



2022

**Annual
Summary
Report**

**The Corporation of the
Township of
Alnwick/Haldimand
Grafton Drinking Water System**

Prepared by: Lakefront Utility Services Inc. (2023)



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1. PURPOSE

The purpose of the Annual Summary Report is to provide information to residents and stakeholders of the Township of Alnwick/Haldimand. Furthermore, satisfying the regulatory requirements of the *Safe Drinking Water Act, 2002* including the Drinking Water Quality Management Standard (DWQMS) reports to the Owner, and regulatory reporting required under *Ontario Regulation 170/03*. This Annual Summary Report fulfills all requirements of *Ontario Regulation 170/03* Section 11 Annual Reports and Schedule 22 Summary Reports for Municipalities.

The Annual Summary Report is prepared by Lakefront Utility Services Inc. (Operating Authority) on behalf of the Township of Alnwick/Haldimand (Owner).

Scope

This Annual Summary Report includes information pertaining to the Village of Grafton's Drinking Water System (Grafton DWS) for the period of January 1, 2022 to December 31, 2022. *Ontario Regulation 170/03* requires reported information be provided to:

- **Drinking Water System Owners (Mayor and Council)**
- **Owner and Operating Authority Top Management**
- **The Public**

Availability

The Grafton DWS is a large municipal residential system that serves approximately 374 metered customers. Copies of this Annual Summary Report are available online at <https://www.lakefrontutilities.com/regulatory-water/>. Hard copies are also available at the LUSI's office at 207 Division St, Cobourg ON, K9A 4L3.

Customers of the Grafton DWS are notified that the annual water quality report is available via "What's New" <https://www.lakefrontutilities.com/whats-new/>, social media posts, and "Stay Connected" LUSI bill insert.

Council Resolution

Ontario Regulation 170/03 requires Annual Summary Reports to be distributed to the municipal council no later than March 31 of each year. The Township of Alnwick/Haldimand must provide LUSI with a copy of the Council Resolution indicating the report has been accepted.

2. GRAFTON DRINKING WATER SYSTEM OVERVIEW

The Grafton Water Treatment Plant (WTP) takes water from two wells, Well #1 and Well #2. Well #1 is the standby well; operation is limited to sampling and emergencies only, as it is influenced by a natural source of ammonia. Well #2 is the duty well and has a rated capacity of 12.5L/s.

Sodium hypochlorite is injected for primary and secondary disinfection purposes. The WTP has two underground clear wells, and two high lift pumping wells, where water achieves the appropriate contact time. *Sodium silicate* is added as an iron sequestering agent.

Treated water is conveyed to the distribution system, and to a bulk water truck fill system installed on the exterior of the WTP.

The distribution system is split into four pressure zones that are regulated by four pressure reducing valves that maintain the pressure between 40 and 90 PSI. As of December 31, 2021, there are 374 metered customers. Water is conveyed to customers by approximately 13km of watermain ranging from 150mm to 300mm, made of PVC. There are 130 fire hydrants located within the system.

3. 2022 COMPLIANCE

3.1 MECP INSPECTION

The MECP began an inspection of the Grafton DWS on September 1, 2022. A final inspection rating of 96.26% was achieved. There were two (2) non-compliances with regulatory requirements, and four (4) identified recommendations or issues related to best practices.

3.1.1. Non-compliance

- Records provided regarding distribution system repairs made on June 9, 2022, in the area of 133 Canning Factory Road failed to confirm that disinfection was completed in accordance with Drinking Water Works Permit (DWWP) #238-201, Section 2.0, and the Ministry's-2020 Watermain Disinfection Procedure (WDP). Written confirmation was provided to the Provincial Officer on how, for future distribution work, the requirements in Section 2.0 of the DWWP and of the WDP will be completed and documented.
- Logbooks were not properly maintained and/or did not contain the required information. Records provided indicate that a few distribution &/or appurtenance repairs occurred over the inspection period, specifically on January 12, June 2 and 9 of 2022. The log records provided for the January 12 & June 2, maintenance activities presented poorly from a legibility perspective. In addition, the records failed to identify the author, and if they were OIC or ORO for the tasks. A revised logsheet was provided to the Provincial Officer that captures the requirements listed.

3.1.2. Best Management Practices

- There was no backflow prevention program, policy and/or bylaw in place. It is recommended that the Operating Authority/Owner consider drafting a policy to be included in the O/M Manual to address the inspection and testing of backflow preventers at the wellhouse, as well as those (as applicable) within the distribution system.
- There was no by-law or policy in place limiting access to hydrants.

