Ontario Clean Water Agency
Agence Ontarienne Des Eaux

901 Main Street
P.O. Box 728
Geraldton, Ontario. P0T 1M0
Fax: 807 854-0483

February 2023

Mayor James McPherson and Council
The Corporation of the Municipality of Greenstone
P.O. Box 70
GERALDTON, Ontario
P0T 1M0

Re: O. Regulation 170 - 2022 Section 11 Annual Reports for the:

- **Beardmore Drinking-Water System**
- **Caramat Drinking-Water System**
- **Geraldton Drinking-Water System**
- **Longlac Drinking-Water System**
- **Nakina Drinking-Water System**

Ontario's Drinking-Water Systems Regulation (O.Reg. 170/03), made under the Safe Drinking Water Act, 2002, requires that the owner of a drinking water system prepare an annual report on the operation of the system and the quality of its water.

The annual report must cover the period of January 1st to December 31st in a year and *must be prepared not later than February 28th* of the following year. Pursuant to the legislative requirements, enclosed for your records are the *2022 Annual Reports* for the Municipality of Greenstone's Drinking-Water Systems.

Pursuant to the legislative requirements, Section 11 (6): the annual report must:

(a) Contain a brief description of the drinking-water system, including a list of water treatment chemicals used by the system during the period covered by the report;

(b) Summarize any reports made to the Ministry under subsection 18 (1) of the Act or section 16-4 of Schedule 16 during the period covered by the report;

(c) Summarize the results of tests required under this Regulation, or an approval or order, including an OWRA order, during the period covered by the report and, if tests required under this Regulation in respect of a parameter were not required during that period, summarize the most recent results of tests of that parameter;

(d) Describe any corrective actions taken under Schedule 17 or 18 during the period covered by the report;

(e) Describe any major expenses incurred during the period covered by the report to install, repair or replace required equipment; and

(f) In the case of a large municipal residential system or a small municipal residential system, include a statement of where a report prepared under Schedule 22 will be available for inspection under subsection 12 (4). O. Reg. 170/03, s. 11 (6)

In addition, Section 11 (7) gives the direction that a copy of an annual report for the system is given, without charge, to every person who requests a copy and be made available for inspection by any member of the public during normal business hours. The reports should be made available at the office of the municipality, or at a location that is accessible to the users of the water system.

Yours truly,

Patrick Albert

Patrick Albert
General Manager
Northwestern Ontario
Regional Hub 807-853-0650

Copy to: Mark Wright - CAO
Brian Aaltonen – Director of Public Services
Operations Staff – Beardmore WTP
Operations Staff – Caramat WTP
Operations Staff – Geraldton WTP
Operations Staff – Longlac WTP
Operations Staff – Nakina Well Supply

2022 Section 11 Annual Report

Beardmore Drinking Water System

February 2023

Prepared by the

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Section 11 ANNUAL REPORT

Drinking-Water System Number:	**210001264**
Drinking-Water System Name:	Beardmore Water Treatment Plant
Drinking-Water System Owner:	The Corporation of the Municipality of Greenstone
Drinking-Water System Category:	**Large Municipal Residential Drinking Water-System**
Period being reported:	January 1 – December 31, 2022

Complete if your Category is Large Municipal Residential or Small Municipal Residential

Does your Drinking-Water System serve more than 10,000 people? Yes [ ] No [X]

Is your annual report available to the public at no charge on a web site on the Internet? Yes [X] No [ ]

Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.

Geraldton Ward Office (Administration)
1800 Main Street
Geraldton, ON P0T 1M0
Beardmore Ward Office
285 Main Street
Beardmore, ON P0T 1G0

Complete for all other Categories.

Number of Designated Facilities served:

N/A

Did you provide a copy of your annual report to all Designated Facilities you serve? Yes [ ] No [ ]

Number of Interested Authorities you report to:

N/A

Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? Yes [ ] No [ ]

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
N/A	

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 (Municipal)
[X] 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 raw water is pumped from the Blackwater River by the low lift pumps into the packaged treatment plant tank, which is a Graver monoplant treatment unit; a type of solids contact clarifier. The flocculation, sedimentation, and filtration processes are all contained within the packaged plant. Aluminum sulfate is added to the raw water as a coagulant after the low lift pumps and prior to the treatment unit. Two polymers are used to assist with flocculation depending on seasonal conditions. These are injected into the raw water immediately before the treatment unit.

The floc settles onto the tube settlers in the clarifier. The water then passes through a two-compartment dual media (sand and anthracite) filter. Once through the filters, the water is chlorinated with sodium hypochlorite. Carus 8500 Ortho-polyphosphate is used for corrosion control and caustic soda is used for pH adjustment. These three chemicals are injected into the piping between the filter and reservoir. The reservoir is located beneath the process floor and is divided into two compartments having a combined capacity of 682 m3.

Two high lift pumps deliver the finished water to the distribution system and a third high lift pump delivers water under fire flow conditions.

A 160-kW-diesel generator provides standby power to the WTP.

List all water treatment chemicals used over this reporting period

- Caustic Soda (Sodium Hydroxide)
- Sodium Hypochlorite
- Nalco-2 (Sodium Aluminate)
- Nalco 8170 polymer
- Aluminum Sulphate
- Carus 8500

Were any significant expenses incurred to?

[X] Install required equipment
[ ] Repair required equipment
[X] Replace required equipment

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

Install	Repair	Replace	Description	Expense
X		X	Electrical Upgrade for Chemical metering pumps (BEA)	41,860.00
X		X	MCC/PLC Replacement Project	150,000.00
X		X	Replaced 3 chemical pumps with like for like units	35,200.00
X		X	Clearwell Gate Valve & Pipe Replacement	22,674.00
		X	Spare High Lift Pump due to new VFD install	4,761.24

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
01/26/2022	Had a low distribution pressure for approximately 3 minutes due to commissioning new fire pump. Upon start up of the fire pump, the service pumps kicked out and took us some time to get them operational again causing a pressure drop to 15 PSI in the distribution system.	15	PSI	Chlorine residuals from around town as per MOH - completed and satisfactory to MOH. No further action required.	01/26/2022
02/01/2022	Missing all Data trending from Feb 1/22 - 16:52 to Feb 2/22 - 05:50. 13 Hrs in total. Unable to retrieve lost data. IT group cloned the Northwest site, which caused a conflict between the two servers that resulted in loss of Communication.			IT group shut down everything on the new server so it no longer conflicts with the Northwest server.	02/02/2022
04/25/2022	Hand-off-auto switch on Carus 8500 feeder did not fully engage in the auto position			Worked the switch to ensure that it is operating in auto position. Electrical	04/25/2022

	causing the feeder not to come on automatically when the process started up.			upgrade is currently being done to the entire plant and switches.	
05/02/2022	Missing data due to communications loss.			Communication data restored.	5/02/2022
06/23/2022	Operational - Broken pipe in clear well pump well.			Temporary system to supply water via a hydrant. Town wide BWA. Repair leak and disinfect. Sample.	06/29/2022

