



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



**Annual Performance Report**

**Union Water Supply System**

**Drinking Water System # 210000853**

**2022**

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

**By the Ontario Clean Water Agency**

**ANNUAL REPORT**

<b>Drinking Water System Number:</b>	210000853
<b>Drinking Water System Name:</b>	Union Water Supply System
<b>Drinking Water System Owner:</b>	Union Water Supply System Joint Board of Management (Municipality of Leamington, Town of Kingsville, Town of Essex, Municipality of Lakeshore)
<b>Drinking Water System Category:</b>	Large Municipal Residential
<b>Period being reported:</b>	01-January-2022 to 31-December-2022

<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; width: fit-content;">             Union Water Supply System              P.O. Box 340,              1615 Union Ave.,              Ruthven, Ont. N0P 2G0         </div>	<p><b><u>Complete for all other Categories</u></b></p> <p>Number of Designated Facilities served:  <div style="border: 1px solid black; padding: 2px; display: inline-block;">N/A</div> </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:  <div style="border: 1px solid black; padding: 2px; display: inline-block;">N/A</div> </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 their drinking water from your system:

Drinking Water System Name	Drinking Water System Number
Municipality of Leamington	220004992
Town of Kingsville	220003403
Town of Essex	220003680
Municipality of Lakeshore	260004995

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 drinking water?  
 Yes [X] 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 \_\_\_\_\_

**Describe your Drinking Water System**

The Union Water Supply System (UWSS) includes one water treatment plant, the Ruthven Water Treatment Plant (RWTP) that is located in the hamlet of Ruthven in the Town of Kingsville, Ontario. The RWTP is a chemically assisted conventional filtration plant that draws water from Lake Erie.

The UWSS supplies potable water to the Town of Kingsville, Municipality of Leamington, a portion of the Town of Essex and a portion of the Municipality of Lakeshore with an estimated service population of 66,841.

The treatment process includes raw water pH control, chemically assisted up-flow clarification, chemically assisted Dissolved Air Flootation system, filtration with dual media filters, primary disinfection using Chlorine gas and secondary disinfection using Chlorine gas and Sodium Hypochlorite.

Seasonally, the RWTP 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
- SternPAC 70 - Coagulant
- Magnafloc LT22S (polymer) - Coagulant Aid
- NorFloc 122 (polymer) – Coagulant Aid
- Powdered Activated Carbon – Taste and Odor Control
- CO2 – PH adjustment

**Filtration:**

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

**Disinfection:**

- Primary: Chlorine Gas
- Secondary: Chlorine Gas and Sodium Hypochlorite

**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

	Item Description	Expenditures to 2022 Year End
	<b>Capital Works and Major Maintenance</b>	
1	DAF #1 Clarifier Mechanism Structure	\$2,460,540
2	DAF#1 (Formerly Clarifier #2) Concrete Tank Rehabilitation	\$1,115,520
3	DAF #1 Air Saturation System Skid	\$889,740
4	DAF System Auxiliary Building	\$515,840
5	DAF#1 Dome Structure	\$455,050
6	DAF#1 Piping	\$378,830
7	DAF System Electrical	\$312,900
8	DAF #1 System Controls	\$258,970
9	DAF System Auxiliary Building HVAC System	\$187,460
10	DAF#1 Scraper and Skimmer System	\$185,460
11	DAF#1 Clarifier Mixers	\$180,850
12	Smart Hydrant Distribution Monitoring Devices	\$123,100
13	Valve Room - Piping	\$88,530
14	DAF#1 (Formerly Clarifier #2) Blow Down Chamber Rehabilitation	\$73,410
15	Cottam Booster Station PLC Upgrade	\$70,040
16	Albuna Water Tower Upgrades	\$70,000
17	Dissolved Air Flootation (DAF) #1 Rapid Mixer	\$64,860
18	DAF#1 Valves	\$64,770
19	Wastewater Pump - New backup pump	\$62,620
20	Distribution System Components	\$60,600
21	Distribution Water Quality Monitoring Analyzers	\$54,580
22	Low Lift #7 Rehabilitation	\$49,930
23	Treatment Plant Bldg Improvements - Admin Area	\$43,920
24	Valve Room - Valves & Actuators	\$34,580
25	Highlift Pump #9 Major Maintenance	\$30,265
26	Master Water Meters Upgrades	\$24,230
27	Maintenance Building Improvements	\$24,200
28	Clarifiers #3 & #4 Effluent Pipe Rehabilitation	\$20,170
29	Clearwell #1 Inlet Rotork	\$17,260
30	30' Aluminum PRP Series Gantry crane	\$16,960
31	Residuals Pond Effluent Chlorine Analyzer	\$16,230
32	Communication System upgrades	\$13,450
33	Security System Improvements	\$11,710
34	Supply & Install 400AMP Main Breaker	\$8,578
35	2-4" Air relief valves, HL Pump #8 and #9	\$7,651
36	Denso for Raw water pipe protection	\$7,502
37	Spare Reservoir #2 Sump	\$6,996
38	Culvert to Access to South Field, Relocate Reservoir # 2, Raw Water Line Repair	\$6,755
39	10' Aluminum Gantry	\$6,447
40	Post Chlorine chlorinator controller	\$6,053
41	Cathodic protection surveys for water towers and water main	\$6,034

