



2023 Annual/Summary Report for the New Liskeard Drinking Water System

PREPARED BY

Ontario Clean Water Agency
on behalf of the City of Temiskaming Shores

Date: February 15, 2024
Rev: 0

Revision History

Rev. No.	Date	Prepared by:	Approved by:	Description
0	February 15, 2024	I. Bruneau, PCT	C. Mongrain, Operations Supervisor/ORO	Revision 0 issued

Table of Contents

Background.....	4
Section 11 – Annual Report.....	5
1. Introduction	5
2. Description of the New Liskeard Drinking Water System	6
3. List of Water Treatment Chemicals Used	9
4. Significant Expense Incurred in 2023.....	9
5. Details of Notices Reported & Submitted to the Spills Action Center	9
6. Microbiological Testing.....	10
7. Operational Testing.....	10
8. Chemical Testing.....	11
<i>Inorganic or Organic Parameter(s) that Exceeded Half the Standard Prescribed in</i> <i>Schedule 2 of Ontario Drinking Water Quality Standards</i>	<i>15</i>
9. Additional Testing Performed in Accordance with a Legal Instrument.....	16
Schedule 22 – Summary Reports for Municipalities	18
10. Requirements the System Failed to Meet	18
11. Summary of Quantities and Flow Rates.....	18
11.1 Flow Monitoring.....	18
11.2 Rated Capacity & Flow Rates	18
11.3 System Performance.....	23
Conclusion	23

List of Tables

Table 1: Summary of Microbiological Results.....	10
Table 2: Summary of Raw Water Turbidity Results	10
Table 3: Continuous Monitoring in the Treatment Process	11
Table 4: Summary of Chlorine Residuals in the Distribution System	11
Table 5: Summary of Nitrate & Nitrite Data from the Water Treatment Plant	11
<i>Table 6: Summary of Total Trihalomethane Results from the Distribution System</i>	<i>12</i>
Table 7: Summary of Total Haloacetic Acid Results from the Distribution System.....	12
Table 8: Summary of Lead Results under Schedule 15.1 (from the distribution system).....	12
Table 9: Most Recent Schedule 23 Inorganic Results from the Water Treatment Plant	13

Table 10: Most Recent Schedule 24 Organic Results from the Water Treatment Plant..... 13
Table 11: Most Recent Sodium Data (from the Water Treatment Plant) 15
Table 12: Most Recent Fluoride Data Sampled at the Water Treatment Plant 15
Table 13: Summary of UV Dosage 17
Table 14: 2023 – Monthly Summary of Water Takings from the Source (Well No. 3)..... 20
Table 15: 2023 – Monthly Summary of Water Takings from the Source (Well No. 4)..... 20
Table 16: 2023 – Monthly Summary of Combined Water Takings from the Source (Well No. 3 & 4) 21
Table 17: 2023 – Monthly Summary of Treated Water Supplied to the Distribution System 21
Table 18: 2023 – Historical Maximum Flows (2018 to 2023) 22

List of Figures

Figure 1: Daily Volumes of Treated Water into the Distribution System..... 22

Appendices

Appendix A: Summary of Adverse Water Quality Incidents (AWQIs)

Appendix B: Monthly Summary of Microbiological Test Results

Appendix C: Monthly Summary of Operational Test Results

Background

Municipalities throughout Ontario are required to comply with Ontario Regulation 170/03 made under the Safe Drinking Water Act (SDWA) since June 2003. The Act was passed following recommendations made by Commissioner O'Conner after the Walkerton Inquiry. The Act's purpose is to protect human health through the control and regulation of drinking-water systems. O. Reg. 170/03 regulates drinking water testing, use of licensed laboratories, treatment requirements and reporting requirements.

O. Reg. 170/03 requires the owner to produce an Annual Report, under Section 11. This report must include the following:

1. Description of system and chemical(s) used
2. Summary of any adverse water quality reports and corrective actions
3. Summary of all required testing
4. Description of any major expenses incurred to install, repair or replace equipment

This Annual Report must be completed by February 28 of each year.

The regulation also requires a Summary Report which must be presented and accepted by Council by March 31 of each year for the preceding calendar year reporting period.

The report must list the requirements of the Act, its regulations, the system's Drinking Water Works Permit (DWWP), Municipal Drinking Water Licence (MDWL), Certificate of Approval (if applicable), and any regulatory requirement the system failed to meet during the reporting period. The report must also specify the duration of the failure, and for each failure referred to, describe the measures that were taken to correct the failure.

The Safe Drinking Water Act, 2002 and the drinking water regulations can be viewed at the following website: <http://www.e-laws.gov.on.ca>.

To enable the Owner to assess the rated capacity of their system to meet existing and future planned water uses, the following information is also required in the report.

1. A summary of the quantities and flow rates of water supplied during the reporting period, including the monthly average and the maximum daily flows.
2. A comparison of the summary to the rated capacity and flow rates approved in the systems approval, drinking water works permit or municipal drinking water licence or a written agreement if the system is receiving all its water from another system under an agreement.

The two reports have been prepared by the Ontario Clean Water Agency (OCWA) on behalf of the Owner and presented to council as the 2023 Annual/Summary Report.

