



**Ontario Clean Water Agency**  
**Agence Ontarienne Des Eaux**



**Annual Performance Report**

**Union Area Water Supply System**

**Drinking Water System # 210000853**

**2018**

Prepared for the Corporation of the Town of Kingsville, the Corporation of the Town of Essex,  
the Town of Lakeshore & the Municipality of Leamington

By the Ontario Clean Water Agency  
Ken Penney  
Process & Compliance Technician  
kpenney@ocwa.com  
519-326-4447



**ANNUAL REPORT**

|                                        |                                                                                                                                             |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Drinking-Water System Number:</b>   | <b>210000853</b>                                                                                                                            |
| <b>Drinking-Water System Name:</b>     | Union Area Water Supply System                                                                                                              |
| <b>Drinking-Water System Owner:</b>    | Union Area Water Supply System Joint Board of Management (Municipality of Leamington, Town of Kingsville, Town of Essex, Town of Lakeshore) |
| <b>Drinking-Water System Category:</b> | Large Municipal Residential                                                                                                                 |
| <b>Period being reported:</b>          | 01-January-2018 to 31-December-2018                                                                                                         |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
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| <p><b><u>Complete if your Category is Large Municipal Residential or Small Municipal Residential</u></b></p> <p><b>Does your Drinking-Water System serve more than 10,000 people? Yes [ X ] No [ ]</b></p> <p><b>Is your annual report available to the public at no charge on a web site on the Internet? Yes [ X ] No [ ]</b></p> <p><b>Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.</b></p> <div style="border: 1px solid black; padding: 5px;"> <p><i>Union Water Treatment Plant<br/>P.O. Box 340,<br/>1615 Union Ave.,<br/>Ruthven, Ont.<br/>N0P 2G0</i></p> </div> | <p><b><u>Complete for all other Categories.</u></b></p> <p><b>Number of Designated Facilities served:</b></p> <div style="border: 1px solid black; padding: 2px; width: fit-content;">N/A</div> <p><b>Did you provide a copy of your annual report to all Designated Facilities you serve? Yes [ ] No [ ]</b></p> <p><b>Number of Interested Authorities you report to:</b></p> <div style="border: 1px solid black; padding: 2px; width: fit-content;">N/A</div> <p><b>Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? Yes [ ] No [ ]</b></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:**

| <b>Drinking Water System Name</b> | <b>Drinking Water System Number</b> |
|-----------------------------------|-------------------------------------|
| Municipality of Leamington        | 220004992                           |
| Town of Kingsville                | 220003403                           |
| Town of Essex                     | 220003680                           |
| Town of Lakeshore                 | 260004995                           |



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

**Did you provide a copy of your annual report to all Drinking-Water System owners that are connected to you and to whom you provide all of its drinking water?**

Yes [  ] No [  ]

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

- Public access/notice via the web**
- Public access/notice via Government Office**
- Public access/notice via a newspaper**
- Public access/notice via Public Request**
- Public access/notice via a Public Library**
- Public access/notice via other method: Municipal Offices**

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

The Union Water Treatment Plant (UWTP) is a chemically assisted conventional filtration plant, which draws water from Lake Erie.

The UWTP supplies potable water to the Town of Kingsville, Municipality of Leamington, a portion of the Town of Essex and a portion of the Town of Lakeshore with an estimated service population of 65,000.

The treatment process includes chemically assisted up-flow clarification, filtration with dual media filters, primary disinfection using chlorine gas and secondary disinfection using chloramination. As per approval from MOECP, the ammonia system was not in use from June 04, 2018 – December 31, 2018.

Seasonally, the UWTP uses sodium hypochlorite at its intakes to control Zebra Mussel formation.

There are also four water towers and a booster/storage station located on the Union Water Supply System.