42	Lawnmower bagger	\$5,945
43	Unit Heater Replacement	\$5,934
44	Reservoir #2 Leak repair	\$5,481
45	Floor Scrubber	\$5,181
46	Intake 1 & 2 Inspections	\$5,037
47	Fencing Upgrades - Leamington Water Tower	\$5,010
48	DAF Project Valve Room 30" blank flanges	\$4,948
49	Leamington Tower driveway, Substation ESA deficiency,	\$4,783
50	Elevated Water Tank Survey	\$4,661
51	Chlorine Gas Injection System	\$4,648
52	Paint new washroom; install new countertop	\$4,477
53	Cleaning equipment	\$4,427
54	Clarifier Effluent pipe repair	\$4,353
55	Airwash Valve & Actuator - spare	\$4,312
56	Electrician Van Shelving Package	\$4,208
57	Filter #1 - Waste Valve & Actuator	\$4,187
58	Landscape Trailer	\$4,129
59	Fume Hood - Laboratory	\$4,060
60	Filter inlet channels and filter 1-4 level	\$3,826
61	Install Janitorial closet & drywall	\$3,214
62	Filters 1-4 flooring repair	\$3,155
63	Chlorine Gas Injection System	\$2,517
64	Chlorine Gas Injection System	\$2,517
65	Removal of Electric motor for HLPump #9	\$2,459
66	Filter 5-8 Airwash Valves	\$2,290
67	Roadway maintenance gravel box grater	\$2,227
68	New electrical Van safety lighting	\$2,194
69	Trench box for Clarifier effluent pipe repair.	\$2,171
70	Storage shelving for CO2 room	\$2,098
71	Myers Sewage pump	\$2,050
72	Stainless Steel Pipe tap - Albuna Tower Pipe scan install	\$2,035
73	Cement pad at CBS for VFD Project	\$1,933
74	Repairs to clearwell Wall	\$1,816
75	Spare Clarifier PH Probe	\$1,784
76	Concrete steps for DAF project	\$1,710
77	Reservoir #2 Drain Inspection	\$1,563
78	Leamington Tower Gasket	\$1,516
79	Ford Transit 148" WB ultrafloor	\$1,276
80	Chain Hoist for 30' Gantry crane	\$1,037
81	Storage shelving for CO2 room	\$1,024
82	Filter inlet channels and filter 1-4 level	\$945
83	DAF Project Pipe Restraint	\$894
84	Bollards for Generator panel DAF #1 project	\$825
85	Freight charge for 30' Gantry beam	\$763
	<b>Total</b>	<b>\$8,165,001</b>

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
None					

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 Results (min #)-(max #)	Range of Total Coliform Results (min #)-(max #)	Number of HPC Samples	Range of HPC Results (min #)-(max #)
Raw	52	2-20	4-214	0	N/A
Treated	52	0 – 0	0 – 0	52	<10 - <100
Distribution	Please See Individual Annual Reports for Distribution System Information: Leamington (220004992), Kingsville (220003403), Essex (220003680), and Lakeshore (260004995).				