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 Or Fecal Results (min #)-(max #)	Range of Total Coliform Results (min #)-(max #)	Number of HPC Samples	Range of HPC Results (min #)-(max #)
Raw	51	0 – 25	19 – 2420	N/A	N/A
Treated	52	0 – 0	0 – 0	50	0 – 10
Distribution	94	0 – 0	0 – 0	25	0 – 10

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 #)
Turbidity*		
Raw (before filter)	8760	0.0 – 10.01 NTU
Treated	8760	0.0 – 0.437 NTU
Chlorine*		
Treated	8760	0 – 5
Distribution	365	0.56 – 2.73
Fluoride (If the DWS provides fluoridation)	N/A	N/A

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

** Turbidity & chlorine Min/Max (lows/highs) are due to planned maintenance and not plant upset.*

***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	Date Sampled	Result	Unit of Measure
N/A	N/A	N/A	N/A	N/A

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	2022/01/17	< 0.6	µg/L	No
Arsenic	2022/01/17	< 1.0	µg/L	No
Barium	2022/01/17	11.0	µg/L	No
Boron	2022/01/17	< 50.0	µg/L	No
Cadmium	2022/01/17	< 0.1	µg/L	No
Chromium	2022/01/17	< 1.0	µg/L	No
***Lead**	Refer to Summary Table Below			
Mercury	2022/01/17	< 0.1	µg/L	No
Selenium	2022/01/17	< 1.0	µg/L	No
Sodium	2019/07/22	17.3	mg/L	No
Uranium	2022/01/17	< 2.0	µg/L	No
Fluoride	2019/07/22	< 0.02	mg/L	No
Nitrite	2022/01/17	< 0.01	mg/L	No
	2022/04/04	< 0.02	mg/L	No
	2022/07/18	< 0.01	mg/L	No
	2022/10/04	< 0.0036	mg/L	No
Nitrate	2022/01/17	0.12	mg/L	No
	2022/04/04	0.184	mg/L	No
	2022/07/18	0.048	mg/L	No
	2022/10/04	0.036	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 #)	Number of Exceedances
Plumbing	N/A	N/A	N/A
Distribution	N/A	N/A	N/A

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 (ug/L) - TW	2022/01/17	< 0.1	µg/L	No
Atrazine	2022/01/17	< 0.1	µg/L	No
Atrazine & Metabolites	2022/01/17	< 0.2	µg/L	No
Azinphos-methyl (ug/L) - TW	2022/01/17	< 0.1	µg/L	No
Benzene (ug/L) - TW	2022/01/17	< 0.5	µg/L	No

Benzo(a)pyrene (ug/L) - TW	2022/01/17	< 0.005	µg/L	No
Bromoxynil (ug/L) - TW	2022/01/17	< 0.2	µg/L	No
Carbaryl (ug/L) - TW	2022/01/17	< 0.2	µg/L	No
Carbofuran (ug/L) - TW	2022/01/17	< 0.2	µg/L	No
Carbon Tetrachloride (ug/L) - TW	2022/01/17	< 0.2	µg/L	No
Chlorpyrifos (ug/L) - TW	2022/01/17	< 0.1	µg/L	No
Diazinon (ug/L) - TW	2022/01/17	< 0.1	µg/L	No
Dicamba (ug/L) - TW	2022/01/17	< 0.2	µg/L	No
1,2-Dichlorobenzene (ug/L) - TW	2022/01/17	< 0.5	µg/L	No
1,4-Dichlorobenzene (ug/L) - TW	2022/01/17	< 0.5	µg/L	No
1,2-Dichloroethane (ug/L) - TW	2022/01/17	< 0.5	µg/L	No
1,1-Dichloroethylene (ug/L) - TW	2022/01/17	< 0.5	µg/L	No
Dichloromethane (Methylene Chloride) (ug/L) - TW	2022/01/17	< 5.0	µg/L	No
2,4-Dichlorophenol (ug/L) - TW	2022/01/17	< 0.3	µg/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW	2022/01/17	< 0.2	µg/L	No
Diclofop-methyl (ug/L) - TW	2022/01/17	< 0.2	µg/L	No
Dimethoate (ug/L) - TW	2022/01/17	< 0.1	µg/L	No
Diquat (ug/L) - TW	2022/01/17	< 1.0	µg/L	No
Diuron (ug/L) - TW	2022/01/17	< 1.0	µg/L	No
Glyphosate (ug/L) - TW	2022/01/17	< 5.0	µg/L	No
Haloacetic acids (HAA)* (NOTE: show latest annual average)	4-Oct-2022 2022 Average	79.8 82.8	µg/L	No
Malathion (ug/L) - TW	2022/01/17	< 0.1	µg/L	No
Metolachlor (ug/L) - TW	2022/01/17	< 0.1	µg/L	No
Metribuzin (ug/L) - TW	2022/01/17	< 0.1	µg/L	No
Monochlorobenzene (Chlorobenzene) (ug/L) - TW	2022/01/17	< 0.5	µg/L	No
Paraquat (ug/L) - TW	2022/01/17	< 1.0	µg/L	No
PCB (ug/L) - TW	2022/01/17	< 0.035	µg/L	No
Pentachlorophenol (ug/L) - TW	2022/01/17	< 0.5	µg/L	No
Phorate (ug/L) - TW	2022/01/17	< 0.1	µg/L	No
Picloram (ug/L) - TW	2022/01/17	< 0.2	µg/L	No
Prometryne (ug/L) - TW	2022/01/17	< 0.1	µg/L	No
Simazine (ug/L) - TW	2022/01/17	< 0.1	µg/L	No
THM (NOTE: show latest annual average)	4-Oct-2022 2022 Average	87 88.5	µg/L µg/L	No
Terbufos (ug/L) - TW	2022/01/17	< 0.2	µg/L	No
Tetrachloroethylene (ug/L) - TW	2022/01/17	< 0.5	µg/L	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	2022/01/17	< 0.5	µg/L	No
Triallate (ug/L) - TW	2022/01/17	< 0.1	µg/L	No
Trichloroethylene (ug/L) - TW	2022/01/17	< 0.5	µg/L	No
2,4,6-Trichlorophenol (ug/L) - TW	2022/01/17	< 0.5	µg/L	No
Trifluralin (ug/L) - TW	2022/01/17	< 0.1	µg/L	No
Vinyl Chloride (ug/L) - TW	2022/01/17	< 0.2	µg/L	No
MCPA	2022/01/17	< 0.2	µg/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
Sodium	17.3	Mg/L	2019/07/22
2022 HAA Running Annual Average (RAA)	82.8	µg/L	N/A