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

#### Zebra Mussel Control:

- Sodium Hypochlorite – (Seasonal)

#### Clarification Chemicals:

- DelPac 2020 – Coagulant
- DelPac XG-15 - Coagulant
- Hyper+Ion 1090 – Coagulant
- Magnafloc LT22S (polymer) - Coagulant Aid
- Powdered Activated Carbon – Taste and Odor Control

#### Filtration:

- Cat-Floc 8103 Plus (polymer) – Filter Aid (Seasonal)

#### Disinfection:

- Primary: Chlorine Gas
- Secondary: Aqua Ammonia & Chlorine (to form chloramines)

**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**

| <u>Item Description</u>                                  | <b>Expenditures to 2018 Year End</b> |
|----------------------------------------------------------|--------------------------------------|
| <b><u>Capital Works and Major Maintenance</u></b>        |                                      |
| Low Lift Pump #1 Major Maintenance                       | \$19,500                             |
| Microstrainer Floors - Microstrainer #2                  | \$2,941                              |
| Filter Media Replacement -Filters 6 and 8                | \$119,705                            |
| Turbidity Meters for Filter Backwash                     | \$20,581                             |
| High Lift Pump #7 New Pump and Motor                     | \$0                                  |
| New Kitchen/ Lunchroom                                   | \$24,847                             |
| New Laboratory                                           | \$0                                  |
| Maintenance Shop Roof                                    | \$26,404                             |
| Lighting Upgrades                                        | \$8,881                              |
| Essex Water Tower Rehabilitation (interior and exterior) | \$1,128,891                          |
| Distribution System Maintenance                          | \$45,000                             |
| Cathodic Protection System for Leamington Water Tower    | \$23,225                             |
| Security System Install                                  | \$0                                  |
| SCADA System Upgrade - Complete new system*              | \$164,471                            |
| Cottam Booster Reservoir Cover Regrading **              | \$11,545                             |
| High Lift #1 Motor Repair                                | \$0                                  |
| Main Wash #1 Actuator Upgrade                            | \$9,340                              |
| Admin Area upgrades                                      | \$19,261                             |
| <b>Total Capital Works/Major Maintenance:</b>            | <b>\$1,624,592</b>                   |

| <b>New Capital Works</b>                               |             |
|--------------------------------------------------------|-------------|
| CO2 pH Adjustment System/ Chlorine System Improvements | \$142,395   |
| SCADA System Upgrade - Complete new system*            | \$1,055,529 |
| Distribution System Maintenance                        | \$55,000    |
| High Lift Pump #7 Install                              | \$85,000    |
| Master Water Meter Communication System                | \$50,000    |
| Laboratory Upgrades                                    | \$50,000    |
| Security System Install                                | \$45,000    |
| Turbidity Meters for Filter Backwash                   | \$25,000    |
| Low Lift Pump #1 Major Maintenance                     | \$35,000    |
| Maintenance Shop Roof                                  | \$30,000    |
| Lighting Upgrades                                      | \$30,000    |
| Microstrainer #2 Floor                                 | \$30,000    |
| Blue-Green Algae Chlorophyll Instrument – Low Lift     | \$25,000    |
| Total New Capital Works:                               | \$1,657,924 |
| Total Capital Works:                                   | \$3,282,516 |

**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 | Incident description | Corrective Action        | AWQI # | Corrective Action Date |
|---------------|----------------------|--------------------------|--------|------------------------|
| May 19, 2018  | Loss of coagulant    | Re-initialized coagulant | 139437 | May 19, 2018           |

**Note: Corrective action Date is Date of resolution.**

**Microbiological testing is done under Schedule 10 of Regulation 170/03, during this reporting period.**

|                     | Number of Samples                                                                                                                                                              | Range of Ecoli Or Fecal Results (min #)-(max #) (ct/100 mL) | Range of Total Coliform Results (min #)-(max #) (ct/100 mL) | Number of HPC Samples | Range of HPC Results (min #)-(max #) (ct/mL) |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-----------------------|----------------------------------------------|
| <b>Raw</b>          | 51                                                                                                                                                                             | 2 - 56                                                      | 18 - 400                                                    | 0                     | N/A                                          |
| <b>Treated</b>      | 51                                                                                                                                                                             | 0 - 0                                                       | 0 - 0                                                       | 51                    | <10 - 20                                     |
| <b>Distribution</b> | <b>Please See Individual Annual Reports for Distribution System Information:</b> Leamington (220004992), Kingsville (220003403), Essex (220003680), and Lakeshore (260004995). |                                                             |                                                             |                       |                                              |