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

	Number of Grab Samples	Range of Results (min #)-(max #)	Unit of Measure
Turbidity	8760	0.01 - 0.76	NTU
Chlorine - Free	8760	0.83 - 2.57	mg/L

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

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

	Parameter	Date Sampled	Result		Average	Unit of Measure
			North	South		
Nov 26, 2021	Suspended Solids	Jan 05/22	3		3	mg/L
	Suspended Solids	Feb 01/22	3		3	mg/L
	Suspended Solids	Mar 15/22	47		47	mg/L
	Suspended Solids	April 06/22	11	3	7	mg/L
	Suspended Solids	May 03/22	3	3	3	mg/L
	Suspended Solids	June 07/22	3	3	3	mg/L
	Suspended Solids	July 05/22	3	3	3	mg/L
	Suspended Solids	Aug 04/22	3	3	3	mg/L
	Suspended Solids	Sept 07/22	3	3	3	mg/L
	Suspended Solids	Oct 04/22	3	3	3	mg/L
	Suspended Solids	Nov 04/22	3	3	3	mg/L
	Suspended Solids	Dec 14/22	3	3	3	mg/L
Annual Average					7.0	mg/L

Date of legal instrument issued	Parameter	Date Sampled	Result	Unit
Nov 26, 2021	Total Chlorine residuals	Jan 04/2022	0.03	mg/L
	Total Chlorine residuals	Feb 03/2022	0.16	mg/L
	Total Chlorine residuals	Mar 07/2022	0.07	mg/L
	Total Chlorine residuals	Apr 05/2022	0.03	mg/L
	Total Chlorine residuals	May 02/2022	0.05	mg/L
	Total Chlorine residuals	June 06/2022	0.08	mg/L
	Total Chlorine residuals	July 04/2022	0.02	mg/L
	Total Chlorine residuals	Aug 02/2022	0.02	mg/L
	Total Chlorine residuals	Sept 06/2022	0.05	mg/L
	Total Chlorine residuals	Oct 03/2022	0.10	mg/L
	Total Chlorine residuals	Nov 07/2022	0.07	mg/L
	Total Chlorine residuals	Dec 06/2022	0.17	mg/L
Annual Average			0.07	mg/L

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

TREATED WATER	Sample Date (yyyy/mm/dd)	Sample Result	MAC	No. of Exceedances	
				MAC	1/2 MAC
Antimony: Sb (ug/L)	2022/01/04	<MDL 0.6	6.0	No	No
Arsenic: As (ug/L)	2022/01/04	0.2	10.0	No	No
Barium: Ba (ug/L)	2022/01/04	16.7	1000.0	No	No
Boron: B (ug/L)	2022/01/04	17.0	5000.0	No	No
Cadmium: Cd (ug/L)	2022/01/04	0.008	5.0	No	No
Chromium: Cr (ug/L)	2022/01/04	0.18	50.0	No	No
Mercury: Hg (ug/L)	2022/01/04	<MDL 0.01	1.0	No	No
Selenium: Se (ug/L)	2022/01/04	0.1	50.0	No	No
Uranium: U (ug/L)	2022/01/04	0.088	20.0	No	No
Fluoride (mg/L)	2022/01/04	<MDL 0.06	1.5	No	No

Nitrite (mg/L)	2022/01/10	<MDL 0.1	1.0	No	No
Nitrite (mg/L)	2022/04/06	<MDL 0.1	1.0	No	No
Nitrite (mg/L)	2022/07/06	<MDL 0.1	1.0	No	No
Nitrite (mg/L)	2022/10/03	<MDL 0.1	1.0	No	No
Nitrate (mg/L)	2022/01/10	0.5	10.0	No	No
Nitrate (mg/L)	2022/04/06	0.5	10.0	No	No
Nitrate (mg/L)	2022/07/06	0.3	10.0	No	No
Nitrate (mg/L)	2022/10/03	<MDL 0.1	10.0	No	No
Sodium: Na (mg/L)	2022/01/04	7.14	20*	No	No

**\*There is no "MAC" for Sodium. The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified when the sodium concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on sodium restricted diets.**

### 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
Plumbing	Please See Individual Annual Reports for Distribution System Information: Leamington (220004992), Kingsville (220003403), Essex (220003680), and Lakeshore (260004995).		
Distribution	Please See Individual Annual Reports for Distribution System Information: Leamington (220004992), Kingsville (220003403), Essex (220003680), and Lakeshore (260004995).		

