simazine
37.	Terbufos
38.	Tetrachloroethylene (perchloroethylene)
39.	2,3,4,6-Tetrachlorophenol
40.	Triallate
41.	Trichloroethylene
42.	2,4,6-Trichlorophenol
43.	Trifluralin
44.	Vinyl Chloride

**Note:** As of January 1, 2016, the following tests have been eliminated by the MECP.

Item	Parameter
1.	Aldicarb
2.	Aldrin+Dieldrin
3.	Aldrin
4.	Dieldrin
5.	Bendiocarb
6.	Chlordane (Total)
7.	a-chlordane
8.	g-chlordane
9.	Oxychlordane
10.	Cyanazine
11.	DDT+Metabolites
12.	op-DDT

Item	Parameter
13.	pp-DDD
14.	pp-DDE
15.	pp-DDT
16.	Dinoseb
17.	Heptachlor+HepEpoxy
18.	Heptachlor
19.	Heptachlor Epoxide
20.	Lindane
21.	Methoxychlor
22.	Parathion
23.	Temephos
24.	2,4,5-T

# Appendix B - 2019 O.Reg 170/03 Annual Report

Windsor Utilities Commission



**OPTIONAL ANNUAL REPORT TEMPLATE**

<b>Drinking-Water System Number:</b>	220003421
<b>Drinking-Water System Name:</b>	City of Windsor Drinking Water System
<b>Drinking-Water System Owner:</b>	The Windsor Utilities Commission
<b>Drinking-Water System Category:</b>	Large Municipal Residential
<b>Period being reported:</b>	Calendar Year 2019

<p><b><u>Complete if your Category is Large Municipal Residential or Small Municipal Residential</u></b></p> <p>Does your Drinking-Water System serve more than 10,000 people? Yes [ X ] No [ ]</p> <p>Is your annual report available to the public at no charge on a web site on the Internet? Yes [ X ] No [ ]</p> <p>Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>The Windsor Utilities Commission 4545 Rhodes Dr. Windsor ON N9A 5T7</p> </div>	<p><b><u>Complete for all other Categories.</u></b></p> <p>Number of Designated Facilities served: <input style="width: 100px; height: 20px;" type="text"/></p> <p>Did you provide a copy of your annual report to all Designated Facilities you serve? Yes [ ] No [ ]</p> <p>Number of Interested Authorities you report to: <input style="width: 100px; height: 20px;" type="text"/></p> <p>Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? Yes [ ] No [ ]</p>
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**Note: For the following tables below, additional rows or columns may be added or an appendix may be attached to the report**

List all Drinking-Water Systems (if any), which receive all of their drinking water from your system:

Drinking Water System Name	Drinking Water System Number
Town of Lasalle, ON	220004402
Town of Tecumseh, ON	260004969

Did you provide a copy of your annual report to all Drinking-Water System owners that are connected to you and to whom you provide all of its drinking water?  
Yes [ X ] No [ ]

Indicate how you notified system users that your annual report is available, and is free of charge.

- [ X ] Public access/notice via the web
- [ X ] Public access/notice via Government Office
- [ ] Public access/notice via a newspaper
- [ X ] Public access/notice via Public Request





Public access/notice via a Public Library

Public access/notice via other method \_\_\_\_\_

**Describe your Drinking-Water System**

The Windsor Utilities Commission water treatment facility employs screening, pre-chlorination (on an as needed basis), pH adjustment (utilizing CO<sub>2</sub>), disinfection (utilizing ozone), coagulation, flocculation, sedimentation, dual-media filtration with post chlorination and corrosion control adjustment (utilizing phosphoric acid) to treat raw water obtained from the Detroit River.

The water treatment plant pumps sedimentation sludge and backwash water to the sanitary sewer. Treated water from the plant is routed to an on-site reservoir and other reservoir co-located nearby the water treatment facility. Subsequently the treated water is pumped into the distribution system from two pumping stations co-located nearby the water treatment facilities as well. Water from the pumping stations satisfies demand for the greater Windsor area including the communities of Tecumseh and LaSalle. A remote reservoir and pumping station provides a re-chlorination facility (using sodium hypochlorite) to provide system pressure and flow to the southwest portion of the city, while a centrally located water tower provides pressure and flow control to the downtown core.

The drinking water system is monitored at various locations, both at the water treatment and pumping stations as well as throughout the transmission system via a Supervisory Control and Data Acquisition (SCADA) system.

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

Chlorine gas, Sodium Hypochlorite, Carbon dioxide (CO<sub>2</sub>), Ozone (generated on-site using liquid oxygen), Calcium Thiosulfate (ozone quench agent), Polyaluminum chloride (PaCl), Filter aid cationic polymer and phosphoric acid (corrosion control agent).

**Were any significant expenses incurred to?**

- Install required equipment
- Repair required equipment
- Replace required equipment

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

Installed 116 new public-use fire hydrants through capital projects.

Removed 60 existing public-use fire hydrants through capital projects.

Installed 15.89 km of watermain <400 mm and 0.5 km of watermain >= 400 mm.