Operational testing is done under Schedule 7 of Regulation 170/03 during the period Covered by this annual report.

|                                                    | Number of Grab Samples | Range of Results (min #)-(max #) |
|----------------------------------------------------|------------------------|----------------------------------|
| <b>Turbidity</b>                                   | <b>8760</b>            | <b>0.02 – 2.0 NTU</b>            |
| <b>Chlorine - Free</b>                             | <b>8760</b>            | <b>1.21 – 2.21 mg/L</b>          |
| <b>Fluoride</b> (If the DWS provides fluoridation) | <b>N/A</b>             | <b>N/A</b>                       |

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

*NOTE: Record the unit of measure if it is **not** milligrams per litre.*

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

| Date of legal instrument issued                                             | Parameter: (Suspended Solids) | Date Sampled    | Result | Unit of Measure |
|-----------------------------------------------------------------------------|-------------------------------|-----------------|--------|-----------------|
| 16- Feb.- 2018<br>Municipal<br>Drinking Water<br>Licence Number:<br>041-101 | South Settling Pond           | Jan 02/18       | <3.0   | mg/L            |
|                                                                             | South Settling Pond           | Feb 05/18       | 3.0    | mg/L            |
|                                                                             | South Settling Pond           | Mar 05/18       | 3.0    | mg/L            |
|                                                                             | South Settling Pond           | April 02/18     | 5.0    | mg/L            |
|                                                                             | South Settling Pond           | May 07/18       | <3.0   | mg/L            |
|                                                                             | South Settling Pond           | June 04/18      | <3.0   | mg/L            |
|                                                                             | South Settling Pond           | July 03/18      | <3.0   | mg/L            |
|                                                                             | North Settling Pond           | July 03/18      | <3.0   | mg/L            |
|                                                                             | South Settling Pond           | Aug 07/18       | <3.0   | mg/L            |
|                                                                             | North Settling Pond           | Aug 07/18       | <3.0   | mg/L            |
|                                                                             | South Settling Pond           | Sept 04/18      | 4.0    | mg/L            |
|                                                                             | North Settling Pond           | Sept 04/18      | <3.0   | mg/L            |
|                                                                             | South Settling Pond           | Oct 01/18       | <3.0   | mg/L            |
|                                                                             | North Settling Pond           | Oct 01/18       | <3.0   | mg/L            |
|                                                                             | South Settling Pond           | Nov 06/18       | <3.0   | mg/L            |
|                                                                             | North Settling Pond           | Nov 06/18       | <3.0   | mg/L            |
|                                                                             | South Settling Pond           | Dec 03/18       | 8.0    |                 |
| Limit 25.0 mg/L                                                             |                               | Annual Average: | 3.5    | mg/L            |

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

| Parameter             | Sample Date      | Result Value | Unit of Measure | Exceedance |
|-----------------------|------------------|--------------|-----------------|------------|
| Antimony              | January 09, 2018 | 0.08         | ug/L            | No         |
| Arsenic               | January 09, 2018 | 0.3          | ug/L            | No         |
| Barium                | January 09, 2018 | 17.9         | ug/L            | No         |
| Boron                 | January 09, 2018 | 15.0         | ug/L            | No         |
| Cadmium               | January 09, 2018 | 0.007        | ug/L            | No         |
| Chromium              | January 09, 2018 | 0.18         | ug/L            | No         |
| *Lead                 | n/a              |              |                 |            |
| Mercury               | January 09, 2018 | 0.01         | ug/L            | No         |
| Sodium                | January 09, 2018 | 7.74         | mg/L            | No         |
| Selenium              | January 09, 2018 | 0.10         | ug/L            | No         |
| Uranium               | January 09, 2018 | 0.105        | ug/L            | No         |
| Fluoride              | January 09, 2018 | 0.09         | mg/L            | No         |
| Nitrite (N)           | October 15, 2018 | < 0.1        | mg/L            | No         |
| Nitrate (N)           | October 15, 2018 | < 0.1        | mg/L            | No         |
| Nitrite + Nitrate (N) | October 15, 2018 | 0.1          | mg/L            | No         |
| Ammonia (N) - Total   | October 15, 2018 | 0.08         | mg/L            | No         |