2022 Section 11 Annual Report

Caramat Drinking Water System

February 2023

Prepared by the

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

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

Section 11 ANNUAL REPORT

Drinking-Water System Number:	**220000184**
Drinking-Water System Name:	Caramat Water Treatment Plant
Drinking-Water System Owner:	The Corporation of the Municipality of Greenstone
Drinking-Water System Category:	**Small Municipal Residential Drinking Water-System**
Period being reported:	January 1 – December 31, 2022

Complete if your Category is Large Municipal Residential or Small Municipal Residential	***Complete for all other Categories.***
Does your Drinking-Water System serve more than 10,000 people? Yes [ ] No [X] **Is your annual report available to the public at no charge on a web site on the Internet? Yes [X] No [ ]** **Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be** **Geraldton Ward Office (Administration)** 1800 Main Street Geraldton, ON P0T 1M0 **Longlac Ward Office** 105 Hamel Avenue Longlac, ON P0T 2A0	**Number of Designated Facilities served:** N/A **Did you provide a copy of your annual report to all Designated Facilities you serve? Yes [ ] No [ ]** **Number of Interested Authorities you report to:** N/A **Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? Yes [ ] No [ ]**

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
N/A	N/A

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.

- **[X] Public access/notice via the web**
- **[X] Public access/notice via Government Office** (Municipal)
- **[X] 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 treatment process generally consists of pre-ozonation, filtration through the multi-stage slow sand filter, primary chlorination, storage, and secondary chlorination.

The filtration system consists of a 75.2 m^3/day pre-packaged, two-train, multi-stage filtration system designed and manufactured by MS Filter Inc. The two-train roughing filter, slow sand filter and granular activated carbon (GAC) contractor are all contained within one overall filter tank. The ozone generation and contactor equipment is separate from the filter tank.

Primary disinfection is achieved using a 12% sodium hypochlorite solution injected into the raw water, downstream of the filtration system, by means of two (duty/stand-by) chemical metering pumps. The necessary chlorine contact time is achieved within the two 57 m^3 reservoirs. The reservoirs provide the necessary minimum contact time for adequate disinfection as well as equalization and emergency water storage as per MOE guidelines.

Two high lift pumps (duty and stand-by) draw treated water from the reservoirs to the distribution system.

One backwash pump also draws treated water from the reservoirs and is used to backwash the filtration system.

The free chlorine residual of the treated water is monitored continuously by an online analyzer, and recorded in the PLC.

A magnetic flow meter measures the treated water flow to the distribution system. This information is recorded in the PLC.

Secondary disinfection is achieved using a 12% sodium hypochlorite solution injected into the high lift pump discharge header by means of two (duty and stand-by) chemical metering pumps.

A 60-kW-diesel generator in a stand alone container provides standby power to the WTP.

In November 2009, an oxygen concentrator system was installed and put into operation.

List all water treatment chemicals used over this reporting period

- Sodium Hypochlorite 12%
- Oxygen (generated on site)
- Ozone (generated on site)
- Granular activated carbon (GAC)

Were any significant expenses incurred to?

[ ] Install required equipment
[X] Repair required equipment
[X] Replace required equipment

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

Install	Repair	Replace	Description	Expense
	X		Low lift pump #1 cartridge (inside parts, impellers)	$2,607.15
	X		Low lift pump #2 cartridges (inside parts, impellers)	$2,607.15
		X	Ozone Controller	$8,216.10
	X		Air Compressor Overhaul/Maintenance	$12, 704.74

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
Dec 30 2022	TC result of 16mg/L	16	Mg/L	Flush and Resample upstream and downstream and at point of AWQI	Jan 6 2023

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 Or Fecal Results (min #)-(max #)	Range of Total Coliform Results (min #)-(max #)	Number of HPC Samples	Range of HPC Results (min #)-(max #)
Raw	N/A	N/A	N/A	N/A	N/A
Treated	N/A	N/A	N/A	N/A	N/A
Distribution	49	0	0-16	46	0-10

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 #)
Turbidity*		
Raw	87	0.64 – 1.8 NTU
Filter #1	8760	0.00 – 1.99 NTU
Filter #2	8760	0.00 – 1.99 NTU
Chlorine*		
Treated	8760	0.00 – 4.99
Distribution	97	0.54 – 1.62
Fluoride (If the DWS provides fluoridation)	N/A	N/A

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

** Turbidity & chlorine Min/Max (lows/highs) are due to planned maintenance and not plant upset.*

***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	Date Sampled	Result	Unit of Measure
July 4, 2011 Municipal Drinking Water Licence (MDWL)#225-101	Nitrosodimethylamine (NDMA) Quarterly	2022/01/17 2022/04/19 2022/07/04 2022/10/03	0.00090 0.00090 0.00114 0.00090	µg/L µg/L µg/L µg/L
July 4, 2011 Municipal Drinking Water Licence (MDWL)#225-101	Trihalomethanes (THM's) Monthly	10-Jan-2020 07-Feb-2022 01-Mar-2022 4-Apr-2022 12-May-2022 06-Jun-2022 04-Jul-2022 08-Aug-2022 06-Sept-2022 03-Oct-2022 21-Nov-2022 05-Dec-2022	31.1 31.1 35.8 1 47.5 80.6 51.2 36.9 31.8 24.6 24.3 22.7	µg/L µg/L µg/L µg/L µg/L µg/L µg/L µg/L µg/L µg/L µg/L µg/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	2022/01/17	< 0.6	µg/L	No
Arsenic	2022/01/17	< 1.0	µg/L	No
Barium	2022/01/17	18.0	µg/L	No
Boron	2022/01/17	< 50.0	µg/L	No
Cadmium	2022/01/17	< 0.1	µg/L	No
Chromium	2022/01/17	< 1.0	µg/L	No
***Lead**	Refer to Summary Table Below			
Mercury	2022/01/17	< 0.1	µg/L	No
Selenium	2022/01/17	< 1.0	µg/L	No
Sodium	2022/01/17	5.74	mg/L	No
Uranium	2022/01/17	< 2.0	µg/L	No
Fluoride	2022/01/17	< 0.022	mg/L	No
Nitrite	2022/01/17 2022/04/04 2022/07/04 2022/10/03	< 0.01 < 0.01 < 0.01 < 0.315	mg/L mg/L mg/L mg/L	No No No No
Nitrate	2022/01/17 2022/04/04 2022/07/04 2022/10/03	0.138 0.361 0.342 0.315	mg/L mg/L mg/L mg/L	No No No 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
Plumbing	Sampling not required as per Ont. Regulation 170	-	-
Distribution	0	N/A	N/A