Decommissioned approximately 11.54 km of watermain <400 mm and decommissioned less than 0.5 km watermain >400 mm.



Replaced underdrain and media in a filter bed at Water Treatment Plant - \$884k in 2019.

Upgrade to the excitation and voltage regulation systems for the four 1 MW natural gas generators at the Water Treatment Plant, resulting in improved reliability and load sharing for the generators.

Reservoir G was commissioned and placed in service in March 2019.

Reservoir “D”, was drained for cleaning and inspection. This included inspection of the 60 inch valve that held back the water from the piping outside. Rehabilitation work is being engineered for construction in 2020.

Replace a total of 15 valves in the distribution system including two 600 mm feeder main valves.

Provide details on the notices submitted in accordance with subsection 18(1) of the Safe Drinking-Water Act or section 16-4 of Schedule 16 of O.Reg.170/03 and reported to Spills Action Centre

Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
May 22, 2019	<b>AWQI#145465</b> Count of 3 TC at Sample Station D22 Free chlorine residual of 0.90 mg/L	3	CFU/100 mL	Testing. 2 sets taken 24 hours apart initial location, downstream and upstream	May 24, 2019
July 30, 2019	<b>AWQI#146916</b> Free chlorine residual of 0.03 mg/L at a hydrant	0.03	mg/L	Flushing for 95 minutes restored the Free chlorine residual to 0.27 mg/L	July 30, 2019
December 13, 2019	<b>AWQI#149264</b> Lead of 54.2 µg/L at a hydrant	54.2	µg/L	Re-sample 2 consecutive days. Lead results of 0.69 µg/L and 0.34 µg/L were obtained.	December 20, 2019

**Microbiological testing done under the Schedule 10, 11 or 12 of Regulation 170/03, during this reporting period.**

	Number of Samples	Range of E.Coli (min#)-(max#)	Range of Total Coliform (min#)-(max#)	Number of HPC Samples	Range of HPC (min#)-(max#)
Raw	248	<b>2 - 400</b>	<b>10 - 3400</b>	248	<b>40 - &gt;2000</b>
Treated	1855	<b>0 - 0</b>	<b>0 - 0</b>	1466	<b>&lt;10 - 50</b>
Distribution	1852	<b>0 - 0</b>	<b>0 - 3</b>	957	<b>&lt;10 - 50</b>

**Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this Annual Report.**

***NOTE: For continuous monitors use 8760 as the number of samples.***

	Number of Samples	Range of Results (min#)-(max#)	Unit of Measure
Turbidity	365	<b>0.02 - 0.26</b>	NTU
Chlorine	365	<b>1.19 - 1.63</b>	mg/L

**Summary of additional testing and sampling carried out in accordance with the requirement of an approval, order or other legal instrument.**

Date of legal instrument issued	Parameter	Date Sampled	Running Annual Average Result	Unit of Measure
MDWL 025-101	Bromate - Treated	1-Jan-19 to 31-Dec-19	<b>&lt;0.003</b>	mg/L
MDWL 025-101	Bromate - Distribution	1-Jan-19 to 31-Dec-19	<b>&lt;0.003</b>	mg/L

\* Reported as Running Annual Average

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

Parameter	Sample Date	Result Value	Unit of Measure	Exceedence
Antimony	October 2, 2019	0.00011	mg/L	NO
Arsenic	October 2, 2019	0.0003	mg/L	NO
Barium	October 2, 2019	0.0151	mg/L	NO
Boron	October 2, 2019	0.018	mg/L	NO
Cadmium	October 2, 2019	0.000003 <MDL	mg/L	NO
Chromium	October 2, 2019	0.00018	mg/L	NO
*Lead	October 2, 2019	0.00002	mg/L	NO
Mercury	October 2, 2019	0.00001 <MDL	mg/L	NO
Selenium	October 2, 2019	0.0001	mg/L	NO
Sodium	January 23, 2019	7.71	mg/L	NO
Uranium	October 2, 2019	0.000032	mg/L	NO
Fluoride	January 23, 2019	0.10	mg/L	NO
Nitrite	October 2, 2019	0.003 <MDL	mg/L	NO
Nitrate	October 2, 2019	0.216	mg/L	NO

**Summary of lead testing under Schedule 15.1 during this reporting period**

(applicable to the following drinking water systems; large municipal residential systems, small municipal residential systems, and non-municipal year-round residential systems)

Location Type	Number of Samples	Range of Lead Results (min#)-(max#)	Unit of Measure	Number of Exceedences
Plumbing	278	0.01 <MDL - 10.80	ug/L	2

Distribution	216	0.01 <MDL - 54.2	ug/L	1
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**Summary of Organic parameters sampled during this reporting period or the most recent sample results**

