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March 1<sup>st</sup>, 2023

Dear Water Consumer,

The Water Division is pleased to provide the 2022 Annual Summary Report for the City of Stratford Drinking Water System.

The attached report is in accordance with Schedule 22 of O. Reg 170/03, under the Safe Drinking Water Act.

As identified under Section 12 of O. Reg. 170/03, it is required that the Annual Report as per Section 11 of O. Reg. 170/03 and the Summary Report be made available for inspection by any member of the public during normal business hours, without charge. This report can be viewed at Infrastructure and Developmental Services, City Annex, 82 Erie Street, 3<sup>rd</sup> Floor, Stratford.

The report can also be found on the City of Stratford website at:  
<https://www.stratford.ca/en/live-here/waterannualreports.aspx>

This report will also be provided to members of council by March 31, 2023.

For any questions or additional information regarding the report, please contact me at (519) 271-0250 ext. 222.

Yours truly,

A handwritten signature in blue ink, appearing to read "J. Bowes". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Johnny Bowes  
Manager of Environmental Services



**2022**

# Annual Summary Report

City of Stratford Drinking Water System

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## **Quality Management System Policy**

The City of Stratford as the owner and operator of the treatment and distribution drinking water system is committed to developing a high level of trust, commitment, and accountability by consistently delivering high quality and safe drinking water to the consumers.

The City of Stratford, Water Division is committed to:

- Providing safe and reliable drinking water services to our consumers, by managing potential risks, promoting resource stewardship and source water protection,
- Complying with applicable legislation, regulations, guidelines, and standards as related to the provision of safe drinking water.
- Maintaining and continually improving the effectiveness of the Quality Management System; and
- Establish and maintain a Quality Management System that is consistent with the Quality Management System Policy.

## **The City of Stratford Quality Management System Summary**

The City of Stratford Quality Management System (QMS) is legislated under the Drinking Water Quality Management Standard (DWQMS) through the Safe Drinking Water Act. To maintain operating authority accreditation, the Ministry of the Environment, Conservation and Parks (MECP) mandate tasks that must be completed annually. These activities include:

- Conducting an internal audit of the Quality Management System.
- Conducting a Management Review meeting.
- Participating in an external audit conducting by a third-party Accreditation Body
- Updating the Quality Management System Operational Plan.
- Updating Council of the status of the Quality Management System.

The QMS Operational Plan was reviewed and updated in 2022 with focus on implementing significant updates to the City's existing Operational Plan, reflecting sector best practices for the City's improved conformity to the latest version of the MECP's Drinking Water Quality Management Standard.

Internal audits were completed with support from Water operational staff and Acclaims Environmental. No non-conformities were identified as a result of the internal audit. The audit report did note six areas for opportunities for improvement which all have been addressed with the Operational Plan 2022 revisions.

The City of Stratford must receive accreditation annually to operate the drinking water system. Through a qualified third-party auditor, the City must demonstrate that its QMS meets the requirements of the DWQMS (Drinking Water Quality Management Standard). SAI Global conducted an external audit on March 29<sup>th</sup>, 2022, by Janet McKenzie for the System Audit and April 28<sup>th</sup>, 2022, by Janet McKenzie for the Re-Accreditation Audit. There were no non-conformances and two OFI's identified.

Staff are required to conduct an annual Management Review meeting to evaluate the effectiveness of the QMS. Deficiencies and opportunities for improvement are identified and action items are developed to ensure follow-up. The City of Stratford held their management review meeting on December 12<sup>th</sup>, 2022. All requirements were achieved in 2022.

## **1.0 System Overview**

This annual summary for the City of Stratford Drinking Water System was published in accordance with Schedule 22 of Ontario's Drinking Water Systems Regulation for the reporting period of January 1, 2022 to December 31, 2022. The City of Stratford Drinking Water System (waterworks number 220000530) is categorized as a Large Municipal Residential Drinking Water System.

This report was prepared by the City of Stratford on behalf of the Corporation of the City of Stratford and must be supplied to the municipal council by March 31, 2022.

## **2.0 Compliance with Regulations**

The City of Stratford Drinking Water System is operated and maintained to ensure that safe drinking water supplied to the consumers and serviced by the system satisfy requirements within the Safe Drinking Water Act, the regulations, the Municipal Drinking Water License (074-101) and Drinking Water Works Permit (074-201).

The Ministry of the Environment, Conservation and Parks (MECP) conducted the routine annual inspection on June 8th, 2022. The inspecting officer, Neville Rising, found no non-compliances with the regulatory requirements.

There was one Adverse Drinking Water Quality Incident (AWQI) reported during this reporting period. This occurred with a distribution sample taken on June 13, 2022 at 103 Bruce St. A Total Coliform was identified during sampling with a result of 1 cfu/100mL. This was reported to SACC and the MECP as required. Resamples were taken at the source and the upstream and downstream hydrants on June 15th, 2022. All resamples passed.