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	2022/01/17	<0.1	µg/L	No
Atrazine + N-dealkylated metobolites	2022/01/17	<0.2	µg/L	No
Azinphos-methyl	2022/01/17	<0.1	µg/L	No
Benzene	2022/01/19	<0.5	µg/L	No
Benzo(a)pyrene	2022/01/17	<0.005	µg/L	No
Bromoxynil	2022/01/17	<0.2	µg/L	No
Carbaryl	2022/01/17	<0.2	µg/L	No
Carbofuran	2022/01/17	<0.2	µg/L	No
Carbon Tetrachloride	2022/01/19	<0.2	µg/L	No
Chlorpyrifos	2022/01/17	<0.1	µg/L	No
Diazinon	2022/01/17	<0.1	µg/L	No
Dicamba	2022/01/19	<0.2	µg/L	No
1,2-Dichlorobenzene	2022/01/19	<0.5	µg/L	No
1,4-Dichlorobenzene	2022/01/19	<0.5	µg/L	No
1,2-Dichloroethane	2022/01/19	<0.5	µg/L	No
1,1-Dichloroethylene (vinylidene chloride)	2022/01/19	<0.5	µg/L	No
Dichloromethane (methylene chloride)	2022/01/19	<5.0	µg/L	No
2-4 Dichlorophenol	2022/01/17	<0.3	µg/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	2022/01/17	<0.2	µg/L	No
Diclofop-methyl	2022/01/17	<0.2	µg/L	No
Dimethoate	2022/01/17	<0.1	µg/L	No
Diquat	2022/01/17	<1.0	µg/L	No
Diuron	2022/01/17	<1.0	µg/L	No
Glyphosate	2022/01/17	<5.0	µg/L	No
Haloacetic acids (HAA) (NOTE: show latest annual average)	03-Oct-2022 2022 Average	55.8 76.3	µg/L	No
Malathion	2022/01/17	<0.1	µg/L	No
Metolachlor	2022/01/17	<0.1	µg/L	No
Metribuzin	2022/01/17	<0.1	µg/L	No
Monochlorobenzene	2022/01/19	<0.5	µg/L	No
Paraquat	2022/01/17	<1.0	µg/L	No
Pentachlorophenol	2022/01/17	<0.5	µg/L	No
Phorate	2022/01/17	<0.1	µg/L	No
Picloram	2022/01/17	<0.2	µg/L	No
Polychlorinated Biphenyls(PCB)	2022/01/25	<0.035	µg/L	No
Prometryne	2022/01/17	<0.1	µg/L	No
Simazine	2022/01/17	<0.1	µg/L	No

THM **(**NOTE**:** show latest annual average**)**	03-Oct-2022 2022 Average	23.9 34.9	µg/L µg/L	No No
Terbufos	2022/01/17	<0.2	µg/L	No
Tetrachloroethylene	2022/01/19	<0.5	µg/L	No
2,3,4,6-Tetrachlorophenol	2022/01/17	<0.5	µg/L	No
Triallate	2022/01/17	<0.1	µg/L	No
Trichloroethylene	2022/01/19	<0.5	µg/L	No
2,4,6-Trichlorophenol	2022/01/17	<0.5	µg/L	No
Trifluralin	2022/01/17	<0.1	µg/L	No
Vinyl Chloride	2022/01/19	<0.2	µg/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
2022 HAA – Running Annual Average (RAA)	76.3	µg/L	N/A

2022 Section 11 Annual Report

Geraldton Drinking Water System

February 2023

Prepared by the

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Section 11 ANNUAL REPORT

Drinking-Water System Number:	**210000292**
Drinking-Water System Name:	Geraldton Water Treatment Plant
Drinking-Water System Owner:	The Corporation of the Municipality of Greenstone
Drinking-Water System Category:	**Large Municipal Residential Drinking Water-System**
Period being reported:	January 1 – December 31, 2022

Complete if your Category is Large Municipal Residential or Small Municipal Residential	***Complete for all other Categories.***
Does your Drinking-Water System serve more than 10,000 people? Yes [ ] No [X] **Is your annual report available to the public at no charge on a web site on the Internet? Yes [X] No [ ]** **Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.** **Geraldton Ward Office (Administration)** 1800 Main Street Geraldton, ON P0T 1M0	**Number of Designated Facilities served:** N/A **Did you provide a copy of your annual report to all Designated Facilities you serve? Yes [ ] No [ ]** **Number of Interested Authorities you report to:** N/A **Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? Yes [ ] No [ ]**

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
N/A	N/A

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.

[X] Public access/notice via the web
[X] Public access/notice via Government Office (Municipal)
[X] 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

Cecile Lake is the sole source of supply for the Geraldton water system. The surface water is conveyed by gravity through two (2) coarse screens to the intake well and low lift pumping chamber.

Prior to entering the treatment plant, Alum (aluminum sulphate) and polymer are added for coagulation. Potassium permanganate is added to the raw water for manganese removal as required.

The raw water passes through stages of mixing, flocculation, sedimentation with the aid of tube settlers and passes through a filter of mixed media consisting of anthracite, sand and gravel.

Disinfection is provided by injecting chlorine gas into the filtered water before it enters the storage reservoirs.

Three high lift pumps deliver water to the distribution system.
A 200-kW-diesel generator provides standby power to the WTP.

List all water treatment chemicals used over this reporting period

- Aluminum Sulphate A-10
- Magnafloc LT-20 polymer
- Potassium Permanganate
- Chlorine Gas

Were any significant expenses incurred to?