- The owner and/or operating authority did not undertake efforts to promote water conservation and/or reduce water losses in their system. No formal Bylaw or Policy was provided that directly speaks to water conservation. That said, the Municipality has implemented By-Law #38-2021, being a by-law to establish water rates for 2021-2026 upon the users of the water system to recover the operating and capital costs required to operate, repair and maintain the water system in the township of Alnwick/Haldimand by Lakefront Utility Services Inc. It is understood that consumer misuse of the water supply comes at a cost to the owner of the residences in accordance with the above noted by-law, which in itself encourages water conservation and mitigates to some degree water misuse. No further actions required.
- It is recommended that the O/A consider the merits of creating & utilizing a monthly anomalous data sheet to capture & document details where SCADA or compliance data is considered erroneous due to contributing factors such as calibrations, power-blips, maintenance or the operation of the gen-set for example.

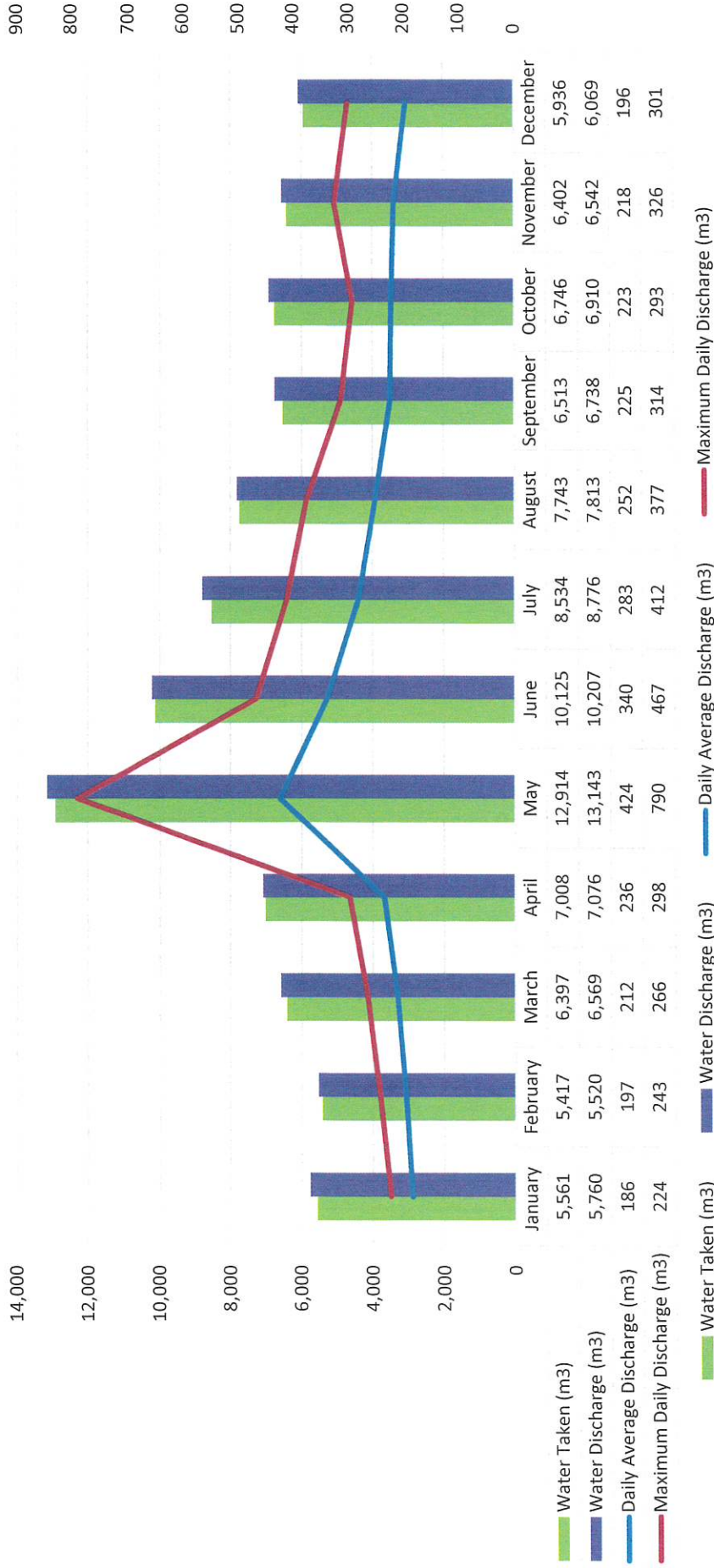
3.2 LICENSE & PERMIT COMPLIANCE

The Grafton DWS maintained compliance with all applicable legislation, and all terms and conditions of the Municipal Drinking Water License (238-101, Issue 4, February 25, 2022), Drinking Water Works Permit (238-201, Issue 3, February 25, 2022), and Permit to Take Water (Permit No. 3872-C8LQQF, December 16, 2021) in 2022.