Water quality exceedances for Fluoride and Sodium were observed in samples taken in 2018. The Fluoride and Sodium levels continue to be an issue in the system due to them occurring naturally. Annual notification is provided to property owners on their water bill as well as notification on the Huron Perth Public Health website of the Fluoride levels.

Fluoride & Sodium exceedances are reportable every 57 months. Next reportable exceedances will be in 2023.

- Next reporting requirement for Fluoride, for all treated entry locations, is June 12, 2023.
- Next reporting requirement for Sodium, for all treated entry locations, is March 12, 2023.

### **3.0 Corrective Actions**

The routine MECP Inspections have an Inspection Rating Record, which evaluates the system to provide information for the owner/operator on areas that need to be improved. The particular areas that were evaluated for the City of Stratford Drinking Water System were: Treatment Process, Operations Manuals, Water Quality Monitoring, Reporting and Corrective Actions and Other Inspection Findings. This system received 0 out of 493 non-compliance ratings and as such received 100% for the Final Inspection Rating.

### **4.0 Summary of Quantity of Water Supplied**

#### **Production Wells and Treated Flows**

Within the City of Stratford Drinking Water System is a total of 11 confined artesian wells. Of the 11 wells in the system, five are considered remote facilities that are located throughout the city. The distribution system has over 180 kilometers of cast iron, ductile, steel and PVC water main, varying in size from 100mm to 400mm. Additionally, The City of Stratford's water system is 100% metered, with more than 12,537 service connections.

There are also two water towers within the distribution system in order to provide both storage and pressure stability. The City's topography is moderately level which allows for a single pressure zone throughout the distribution system.

Attached as Appendix A summarizes the flow rates for 2022, including; Municipal Drinking Water License Schedule C rated capacity, total and average daily flows, and raw water peak flows.

#### **Monitoring Wells**

As per section 4.2 (4) of the Permit to Take Water, all data collected under the monitoring well program shall be analyzed, interpreted, and summarized in an annual report by a qualified person. The 2022 final report was prepared by Lotowater Technical Services Inc. on March 1, 2023. Reports can be viewed at 82 Erie Street, 3<sup>rd</sup> Floor Engineering.

General comments include:

- There have been no reported negative impacts or interference effects from the city well pumping over the last 15+ years.
- There has been an increase of 1.4% in water use from 2021 to 2022.
- Average levels in all five monitoring wells have followed a slightly decreasing trend since 2009.

- Despite the monitoring level decrease, levels are still within ranges they have been in the past.
- Water levels at the Dunn Road pumping well have increased by over 4 m while levels at O’Loane have decreased by over 3 m. These changes are significant compared to historical data and are not explained by changes in pumping volumes.
- Since the 2007 report, a new multilevel monitoring well was constructed in 2008 in the west end of the city (Lorne Ave Monitoring Well).
- There have been no significant modifications to any of the 11 existing production wells since 2007; beyond regular maintenance and repairs.
- Current water taking is not having any negative effects on other wells or the environment.

#### Recommendations:

- A more comprehensive monitoring report of the water system be performed like was last performed in 2007. There have been some significant changes in water levels in two of the production wells, and a decreasing trend in the monitoring wells, that warrants more thorough review than what is performed in the simplified annual data summary review reports.
- As part of the 2023 hydrogeologic evaluation re assess manual and automated data collection frequencies and methods. New technologies are available that can efficiently record well levels such that the frequency of manual measurements could be decreased.
- As part of the 2023 hydrogeologic evaluation consider automating some of the data management and simplifying the reporting to streamline the annual report process.



## Appendix "A" – Flow Data

### Chestnut Street Well and Pumphouse

Month	<b>Raw Peak Flow Rate</b> (Max = 2500 L/min)	<b>Treated Water</b> (MDWL Limit = 3600 m <sup>3</sup> /day)	<b>Monthly Average</b> (m <sup>3</sup> /day)
January	1654	2237	1216
February	1708	2086	1093
March	1618	1667	1323
April	1647	1695	549
May	1657	973	222
June	0	0	0
July	0	0	0
August	1760	1120	605
September	1635	1729	1045
October	1634	1336	383
November	0	0	0
December	0	0	0
<b>Average</b>	-	-	<b>536</b>
<b>Maximum</b>	<b>1760</b>	<b>2237</b>	-

### Morningson Street Well and Pumphouse

Month	<b>Raw Peak Flow Rate</b> (Max = 3410 L/min)	<b>Treated Water</b> (MDWL Limit = 4910 m <sup>3</sup> /day)	<b>Monthly Average</b> (m <sup>3</sup> /day)
January	2172	754	375
February	2144	902	93
March	7480	551	259
April	2291	664	336
May	2279	555	390
June	2288	871	473
July	2271	1419	610
August	2237	1041	530
September	2237	1607	328
October	2286	1942	557
November	2255	748	347
December	2254	877	446
<b>Average</b>	-	-	<b>395</b>
<b>Maximum</b>	<b>7480</b>	<b>1942</b>	-

\*March 7, 2022 – Flushing to waste, exceeded our PTTW L/min due to no back pressure during flushing.