[ ] Install required equipment
[ ] Repair required equipment
[X] Replace required equipment

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

Install	Repair	Replace	Description	Expense
		X	MCC/PLC Replacement Project	$265,200.00

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
Feb 2 2022	Loss of data for 13hrs, Cl2 and turbidity not being recorded, because of mtc. work done by IT			IT group shut down everything on the new server so it no longer is in conflict with the Northwest server. Data was retrieved.	Feb 3 2022
Feb 8 2022	Loss of pressure from water line break 6" on Main Street. Water break repairs completed Feb 8 2022 23:00. BWA issued.			Received results from ALS, samples absent of E coli and TC, called MOH talked to Colin Mclellan verbal notification to rescind boil water advisory, notified all businesses.	Feb 10 2022
February 15 2022	Loss of pressure, water break on 6" line. 2 businesses and 1 residence affected.			Repaired main, Collected 1 set of bacti samples.	Feb 22 2022
May 25 2022	Loss of pressure on 6" line due to main break. 15 residence affected			Collected 2 sets of bacti samples	May 30 2022
June 27 2022	Loss of pressure to isolate for curb stop repair 11 residences affected.			Collected 2 sets of bacti samples.	June 30 2022
Sept 27 2022	Loss of pressure, water			Collected 2 sets of	Oct 3 2022

	break. 3 residences affected.			bacti samples.	
Dec 5 2022	Loss of pressure, water break. 24 residences affected.			Collected 2 locations of bacti samples.	Dec 8 2022

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 Or Fecal Results (min #)-(max #)	Range of Total Coliform Results (min #)-(max #)	Number of HPC Samples	Range of HPC Results (min #)-(max #)
Raw	46	0 – 5	0 – 152	N/A	N/A
Treated	46	0 – 0	0 – 0	45	0 – 10
Distribution	144	0 - 0	0 - 0	39	0 – 3

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 #)
Turbidity*		
Raw	242	0.87 – 131 NTU
Filter #1	8760	0.00 – 3.00 NTU
Filter #2	8760	0.00 – 3.00 NTU
Chlorine*		
Treated	8760	0.00 – 5.0
Distribution	234	0.75 – 2.2
Fluoride (If the DWS provides fluoridation)	N/A	N/A

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

** Turbidity & chlorine Min/Max (lows/highs) are due to planned maintenance and not plant upset.*

***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	Date Sampled	Result	Unit of Measure
July 4, 2011 Municipal Drinking Water Licence 225-104	Suspended Solids (Composite) Frequency: Monthly Location: Point of Discharge to Yvonne Lake	2022/05/10 2022/06/06 2022/07/04 2022/08/08 2022/09/19 2022/10/03	<3.0 <3.2 <3.0 5.4 <3.0 <3.0	mg/L mg/L mg/L mg/L mg/L mg/L
Note: Samples can only be collected when conditions permit. Winter conditions prevent sampling as the discharge location is frozen.		Average Annual Concentration for 2022	3.43	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	2022/01/10	< 0.6	µg/L	No
Arsenic	2022/01/10	< 1.0	µg/L	No
Barium	2022/01/10	< 10.0	µg/L	No
Boron	2022/01/10	< 50.0	µg/L	No
Cadmium	2022/01/10	< 0.1	µg/L	No
Chromium	2022/01/10	< 1.0	µg/L	No
***Lead**	Refer to Summary Table Below			
Mercury	2022/01/10	< 0.1	µg/L	No
Selenium	2022/01/10	< 1.0	µg/L	No
Sodium	2019/01/09	17.2	mg/L	No
Uranium	2022/01/10	< 2.0	µg/L	No
Fluoride	2019/01/09	< 0.02	mg/L	No
Nitrite	2022/01/10 2022/04/11 2022/07/18 2022/10/03	< 0.01 < 0.01 < 0.01 < 0.02	mg/L mg/L mg/L mg/L	No No No No
Nitrate	2022/01/10 2022/04/11	< 0.02 0.229	mg/L mg/L	No No

	2022/07/18 2022/10/03	0.126 < 0.02	mg/L mg/L	No 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
Plumbing	Sampling not required as per Ont. Regulation 170	-	-
Distribution	4	1 – 1 µg/L	0

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	2022/01/10	< 0.1	µg/L	No
Atrazine	2022/01/18	< 0.1	µg/L	No
Atrazine & Metabolites	2022/01/18	< 0.2	µg/L	No
Azinphos-methyl	2022/01/10	< 0.1	µg/L	No
Benzene	2022/01/10	< 0.5	µg/L	No
Benzo(a)pyrene	2022/01/10	< 0.005	µg/L	No
Bromoxynil	2022/01/10	< 0.2	µg/L	No
Carbaryl	2022/01/10	< 0.2	µg/L	No
Carbofuran	2022/01/10	< 0.2	µg/L	No
Carbon Tetrachloride	2022/01/10	< 0.2	µg/L	No
Chlorpyrifos	2021/01/11	< 0.1	µg/L	No
Diazinon	2022/01/10	< 0.1	µg/L	No
Dicamba	2022/01/10	< 0.2	µg/L	No
1,2-Dichlorobenzene	2022/01/10	< 0.5	µg/L	No
1,4-Dichlorobenzene	2022/01/10	< 0.5	µg/L	No
1,2-Dichloroethane	2022/01/10	< 0.5	µg/L	No
1,1-Dichloroethylene (vinylidene chloride)	2022/01/10	< 0.5	µg/L	No
Dichloromethane	2022/01/10	< 5.0	µg/L	No

2-4 Dichlorophenol	2022/01/10	< 0.3	µg/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	2022/01/10	< 0.2	µg/L	No
Diclofop-methyl	2022/01/10	< 0.2	µg/L	No
Dimethoate	2022/01/10	< 0.1	µg/L	No
Diquat	2022/01/10	< 1.0	µg/L	No
Diuron	2022/01/10	< 1.0	µg/L	No
Glyphosate	2022/01/10	< 5.0	µg/L	No
Haloacetic acids (HAA)* (NOTE: show latest annual average)	03-Oct-2022 2022 Average	52.3 41.7	µg/L	No
Malathion	2022/01/10	< 0.1	µg/L	No
Metolachlor	2022/01/10	< 0.1	µg/L	No
Metribuzin	2022/01/10	< 0.1	µg/L	No
Monochlorobenzene	2022/01/10	< 0.5	µg/L	No
Paraquat	2022/01/10	< 1.0	µg/L	No
Pentachlorophenol	2022/01/10	< 0.5	µg/L	No
Phorate	2022/01/10	< 0.1	µg/L	No
Picloram	2022/01/10	< 0.2	µg/L	No
Polychlorinated Biphenyls(PCB)	2022/01/10	< 0.035	µg/L	No
Prometryne	2022/01/10	< 0.1	µg/L	No
Simazine	2022/01/10	< 0.1	µg/L	No
THM (NOTE: show latest annual average)	03-Oct-2022 2022 Average	63.6 41.9	µg/L µg/L	No No
Terbufos	2022/01/10	< 0.2	µg/L	No
Tetrachloroethylene	2022/01/10	< 0.5	µg/L	No
2,3,4,6-Tetrachlorophenol	2022/01/10	< 0.5	µg/L	No
Triallate	2022/01/10	< 0.1	µg/L	No
Trichloroethylene	2022/01/10	< 0.5	µg/L	No
2,4,6-Trichlorophenol	2022/01/10	< 0.5	µg/L	No
Trifluralin	2022/01/10	< 0.1	µg/L	No
Vinyl Chloride	2022/01/10	< 0.2	µg/L	No
MCPA	2022/01/10	< 0.2	µg/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
2022 THM Running Annual Average (RAA)	41.9	ug/L	03-Oct-2022