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

TREATED WATER	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	½ MAC
Alachlor (ug/L)	2022/01/04	<MDL 0.02	5.0	No	No
Atrazine + N-dealkylated metabolites (ug/L)	2022/01/04	<MDL 0.01	5.0	No	No
Azinphos-methyl (ug/L)	2022/01/04	<MDL 0.05	20.0	No	No
Benzene (ug/L)	2022/01/04	<MDL 0.32	1.0	No	No
Benzo(a)pyrene (ug/L)	2022/01/04	<MDL 0.004	0.01	No	No
Bromoxynil (ug/L)	2022/01/04	<MDL 0.33	5.0	No	No
Carbaryl (ug/L)	2022/01/04	<MDL 0.05	90.0	No	No
Carbofuran (ug/L)	2022/01/04	<MDL 0.01	90.0	No	No
Carbon Tetrachloride (ug/L)	2022/01/04	<MDL 0.17	2.0	No	No
Chlorpyrifos (ug/L)	2022/01/04	<MDL 0.02	90.0	No	No
Diazinon (ug/L)	2022/01/04	<MDL 0.02	20.0	No	No
Dicamba (ug/L)	2022/01/04	<MDL 0.2	120.0	No	No



1,2-Dichlorobenzene (ug/L)	2022/01/04	<MDL 0.41	200.0	No	No
1,4-Dichlorobenzene (ug/L)	2022/01/04	<MDL 0.36	5.0	No	No
1,2-Dichloroethane (ug/L)	2022/01/04	<MDL 0.35	5.0	No	No
1,1-Dichloroethylene (ug/L)	2022/01/04	<MDL 0.33	14.0	No	No
Dichloromethane (Methylene Chloride) (ug/L)	2022/01/04	<MDL 0.35	50.0	No	No
2,4-Dichlorophenol (ug/L)	2022/01/04	<MDL 0.15	900.0	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L)	2022/01/04	<MDL 0.19	100.0	No	No
Diclofop-methyl (ug/L)	2022/01/04	<MDL 0.4	9.0	No	No
Dimethoate (ug/L)	2022/01/04	<MDL 0.06	20.0	No	No
Diquat (ug/L)	2022/01/04	<MDL 1.0	70.0	No	No
Diuron (ug/L)	2022/01/04	<MDL 0.03	150.0	No	No
Glyphosate (ug/L)	2022/01/04	<MDL 1.0	280.0	No	No
Malathion (ug/L)	2022/01/04	<MDL 0.02	190.0	No	No
Metolachlor (ug/L)	2022/01/04	<MDL 0.01	50.0	No	No
Metribuzin (ug/L)	2022/01/04	<MDL 0.02	80.0	No	No
Monochlorobenzene (Chlorobenzene) (ug/L)	2022/01/04	<MDL 0.3	80.0	No	No
Paraquat (ug/L)	2022/01/04	<MDL 1.0	10.0	No	No
PCB (ug/L)	2022/01/04	<MDL 0.04	3.0	No	No
Pentachlorophenol (ug/L)	2022/01/04	<MDL 0.15	60.0	No	No
Phorate (ug/L)	2022/01/04	<MDL 0.01	2.0	No	No
Picloram (ug/L)	2022/01/04	<MDL 1.0	190.0	No	No
Prometryne (ug/L)	2022/01/04	<MDL 0.03	1.0	No	No
Simazine (ug/L)	2022/01/04	<MDL 0.01	10.0	No	No
Terbufos (ug/L)	2022/01/04	<MDL 0.01	1.0	No	No
Tetrachloroethylene (ug/L)	2022/01/04	<MDL 0.35	10.0	No	No
2,3,4,6-Tetrachlorophenol (ug/L)	2022/01/04	<MDL 0.2	100.0	No	No
Triallate (ug/L)	2022/01/04	<MDL 0.01	230.0	No	No
Trichloroethylene (ug/L)	2022/01/04	<MDL 0.44	5.0	No	No
2,4,6-Trichlorophenol (ug/L)	2022/01/04	<MDL 0.25	5.0	No	No
Trifluralin (ug/L)	2022/01/04	<MDL 0.02	45.0	No	No
Vinyl Chloride (ug/L)	2022/01/04	<MDL 0.17	1.0	No	No
THM (ug/L)	Running Annual Average	11.05	100	No	No
HAA (ug/L)	Running Annual Average	<MDL 5.3	80	No	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
None			