## Appendix "A" – Flow Data

### Lorne Avenue Well and Pumphouse

Month	<b>Raw Peak Flow Rate</b> (Max = 1370 L/min)	<b>Treated Water</b> (MDWL Limit = 1973 m <sup>3</sup> /day)	<b>Monthly Average</b> (m <sup>3</sup> /day)
January	1122	333	159
February	1103	1018	158
March	1103	688	133
April	1106	905	511
May	1238	891	563
June	1104	1443	786
July	1088	1415	937
August	1088	902	293
September	1119	263	61
October	1090	948	486
November	1091	885	638
December	2062	799	630
<b>Average</b>	-	-	<b>446</b>
<b>Maximum</b>	<b>2062</b>	<b>1443</b>	-

\*December 5, 2022 – Flushing to Waste, extended our PTTW L/min due to no back pressure during flushing.

### Dunn Road Well and Pumphouse

Month	<b>Raw Peak Flow Rate</b> (Max = 5000 L/min)	<b>Treated Water</b> (MDWL Limit = 7200 m <sup>3</sup> /day)	<b>Monthly Average</b> (m <sup>3</sup> /day)
January	2556	2767	1542
February	2791	2782	1616
March	2544	2451	1553
April	2597	2649	1531
May	2605	2084	1360
June	2552	2768	1754
July	9161	2662	1794
August	2390	2602	1437
September	2912	2551	1439
October	2442	1354	1060
November	2407	1430	1150
December	2432	1311	1077
<b>Average</b>	-	-	<b>1443</b>
<b>Maximum</b>	<b>9161</b>	<b>2782</b>	-

\*July 6, 2022 – Flushing to waste, extended our PTTW L/min due to no back pressure during flushing.

## Appendix "A" – Flow Data

### O'Loane Avenue Well and Pumphouse

Month	<b>Raw Peak Flow Rate</b> (Max = 3406 L/min)	<b>Treated Water</b> (MDWL Limit = 4905 m <sup>3</sup> /day)	<b>Monthly Average</b> (m <sup>3</sup> /day)
January	3020	2438	1825
February	2994	2843	2368
March	2998	2732	2160
April	3007	2342	1922
May	3004	2790	1994
June	2992	4133	2158
July	2965	3667	2338
August	2957	2410	1932
September	2957	4068	1918
October	2963	2274	1742
November	2964	2586	1783
December	2973	2083	1678
<b>Average</b>	-	-	<b>1985</b>
<b>Maximum</b>	<b>3020</b>	<b>4133</b>	-

### Romeo Street Pumping Station

Month	<b>Raw Peak Flow Rate</b> (see individual flow rates FW 1, 2, 3, 4, 6, 7)	<b>Treated Water</b> (MDWL Limit = 17012 m <sup>3</sup> /day)	<b>Monthly Average</b> (m <sup>3</sup> /day)
January	-	6090	5489
February	-	6660	6028
March	-	6370	5716
April	-	6450	5798
May	-	6390	5754
June	-	6910	6181
July	-	7480	6354
August	-	6450	5995
September	-	6440	5538
October	-	5830	5386
November	-	6110	5414
December	-	5660	5343
<b>Average</b>	-	-	<b>5750</b>
<b>Maximum</b>	-	<b>7480</b>	-

## Appendix "A" – Flow Data

### **Romeo Street Pumping Station Raw Peak Flows**

Field Wells 1, 2, 3, 4, 6, 7 (PTTW allowable water taking is per individual field well)

Month	<b>FW1</b> (L/min)	<b>FW2</b> (L/min)	<b>FW3</b> (L/min)	<b>FW4</b> (L/min)	<b>FW6</b> (L/min)	<b>FW7</b> (L/min)
January	1104	1070	735	1063	2891	2354
February	1101	1073	683	1068	2640	2291
March	1103	1085	571	1030	2654	2316
April	1105	1089	596	1030	2653	2330
May	1098	1085	634	1046	2644	2328
June	1101	1086	574	1040	2924	2374
July	1079	1073	601	1035	2808	3501
August	1080	1074	586	1032	2792	3313
September	1091	1106	559	1045	2914	2536
October	1085	1081	545	1050	2841	2540
November	1087	1084	1060	1057	2854	2537
December	1093	1088	1021	1047	2824	2550
<b>Average</b>	-	-	-	-	-	-
<b>Maximum</b>	1105	1106	1060	1068	2914	3501
<b>Max Limit</b>	<b>1136</b>	<b>1136</b>	<b>1136</b>	<b>1136</b>	<b>3858</b>	<b>3410</b>

\*July 15, 2022 – FW 7 pump failure, exceeded our PTTW L/min. According to our data the exceedance lasted less than a minute.