2022 Section 11 Annual Report

Longlac Drinking Water System

February 2023

Prepared by the

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

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

Section 11 ANNUAL REPORT

Drinking-Water System Number:	**220000264**
Drinking-Water System Name:	Longlac Water Treatment Plant
Drinking-Water System Owner:	The Corporation of the Municipality of Greenstone
Drinking-Water System Category:	**Large Municipal Residential Drinking Water-System**
Period being reported:	January 1 – December 31, 2022

Complete if your Category is Large Municipal Residential or Small Municipal Residential	***Complete for all other Categories.***
Does your Drinking-Water System serve more than 10,000 people? Yes [ ] No [X] **Is your annual report available to the public at no charge on a web site on the Internet? Yes [X] No [ ]** **Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.** **Geraldton Ward Office (Administration)** 1800 Main Street Geraldton, ON P0T 1M0 **Longlac Ward Office** 105 Hamel Avenue Longlac, ON P0T 2A0	**Number of Designated Facilities served:** N/A **Did you provide a copy of your annual report to all Designated Facilities you serve? Yes [ ] No [ ]** **Number of Interested Authorities you report to:** N/A **Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? Yes [ ] No [ ]**

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
N/A	N/A

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.

[X] Public access/notice via the web
[X] Public access/notice via Government Office (Municipal)
[X] 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 Longlac Water Treatment Plant (WTP), located on Park Street, draws raw water from Long Lake. The WTP is a package plant, consisting of two Graver Reactors/Filters. Treatment includes coagulation, flocculation, and sedimentation with the aid of tube settlers, filtration, corrosion control and disinfection. This plant has a design capacity of 6,050 m^3/day. The WTP presently serves a population of approximately 1750 persons within the community and 500 persons within two First Nations. The WTP was designed with the anticipation that the community would experience growth.

Long Lake is the sole source of supply for the Longlac water system. A surface water intake with 245 m of 450 mm diameter intake piping through two course screens convey water by gravity to the intake well, and the low lift pumping chamber. Alum is the coagulant and the flocculation aid is Nalclear 8181 (polymer), they are added to the raw water between the low lift pumps and the treatment unit. The water is then pumped to the *Graver* Reactors/Filters Treatment Unit. The Reactivators are solids contact clarifiers combining coagulation, flocculation, and sedimentation in one unit. The water is flocculated, and the floc settled out using tube settlers in the solids contact clarifier and by maintaining a sludge blanket. The water then passes through a two-compartment dual media (sand and anthrafilt) filter.

Once through the filters the water is chlorinated with chlorine gas; and Carus 8500 orthophosphate is added for corrosion control. The water then enters a treated water reservoir. The reservoir, located beneath the process floor, is divided into three compartments with a total capacity of 705 m^3. Three high lift pumps deliver the finished water to the distribution system. The elevated storage tank with a capacity of 2273 m^3 provides emergency storage and fire flow. Pressure is controlled by a pilot operated Pressure Relief Valve.

Wastewater from the filter backwash and clarifier blowdown is collected in a wastewater storage tank, and then pumped to the municipal sanitary sewer system.

A 200-kW-diesel generator provides standby power to the entire WTP.

List all water treatment chemicals used over this reporting period

- Aluminum Sulphate
- Chlorine Gas
- Carus 8500
- Nalclear 8181 Polymer

Were any significant expenses incurred to?

[X] Install required equipment
[] Repair required equipment
[X] Replace required equipment

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

Install	Repair	Replace	Description	Expense
X		X	Chemical Dosing Pump #1	$11,400.00
X		X	Chemical Dosing Pump #2	$11,400.00
X		X	Filter to Waste Conversion	$26,650.00
X			Waste Pit Equipment/Parts	$20,000.00
X		X	Water Tower Control Panel & Equipment Upgrade	$31,250.00

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
Oct 4 2022	Loss of Pressure			Hydrant repair Riverview -BWA issued for affected homes.Samped three locations . BWA lifted	Oct 7 2022

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 Or Fecal Results (min #)-(max #)	Range of Total Coliform Results (min #)-(max #)	Number of HPC Samples	Range of HPC Results (min #)-(max #)
Raw	46	0 – 50	0 – 2420	N/A	N/A
Treated	46	0 – 0	0 – 0	44	0 – 10
Distribution	104	0 – 0	0 – 0	46	0 – 276

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 #)
Turbidity*		
Raw	214	0.4 – 21.4 NTU
Filter #1	8760	0.0 – 2.99 NTU
Filter #2	8760	0.0 – 2.99 NTU
Chlorine*		
Treated	8760	0.36 – 2.85
Distribution	213	1.24 – 2.16
Fluoride (If the DWS provides fluoridation)	N/A	N/A