The Grafton DWS Permit to Take Water allows the taking of 1,253 m³ of water from each well per day at a rate of 870L/min. The average flow rate from production well #2 was 138L/min.

The total quantity of water taken and discharged from the WTP is illustrated in Figure 1, Table 1 and Table 2. In 2022 there were no instances where the maximum volume of the Permit to Take Water was exceeded. In May 2022, the WTP operated at 64% of its maximum rated capacity, as shown in Figure 2. The labels presented in Figure 2 are representative of the maximum flow observed for the respective month (m³).

Figure 1 - Flow Quantities Grafton Drinking Water System



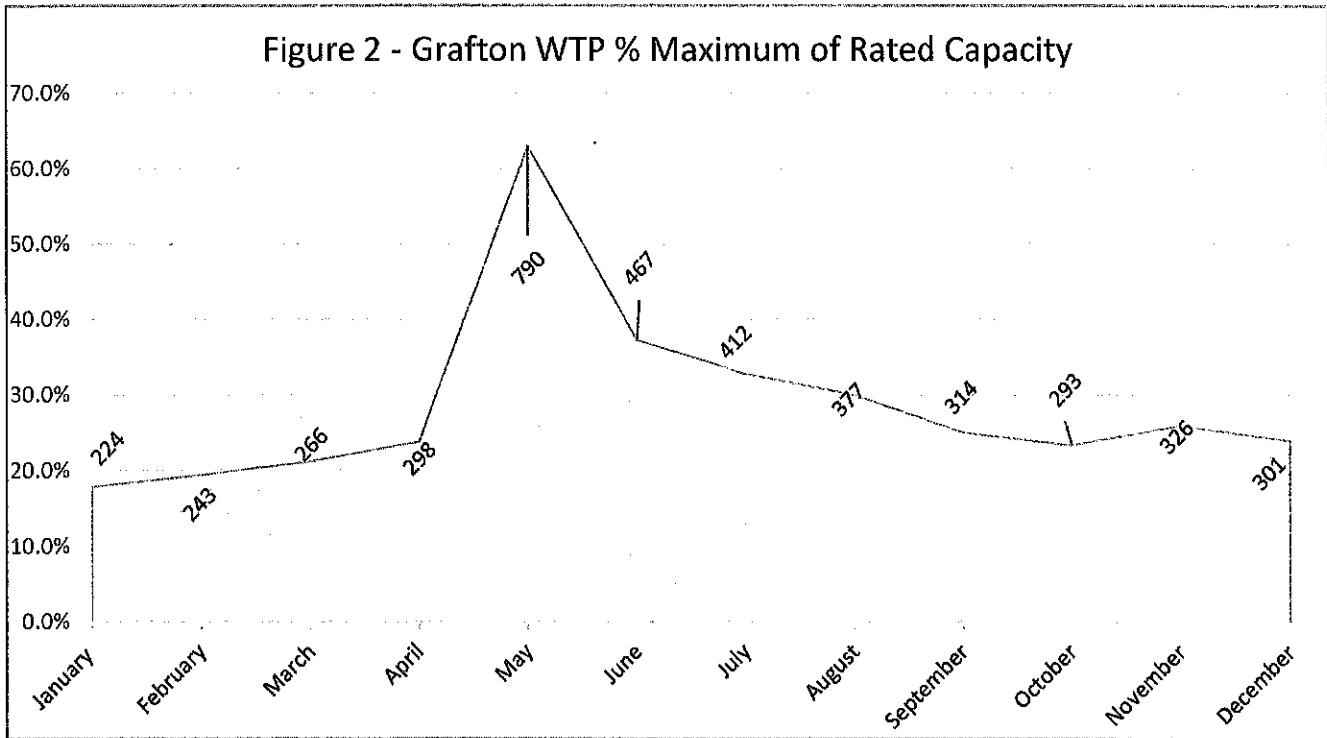


Table 1 - Raw Water Flows (m3)