Parameter	Sample Date	Result Value	Unit of Measure	Exceedence
Alachlor	October 2, 2019	0.00002 <MDL	mg/L	NO
Atrazine + N-dealkylated metabolites	October 2, 2019	0.00002	mg/L	NO
Azinphos-methyl	October 2, 2019	0.00005 <MDL	mg/L	NO
Benzene	October 2, 2019	0.00032 <MDL	mg/L	NO
Benzo(a)pyrene	October 2, 2019	0.000004 <MDL	mg/L	NO
Bromoxynil	October 2, 2019	0.00033 <MDL	mg/L	NO
Carbaryl	October 2, 2019	0.00005 <MDL	mg/L	NO
Carbofuran	October 2, 2019	0.00001 <MDL	mg/L	NO
Carbon Tetrachloride	October 2, 2019	0.00017 <MDL	mg/L	NO
Chlorpyrifos	October 2, 2019	0.00002 <MDL	mg/L	NO
Diazinon	October 2, 2019	0.00002 <MDL	mg/L	NO
Dicamba	October 2, 2019	0.00020 <MDL	mg/L	NO
1,2-Dichlorobenzene	October 2, 2019	0.00041 <MDL	mg/L	NO
1,4Dichlorobenzene	October 2, 2019	0.00036 <MDL	mg/L	NO
1,2-Dichloroethane	October 2, 2019	0.00035 <MDL	mg/L	NO
1,1-Dichloroethylene (vinylidene chloride)	October 2, 2019	0.00033 <MDL	mg/L	NO
Dichloromethane	October 2, 2019	0.00035 <MDL	mg/L	NO
2,4-Dichlorophenol	October 2, 2019	0.00015 <MDL	mg/L	NO
2,4-Dichlorophenoxy acetic acid (2,4-D)	October 2, 2019	0.00019 <MDL	mg/L	NO
Diclofop-methyl	October 2, 2019	0.0004 <MDL	mg/L	NO
Dimethoate	October 2, 2019	0.00006 <MDL	mg/L	NO
Diquat	October 2, 2019	0.001 <MDL	mg/L	NO
Diuron	October 2, 2019	0.00003 <MDL	mg/L	NO
Glyphosate	October 2, 2019	0.001 <MDL	mg/L	NO
Haloacetic Acids (HAA5) (Note: show latest running annual average)	January 0, 1900	Avg.	mg/L	NO
Q1 2019 = <0.0053 mg/L	January 23, 2019	<0.0053		
Q2 2019 = <0.0053 mg/L	May 1, 2019			
Q3 2019 = <0.0053 mg/L	July 3, 2019			
Q4 2019 = <0.0053 mg/L	October 2, 2019			
Malathion	October 2, 2019	0.00002 <MDL	mg/L	NO
MCPA	October 2, 2019	0.00012 <MDL	mg/L	NO
Metolachlor	October 2, 2019	0.00001	mg/L	NO



# Ontario Drinking-Water Systems Regulation O. Reg. 170/03

Metribuzin	October 2, 2019	0.00002 <MDL	mg/L	NO
Monochlorobenzene	October 2, 2019	0.0003 <MDL	mg/L	NO
Paraquat	October 2, 2019	0.001 <MDL	mg/L	NO
Pentachlorophenol	October 2, 2019	0.00015 <MDL	mg/L	NO
Phorate	October 2, 2019	0.00001 <MDL	mg/L	NO
Picloram	October 2, 2019	0.001 <MDL	mg/L	NO
Polychlorinated Biphenyls (PCB)	October 2, 2019	0.00004 <MDL	mg/L	NO
Prometryne	October 2, 2019	0.00003 <MDL	mg/L	NO
Simazine	October 2, 2019	0.00001 <MDL	mg/L	NO
THM (Note: show latest running annual average)		Avg.		
Q1 2019 = 0.0045 mg/L	January 23, 2019	0.0099	mg/L	NO
Q2 2019 = 0.012 mg/L	May 1, 2019			
Q3 2019 = 0.013 mg/L	July 3, 2019			
Q4 2019 = 0.01 mg/L	October 2, 2019			
Terbofos	October 2, 2019	0.00001 <MDL	mg/L	NO
Tetrachlorethylene	October 2, 2019	0.00035 <MDL	mg/L	NO
2,3,4,6-Tetrachlorophenol	October 2, 2019	0.00020 <MDL	mg/L	NO
Triallate	October 2, 2019	0.00001 <MDL	mg/L	NO
Trichloroethylene	October 2, 2019	0.00044 <MDL	mg/L	NO
2,4,6-Trichlorophenol	October 2, 2019	0.00025 <MDL	mg/L	NO
Trifluralin	October 2, 2019	0.00002 <MDL	mg/L	NO
Vinyl Chloride	October 2, 2019	0.00017 <MDL	mg/L	NO

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

No Inorganic or Organic parameter(s) exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standard.

# WINDSOR UTILITIES COMMISSION

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President, Sonogo Management Inc.

### **(2019) Irek Kusmierczyk, Ph.D**

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Water Operations

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Vice President  
Hydro Operations

ENWIN Utilities Ltd. is contracted to operate the water system through the Water System Operating Agreement (WSOA).





**WINDSOR  
UTILITIES  
COMMISSION**