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

** Turbidity & chlorine Min/Max (lows/highs) are due to planned maintenance and not plant upset.*

***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	Date Sampled	Result	Unit of Measure
N/A	N/A	N/A	N/A	N/A

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	2022/01/18	< 0.6	µg/L	No
Arsenic	2022/01/18	< 1.0	µg/L	No
Barium	2022/01/18	< 10.0	µg/L	No
Boron	2022/01/18	< 50.0	µg/L	No
Cadmium	2022/01/18	< 0.1	µg/L	No
Chromium	2022/01/18	< 1.0	µg/L	No
***Lead**	Refer to Summary Table Below			
Mercury	2022/01/18	< 0.1	µg/L	No
Selenium	2022/01/18	< 1.0	µg/L	No
Sodium	2022/01/18	3.51	mg/L	No
Uranium	2022/01/18	< 2.0	µg/L	No
Fluoride	2022/01/24	< 0.02	mg/L	No
Nitrite	2022/01/24 2022/04/11 2022/07/04 2022/10/03	< 0.01 < 0.01 < 0.01 < 0.01	mg/L mg/L mg/L mg/L	No No No No
Nitrate	2022/01/24 2022/04/11 2022/07/04 2022/10/03	0.087 0.099 0.044 0.063	mg/L mg/L mg/L mg/L	No No No 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
Plumbing	Sampling not required as per Ont. Regulation 170	-	-
Distribution	0	N/A	0

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	2022/01/18	< 0.1	µg/L	No
Atrazine	2022/01/08	< 0.1	µg/L	No
Atrazine & Metabloites	2022/01/18	< 0.2	µg/L	No
Azinphos-methyl	2022/01/18	< 0.1	µg/L	No
Benzene	2022/01/18	< 0.5	µg/L	No
Benzo(a)pyrene	2022/01/18	< 0.2	µg/L	No
Bromoxynil	2022/01/18	< 0.2	µg/L	No
Carbaryl	2022/01/18	< 0.2	µg/L	No
Carbofuran	2022/01/18	< 0.2	µg/L	No
Carbon Tetrachloride	2022/01/18	< 0.2	µg/L	No
Chlorpyrifos	2021/01/13	< 0.1	µg/L	No
Diazinon	2022/01/18	< 0.1	µg/L	No
Dicamba	2022/01/18	< 0.2	µg/L	No
1,2-Dichlorobenzene	2022/01/18	< 0.5	µg/L	No
1,4-Dichlorobenzene	2022/01/18	< 0.5	µg/L	No
1,2-Dichloroethane	2022/01/18	< 0.5	µg/L	No
1,1-Dichloroethylene (vinylidene chloride)	2022/01/18	< 0.5	µg/L	No
Dichloromethane	2022/01/18	< 5.0	µg/L	No
2-4 Dichlorophenol	2022/01/18	< 0.3	µg/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	2022/01/18	< 0.2	µg/L	No
Diclofop-methyl	2022/01/18	< 0.2	µg/L	No
Dimethoate	2022/01/18	< 0.1	µg/L	No
Diquat	2022/01/18	< 1.0	µg/L	No
Diuron	2022/01/18	< 1.0	µg/L	No
Glyphosate	2022/01/18	< 5.0	µg/L	No
Haloacetic acids (HAA) (NOTE: show latest annual average)	03-Oct-2022 2022 Average	58.5 52.5	µg/L	No
Malathion	2022/01/18	< 0.1	µg/L	No
Metolachlor	2022/01/18	< 0.1	µg/L	No
Metribuzin	2022/01/18	< 0.1	µg/L	No
Monochlorobenzene	2022/01/18	< 0.5	µg/L	No
Paraquat	2022/01/18	< 1.0	µg/L	No
Pentachlorophenol	2022/01/18	< 0.5	µg/L	No
Phorate	2022/01/18	< 0.1	µg/L	No
Picloram	2022/01/18	< 0.2	µg/L	No
Polychlorinated Biphenyls(PCB)	2022/01/18	< 0.035	µg/L	No
Prometryne	2022/01/18	< 0.1	µg/L	No

Simazine	2022/01/18	< 0.1	µg/L	No
THM **(**NOTE**:** show latest annual average**)**	03-Oct-2022 2022 Average	43.2 39.9	µg/L µg/L	No No
Terbufos	2022/01/18	< 0.2	µg/L	No
Tetrachloroethylene	2022/01/18	< 0.5	µg/L	No
2,3,4,6-Tetrachlorophenol	2022/01/18	< 0.5	µg/L	No
Triallate	2022/01/18	< 0.1	µg/L	No
Trichloroethylene	2022/01/18	< 0.5	µg/L	No
2,4,6-Trichlorophenol	2022/01/18	< 0.5	µg/L	No
Trifluralin	2022/01/18	< 0.1	µg/L	No
Vinyl Chloride	2022/01/18	< 0.2	µg/L	No
MCPA	2022/01/18	< 0.2	µg/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
2022 HAA Running Annual Average (RAA)	52.8	µg/L	N/A

2022 Section 11 Annual Report

Nakina Drinking Water System

February 2023

Prepared by the

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Section 11 ANNUAL REPORT

Drinking-Water System Number:	**220000200**
Drinking-Water System Name:	Nakina Well Supply
Drinking-Water System Owner:	The Corporation of the Municipality of Greenstone
Drinking-Water System Category:	**Large Municipal Residential Drinking Water-System**
Period being reported:	January 1 – December 31, 2022

Complete if your Category is Large Municipal Residential or Small Municipal Residential	***Complete for all other Categories.***
Does your Drinking-Water System serve more than 10,000 people? Yes [ ] No [X] **Is your annual report available to the public at no charge on a web site on the Internet? Yes [X] No [ ]** **Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.** **Geraldton Ward Office (Administration)** 1800 Main Street Geraldton, ON P0T 1M0 **Nakina Ward Office** 200 Centre Avenue Nakina, ON P0T 2H0	**Number of Designated Facilities served:** N/A **Did you provide a copy of your annual report to all Designated Facilities you serve? Yes [ ] No [ ]** **Number of Interested Authorities you report to:** N/A **Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? Yes [ ] No [ ]**

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
N/A	N/A

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.

- **[X] Public access/notice via the web**
- **[X] Public access/notice via Government Office** (Municipal)
- **[X] 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 Nakina Water Supply System is supplied by two (2) groundwater wells. The water supply aquifer utilized by the Corporation of the Municipality of Greenstone – Nakina Ward lies within an esker complex (significant sand and gravel deposit). These deposits are common throughout the area and the most extensive of these features trend southwesterly through the Township. Composed primarily of gravelly sand, this broad belt stretches approximately 4 km in width and 60 km in length. The two wells are located approximately 72 m from the southeastern shore of Rounds Lake.

The wells are housed within the same building, and a common header delivers water to the reservoir beneath the high lift pumping station. The water is chlorinated using sodium hypochlorite at the entry point to the reservoir. The high lift and fire pumps draw water from the reservoir for the delivery to the system.

Wells #1 & #2 are each capable of supplying 18.9 L/s, and were designed to be operated simultaneously for a total of 37.9 L/s. Fire flow and emergency storage is supplied from the reservoir. The facility presently serves a population of approximately 700 persons and was designed with the anticipation of growth within the community.