Month	Monthly Total	Monthly Total Well 1	Monthly Total Well 2	Daily Average Well 2	Minimum - Well 2	Maximum - Well 2	% Max PTTW (1253m ³)
January	5,561.4	23.5	5,537.9	178.6	78.7	246.2	19.6%
February	5,417.2	15.8	5,401.4	192.9	103.8	267.5	21.4%
March	6,397.4	14.9	6,382.6	205.9	185.3	266.4	21.3%
April	7,008.2	15.0	6,993.2	233.1	0.0	412.4	32.9%
May	12,913.8	19.8	12,894.0	415.9	206.0	807.0	64.4%
June	10,141.7	16.7	10,125.0	337.5	126.0	577.0	46.0%
July	8,533.6	16.7	8,533.6	275.3	103.6	510.3	40.7%
August	7,743.5	25.2	7,743.5	249.8	120.1	481.6	38.4%
September	6,513.1	15.7	6,513.1	217.1	122.1	366.5	29.3%
October	6,746.4	21.0	6,746.4	217.6	88.9	380.0	30.3%
November	6,401.9	19.0	6,401.9	217.6	88.9	380.0	30.3%
December	5,936.0	19.0	5,936.0	191.5	102.6	301.3	24.0%
Total	89,314.3	222.4	89,208.6	-	-	-	-
Average	7,442.9	18.5	7,434.0	244	111	416	33%

Table 2 - Treated Water Flows (m3)

Month	Monthly Total	Daily Average	Daily Maximum	Daily Minimum
January	5,759.9	185.8	224.4	158.8
February	5,519.9	197.1	243.3	162.4
March	6,568.8	211.9	266.1	188.6
April	7,076.0	235.9	298.4	207.8
May	13,143.4	424.0	790.3	227.9
June	10,207.2	340.2	467.3	201.8
July	8,776.5	283.1	412.0	174.7
August	7,813.0	252.0	376.6	162.5
September	6,738.2	224.6	314.3	180.5
October	6,909.6	222.9	292.9	177.4
November	6,542.5	218.1	325.9	180.7
December	6,068.8	195.8	301.3	162.3
Total	89,314.3	283.1	89208.6	-
Average	7,442.9	18.5	7,434.0	244

4. ADVERSE WATER QUALITY INCIDENT(S)

There were no incidents of adverse water quality in 2022.

5. CONTINUAL IMPROVEMENT

LUSI's commitment to continual improvement requires investigating and investing in, where appropriate, methods and technologies to improve:

- The quality of processes used to ensure production of ample clean water, and
- The quality and effectiveness of the distribution system.

During the 2022 reporting year, LUSI demonstrated this commitment by completing all the activities listed in Table 3. Table 3 also satisfies O. Reg 170/03 requirement to describe major expenses that occurred during the reporting period.

Table 3 - 2022 Major Expenses Incurred at the Grafton WTP, Distribution System and Misc. Activities

Grafton Water Treatment Plant	Electromagnetic Flow Meter	\$4,000.00
	Chlorine Analyzer	\$7,000.00
	Raw Water Header Replacement Engineering CIMA+ Report	\$13,000.00
	Raw Water Header Replacement CIMA+ Design & Tendering	\$18,000.00
	Raw Water Header Replacement, Lakeland Multitrade Inc.	\$44,000.00

6. SAMPLING AND ANALYSIS

The Grafton DWS exhibited compliance with all sampling and testing as required by *Ontario Regulation 170/03* in the 2022 calendar year. Table 4 illustrates all microbiological testing done under Schedule 10 of *Ontario Regulation 170/03*. There were no instances of adverse water quality indicators due to exceeding a parameter maximum allowable concentration

	E. Coli, (cfu/100mL)		Total Coliform, (cfu/100mL)	HPC, (cfu/1mL)	
	# of Samples	Range of Results (min # - max #)	Range of Results (min # - max #)	# of Samples	Range of Results (min # - max #)
Raw Well 1	52	0 – 0	0 – 0	N/A	N/A
Raw Well 2	52	0 – 0	0 – 0	N/A	N/A
Treated	52	0 – 0	0 – 0	52	0 – 4
Distribution	156	0 – 0	0 – 0	104	0 – 8

Operational testing completed under Schedule 7 of Ontario Regulation 170/03 during the 2021 reporting period are tabulated in Table 5.

	Number of Grab Samples	Range of Results (min # - max #)
Turbidity Well 1 (Raw)	12	0.12 – 0.70 (NTU)
Turbidity Well 2 (Raw)	12	0.06 – 0.29 (NTU)
Turbidity (Treated)	12	0.10 – 0.52 (NTU)
Chlorine (mg/L)	8760 (continuous monitoring)	0.51 – 2.40

Summary of additional testing and sampling:

Location	Date Sampled	Parameter	Result	Unit of Measure
No additional testing or sampling was completed				

In addition to the microbiological sampling and testing requirements, sampling and testing is required for chemical, inorganic and organic parameters. Table 7 illustrates Schedule 13, Schedule 23, and Schedule 24 requirements. If there were multiple samples taken during the reporting period, the most recent sample result is provided. A parameter below the method detection limit indicated by (<), cannot be detected as the concentration is lower than the minimum concentration that can be measured and reported with 99% certainty.