\*only for drinking water systems testing under Schedule 15.2; this includes large municipal non-residential systems, small municipal non-residential systems, non-municipal seasonal residential systems, large non-municipal non-residential systems, and small non-municipal non-residential systems

**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 #) | Number of Exceedances |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|-----------------------|
| <b>Plumbing</b>     | <b>Please See Individual Annual Reports for Distribution System Information:</b> Leamington (220004992), Kingsville (220003403), Essex (220003680), and Lakeshore (260004995). |                                        |                       |
| <b>Distribution</b> | <b>Please See Individual Annual Reports for Distribution System Information:</b> Leamington (220004992), Kingsville (220003403), Essex (220003680), and Lakeshore (260004995). |                                        |                       |

**Summary of Organic parameters sampled during this reporting period or the most recent sample results**

| Parameter                                        | Sample Date                                                                                                                                                                    | Result Value | Unit of Measure | Exceedance |
|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------------|------------|
| Alachlor                                         | January 09, 2018                                                                                                                                                               | 0.02         | ug/L            | No         |
| Atrazine + N-dealkylated metabolites             | January 09, 2018                                                                                                                                                               | 0.02         | ug/L            | No         |
| Atrazine                                         | January 09, 2018                                                                                                                                                               | 0.02         | ug/L            | No         |
| Azinphos-methyl                                  | January 09, 2018                                                                                                                                                               | 0.05         | ug/L            | No         |
| Benzene                                          | January 09, 2018                                                                                                                                                               | 0.32         | ug/L            | No         |
| Benzo(a)pyrene                                   | January 09, 2018                                                                                                                                                               | 0.004        | ug/L            | No         |
| Bromoxynil                                       | January 09, 2018                                                                                                                                                               | 0.33         | ug/L            | No         |
| Carbaryl                                         | January 09, 2018                                                                                                                                                               | 0.05         | ug/L            | No         |
| Carbofuran                                       | January 09, 2018                                                                                                                                                               | 0.01         | ug/L            | No         |
| Carbon Tetrachloride                             | January 09, 2018                                                                                                                                                               | 0.16         | ug/L            | No         |
| Chlorpyrifos                                     | January 09, 2018                                                                                                                                                               | 0.02         | ug/L            | No         |
| Desethyl atrazine                                | January 09, 2018                                                                                                                                                               | 0.01         | ug/L            | No         |
| Diazinon                                         | January 09, 2018                                                                                                                                                               | 0.02         | ug/L            | No         |
| Dicamba                                          | January 09, 2018                                                                                                                                                               | 0.20         | ug/L            | No         |
| 1,2-Dichlorobenzene                              | January 09, 2018                                                                                                                                                               | 0.41         | ug/L            | No         |
| 1,4-Dichlorobenzene                              | January 09, 2018                                                                                                                                                               | 0.36         | ug/L            | No         |
| 1,2-Dichloroethane                               | January 09, 2018                                                                                                                                                               | 0.35         | ug/L            | No         |
| 1,1-Dichloroethene (vinylidene chloride)         | January 09, 2018                                                                                                                                                               | 0.33         | ug/L            | No         |
| Dichloromethane                                  | January 09, 2018                                                                                                                                                               | 0.35         | ug/L            | No         |
| 2-4 Dichlorophenol                               | January 09, 2018                                                                                                                                                               | 0.15         | ug/L            | No         |
| 2,4-Dichlorophenoxy acetic acid (2,4-D)          | January 09, 2018                                                                                                                                                               | 0.19         | ug/L            | No         |
| Diclofop-methyl                                  | January 09, 2018                                                                                                                                                               | 0.40         | ug/L            | No         |
| Dimethoate                                       | January 09, 2018                                                                                                                                                               | 0.03         | ug/L            | No         |
| Diquat                                           | January 09, 2018                                                                                                                                                               | 1.0          | ug/L            | No         |
| Diuron                                           | January 09, 2018                                                                                                                                                               | 0.03         | ug/L            | No         |
| Glyphosate                                       | January 09, 2018                                                                                                                                                               | 1.0          | ug/L            | No         |
| <b>HAA</b><br>(NOTE: show latest annual average) | Please See Individual Annual Reports for Distribution System Information: <b>Leamington (220004992), Kingsville (220003403), Essex (220003680), and Lakeshore (260004995).</b> |              |                 |            |