A 60 kW diesel generator provides standby power for the well pumps and a 200 kW diesel generator provides power for the chemical feed system and the high lift and fire pumps.

In a hydro geological study conducted by KGS Group, the wells were identified **as not** under the direct influence of surface water.

List all water treatment chemicals used over this reporting period

- 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

Install	Repair	Replace	Description	Expense
N/A	N/A	N/A	N/A	N/A

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
N/A	N/A	N/A	N/A	N/A	N/A

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 Or Fecal Results (min #)-(max #)	Range of Total Coliform Results (min #)-(max #)	Number of HPC Samples	Range of HPC Results (min #)-(max #)
Raw					
Well 1	41	0 – 1	0 – 1	N/A	N/A
Well 2	41	0 – 1	0 – 1	N/A	N/A
Treated	41	0 – 0	0 – 0	40	0 – 10
Distribution	81	0 – 0	0 – 0	20	0 – 10

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 #)
Turbidity*		
Raw Well #1	99	0.07 – 0.43 NTU
Raw Well #2	180	0.009 – 0.36 NTU
Treated	8760	0.00 – 4.00 NTU
Chlorine*		
Treated	8760	0.059 – 5.00

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

** Turbidity & chlorine Min/Max (lows/highs) are due to planned maintenance and not plant upset.*

Distribution	364	0.51 – 1.02
Fluoride (If the DWS provides fluoridation)	N/A	N/A

***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	Date Sampled	Result	Unit of Measure
N/A	N/A	N/A	N/A	N/A

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	2021/04/12	<MDL 0.6	µg/L	No
Arsenic	2021/04/12	<MDL 1.0	µg/L	No
Barium	2021/04/12	22.0	µg/L	No
Boron	2021/04/12	<MDL 50.0	µg/L	No
Cadmium	2021/04/12	<MDL 0.1	µg/L	No
Chromium	2021/04/12	<MDL 1.0	µg/L	No
***Lead**	Refer to Summary Table Below			
Mercury	2021/04/12	<MDL 0.1	µg/L	No
Selenium	2021/04/12	<MDL 5.0	µg/L	No
Sodium	2019/12/09	12.5	mg/L	No
Uranium	2021/04/12	<MDL 5.0	µg/L	No
Fluoride	2019/12/09	0.051	mg/L	No
Nitrite	2022/01/12 2022/04/04 2022/07/07 2022/10/03	< 0.02 < 0.02 < 0.02 < 0.118	mg/L mg/L mg/L mg/L	No No No No
Nitrate	2022/01/12 2022/04/04 2022/07/07 2022/10/03	0.149 0.182 0.159 0.118	mg/L mg/L mg/L mg/L	No No No 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
Plumbing	Sampling not required as per Ont. Regulation 170	-	-
Distribution	2	1 – 1 ug/L	0

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	2021/04/12	< 0.1	µg/L	No
Atrazine + N-dealkylated metobolites	2018/01/03	< 0.2	µg/L	No
Azinphos-methyl	2021/04/12	< 0.1	µg/L	No
Benzene	2021/04/12	< 0.5	µg/L	No
Benzo(a)pyrene	2021/04/12	< 0.005	µg/L	No
Bromoxynil	2021/04/12	< 0.2	µg/L	No
Carbaryl	2021/04/12	< 0.2	µg/L	No
Carbofuran	2021/04/12	< 0.2	µg/L	No
Carbon Tetrachloride	2021/04/12	< 0.2	µg/L	No
Chlorpyrifos	2021/04/12	< 0.1	µg/L	No
Diazinon	2021/04/12	< 0.1	µg/L	No
Dicamba	2021/04/12	< 0.2	µg/L	No
1,2-Dichlorobenzene	2021/04/12	< 0.5	µg/L	No
1,4-Dichlorobenzene	2021/04/12	< 0.5	µg/L	No
1,2-Dichloroethane	2021/04/12	< 0.5	µg/L	No
1,1-Dichloroethylene (vinylidene chloride)	2021/04/12	< 0.5	µg/L	No
Dichloromethane	2021/04/12	< 5.0	µg/L	No
2-4 Dichlorophenol	2021/04/12	< 0.3	µg/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	2021/04/12	< 0.2	µg/L	No
Diclofop-methyl	2021/04/12	< 0.2	µg/L	No
Dimethoate	2021/04/12	< 0.1	µg/L	No
Diquat	2021/04/12	< 1.0	µg/L	No
Diuron	2021/04/12	< 1.0	µg/L	No
Glyphosate	2021/04/12	< 5.0	µg/L	No
Haloacetic acids (HAA)* (NOTE: show latest annual average)	30-Oct-2022 2022 Average	11.0 7.8	µg/L	No
Malathion	2021/04/12	< 0.1	µg/L	No

Metolachlor	2021/04/12	< 0.1	µg/L	No
Metribuzin	2021/04/12	< 0.1	µg/L	No
Monochlorobenzene	2021/04/12	< 0.5	µg/L	No
Paraquat	2021/04/12	< 1.0	µg/L	No
Pentachlorophenol	2021/04/12	< 0.035	µg/L	No
Phorate	2021/04/12	< 0.5	µg/L	No
Picloram	2021/04/12	< 0.1	µg/L	No
Polychlorinated Biphenyls(PCB)	2021/04/12	< 0.2	µg/L	No
Prometryne	2021/04/12	< 0.1	µg/L	No
Simazine	2021/04/12	< 0.1	µg/L	No
THM **(**NOTE**:** show latest annual average**)**	30-Oct-2022 2022 Average	10.6 11.70	µg/L µg/L	No No
Terbufos	2021/04/12	< 0.2	µg/L	No
Tetrachloroethylene	2021/04/12	< 0.5	µg/L	No
2,3,4,6-Tetrachlorophenol	2021/04/12	< 0.5	µg/L	No
Triallate	2021/04/12	< 0.1	µg/L	No
Trichloroethylene	2021/04/12	< 0.5	µg/L	No
2,4,6-Trichlorophenol	2021/04/12	< 0.5	µg/L	No
2-methyl-4-chlorophenoxyacetic acid (MCPA)	2021/04/12	< 0.2	ug/L	No
Trifluralin	2021/04/12	< 0.1	µg/L	No
Vinyl Chloride	2021/04/12	< 0.2	µg/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
Sodium	12.5	Mg/L	2019/12/09