Table 7 – Grafton DWS Schedule 13, 23 and 24 Sampling

PARAMETER	STANDARD (µg/L)	SAMPLE RESULT (µg/L)	SAMPLE DATE	
Fluoride	1.5	0.21	16-Sept-19	
Sodium	20	17		
Nitrite	1	0.003 < MDL	28-Nov-22	
Nitrate	10	0.021		
THM: Annual Average	100	24.5	01-Dec-22	
HAA: Annual Average	80	5.3 < MDL		
Antimony	6	0.09 < MDL	13-Jan-22	
Arsenic	10	0.3		
Barium	1000	146		
Boron	5000	30		
Cadmium	5	0.003 < MDL		
Chromium	50	0.09		
Mercury	1	0.01 < MDL		
Selenium	10	0.04 < MDL		
Uranium	20	0.057		
Benzene	1	0.32 < MDL		13-Jan-22
Carbon tetrachloride	2	0.17 < MDL		
1,2-Dichlorobenzene	200	0.41 < MDL		
1,4-Dichlorobenzene	5	0.36 < MDL		
1,1-Dichloroethylene (vinylidene chloride)	14	0.33 < MDL		
1,2-Dichloroethane	5	0.35 < MDL		
Dichloromethane	50	0.35 < MDL		
Monochlorobenzene	80	0.3 < MDL		
Tetrachloroethylene (perchloroethylene)	10	0.35 < MDL		
Trichloroethylene	5	0.44 < MDL		
Vinyl Chloride	1	0.17 < MDL		
Diquat	70	1 < MDL		
Paraquat	10	1 < MDL		
Glyphosate	280	1 < MDL		
Polychlorinated Biphenyls (PCBs) - Total	3	0.04 < MDL		
Benzo(a)pyrene	0.01	0.004 < MDL		
Alachlor	5	0.02 < MDL		
Atrazine + N-dealkylated metabolites	5	0.02 < MDL		
Atrazine	-	0.01 < MDL		
Desethyl atrazine	-	0.01 < MDL		
Azinphos-methyl	20	0.05 < MDL		
Carbaryl	90	0.05 < MDL		
Carbofuran	90	0.01 < MDL		
Chlorpyrifos	90	0.02 < MDL		
Diazinon	20	0.02 < MDL		
Dimethoate	20	0.06 < MDL		
Diuron	150	0.03 < MDL		

PARAMETER	STANDARD (µg/L)	SAMPLE RESULT (µg/L)	SAMPLE DATE
Malathion	190	0.02 <MDL	13-Jan-22
Metolachlor	50	0.01 <MDL	
Metribuzin	80	0.02 <MDL	
Phorate	2	0.01 <MDL	
Prometryne	1	0.03 <MDL	
Simazine	10	0.01 <MDL	
Terbufos	1	0.01 <MDL	
Triallate	230	0.01 <MDL	
Trifluralin	45	0.02 <MDL	
2,4-dichlorophenoxyacetic acid (24-D)	100	0.19 <MDL	
Bromoxynil	5	0.33 <MDL	
Dicamba	120	0.20 <MDL	
Diclofop-methyl	9	0.40 <MDL	
MCPA	0.1	0.00012 <MDL	
Picloram	190	1 <MDL	
2,4-dichlorophenol	900	0.15 <MDL	
2,4,6-trichlorophenol	5	0.25 <MDL	
6-tetrachlorophenol	100	0.20 <MDL	
Pentachlorophenol	60	0.15 <MDL	

Summary of lead testing under Schedule 15.1 during this reporting period

Location Type	Number of Samples	Range of Lead Results (min#) – (max #)	Unit of Measure	Number of Exceedances
Plumbing	Not required, plumbing exemption and only pH and Alkalinity required in distribution samples			
Distribution	4	NA – pH (7.54-7.76), Alkalinity (192-194 mg/L)		



The Corporation of the Township of Alnwick/Haldimand

Resolution of Council

March 21st, 2023

Resolution No. R-114-2023


Moved by Deputy Mayor Joan Stover

Seconded by Councillor Mary Catherine O'Neill

"Be it resolved that the Council of the Township of Alnwick/Haldimand accept the 2022 Annual Summary Report as presented; and

Further that the 2022 Annual Summary Report - Grafton Drinking Water System from Lakefront Utility Services Inc., be received and placed on the Township's website.

CARRIED."

 3/21/23

Mayor, John Logel