**Summary of Organic parameters sampled during this reporting period or the most recent sample results continued**

| Parameter                                        | Sample Date                                                                                                                                                                    | Result Value | Unit of Measure | Exceedance |
|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------------|------------|
| Malathion                                        | January 09, 2018                                                                                                                                                               | 0.02         | ug/L            | No         |
| MCPA                                             | January 09, 2018                                                                                                                                                               | 0.12         | ug/L            | No         |
| Metolachlor                                      | January 09, 2018                                                                                                                                                               | 0.01         | ug/L            | No         |
| Metribuzin                                       | January 09, 2018                                                                                                                                                               | 0.02         | ug/L            | No         |
| Monochlorobenzene                                | January 09, 2018                                                                                                                                                               | 0.3          | ug/L            | No         |
| Paraquat                                         | January 09, 2018                                                                                                                                                               | 1.0          | ug/L            | No         |
| Pentachlorophenol                                | January 09, 2018                                                                                                                                                               | 0.15         | ug/L            | No         |
| Phorate                                          | January 09, 2018                                                                                                                                                               | 0.01         | ug/L            | No         |
| Picloram                                         | January 09, 2018                                                                                                                                                               | 1.0          | ug/L            | No         |
| Polychlorinated Biphenyls(PCB)                   | January 09, 2018                                                                                                                                                               | 0.04         | ug/L            | No         |
| Prometryne                                       | January 09, 2018                                                                                                                                                               | 0.03         | ug/L            | No         |
| Simazine                                         | January 09, 2018                                                                                                                                                               | 0.01         | ug/L            | No         |
| <b>THM</b><br>(NOTE: show latest annual average) | Please See Individual Annual Reports for Distribution System Information: <b>Leamington (220004992), Kingsville (220003403), Essex (220003680), and Lakeshore (260004995).</b> |              |                 |            |
| Terbufos                                         | January 09, 2018                                                                                                                                                               | 0.01         | ug/L            | No         |
| Tetrachloroethylene                              | January 09, 2018                                                                                                                                                               | 0.35         | ug/L            | No         |
| 2,3,4,6-Tetrachlorophenol                        | January 09, 2018                                                                                                                                                               | 0.20         | ug/L            | No         |
| Triallate                                        | January 09, 2018                                                                                                                                                               | 0.01         | ug/L            | No         |
| Trichloroethylene                                | January 09, 2018                                                                                                                                                               | 0.44         | ug/L            | No         |
| 2,4,6-Trichlorophenol                            | January 09, 2018                                                                                                                                                               | 0.25         | ug/L            | No         |
| Trifluralin                                      | January 09, 2018                                                                                                                                                               | 0.02         | ug/L            | No         |
| Vinyl Chloride                                   | January 09, 2018                                                                                                                                                               | 0.17         | ug/L            | No         |

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

| Parameter   | Result Value | Unit of Measure | Date of Sample |
|-------------|--------------|-----------------|----------------|
| <b>None</b> |              |                 |                |