Section 11 – Annual Report

1. Introduction

Drinking-Water System Name	New Liskeard Drinking Water System
Drinking-Water System Number	220000344
Drinking-Water System Owner	The Corporation of the City of Temiskaming Shores
Drinking-Water System Category	Large Municipal, Residential System
Municipal Drinking Water Licence No.	218-103-3 (issued July 23, 2021)
Drinking Water Work Permit No.	218-203-4 (issued July 23, 2021)
Permit to Take Water No.	4417-AF2JAM (issued November 2, 2016)
Reporting Period	January 1, 2023 to December 31, 2023

Does your Drinking-Water System serve more than 10,000 people? No

Is your annual report available to the public at no charge on a web site on the Internet?

Yes at: <http://www.temiskamingshores.ca/en/index.asp>

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

City of Temiskaming Shores Municipal Office
325 Farr Drive, P.O. Box 2050
Haileybury, ON POJ 1K0

Drinking Water Systems that receive drinking water from the New Liskeard Drinking Water System

The New Liskeard Drinking Water System provides drinking water to the communities of New Liskeard and Dymond within the City of Temiskaming Shores.

The Annual Report was provided to all connected Drinking Water System Owners

The Ontario Clean Water Agency prepared the 2023 Annual/Summary Report for the New Liskeard Drinking Water System and provided a copy to the system owner; the City of Temiskaming Shores.

System Users are notified that the Annual Report is available for viewing through:

- Notice on the City's Facebook page
- Notice in the local newspaper

2. Description of the New Liskeard Drinking Water System

The New Liskeard Drinking Water System is owned by The Corporation of the City of Temiskaming Shores and consists of a Class 1 water treatment system and a Class 3 water distribution subsystem. The system is a communal ground water well supply that services the communities of New Liskeard and Dymond. The Ontario Clean Water Agency is the accredited operating authority and is designated as the Overall Responsible Operator for both the water treatment and water distribution facilities.

Raw Water Supply

The New Liskeard water treatment plant, located at 301 McCamus Avenue and is supplied by two main production wells; Well 3 and Well 4. Well No. 3 was originally constructed on December 2, 1950. It is a 54.9 m deep drilled well equipped with a magnetic flow meter and a vertical turbine pump rated at 2700 L/min. It consists of a 660 mm diameter outer casing and 406 mm inner steel casing with a 7.6 m long stainless steel (shutter style) screen. The well is housed in a secure building located directly across from the water plant.

Well No. 4 was originally constructed on August 13, 1977. It is a 54.9 m deep drilled well also equipped a magnetic flow meter and with a vertical turbine pump rated at 2700 L/min. It consists of a 762 mm diameter outer steel casing, to a depth of 27.4 m and 356 mm inner steel casing, to a depth of 46.3 m with a 7.6 m long stainless steel screen, 30.5 cm in diameter. This well is located inside the water treatment plant building.

There is approximately 23 m of low permeability clay between the ground surface and the aquifer protecting the groundwater from surface spills.

Water Treatment

The production wells feed the main water treatment plant that has a maximum rated capacity of 7865 cubic meters per day (m³/d).

The treatment process consists of two iron and manganese removal/pressure filtration systems rated at 94.6 L/s that are filled with Filtronic's Electromedia[®], a proprietary media. The configuration allows either filter to be supplied with raw water from either of the two wells and the filter effluent is continuously monitored for turbidity and free chlorine residual. The two pressurized filters are automatically backwashed, based on high filter turbidity or maximum filter runtime. Manual backwashes can also be initiated when required. The backwash wastewater is discharged into the municipal sanitary sewage system which flows into the New Liskeard Lagoon.

Prior to filtration, chlorine gas is injected into the water to aid the oxidation process and precipitate the iron and manganese. After filtration, the treated water is re-chlorinated and directed into a contact tank comprised of two clearwells.

Water Storage

The clearwells are located directly below the water treatment plant and have a total storage capacity of 271 m³ (clearwell No. 1: 126 m³; clearwell No. 2: 145 m³). The baffles in the clearwell help to ensure sufficient chlorine contact time (CT). The free chlorine residual, pH, temperature, level and flow are continuously monitored to ensure adequate primary disinfection before the water enters the distribution system. The two clearwells are connected via an isolation valve to enable either clearwell to be drained for maintenance without compromising a continuous supply of water to users.

Two vertical turbine high lift pumps, equipped with variable frequency drives (VFDs) are each rated at 3272 L/min. They direct the treated water from the clear well to the Shepherdson Road reservoir and the Dymond reservoirs. If the high lifts are off then the Dymond Reservoir is fed by the Shepherdson Road reservoir.

The Shepherdson Road Reservoir is located at 150 Shepherdson Road in New Liskeard and has a storage capacity of 1818 m³. Three vertical turbine pumps, all equipped with variable frequency drives (VFDs), supply water to pressure zones 2 and 3 in the system. A secondary disinfection system is in place at the reservoir using sodium hypochlorite to boost the chlorine levels leaving the reservoir if required.

The Dymond Reservoir is located at 286 Raymond Street and has a capacity of 1395 m³. The reservoir is a single story building with an underground clearwell consisting of four interconnected baffled cells. A second building houses a sodium hypochlorite feed system, if boosting is required and four vertical turbine pumps (equipped with VFDs) two rated at 70 L/s and two rated at 28.1 L/s.

Control System

The New Liskeard Water Treatment System is controlled by a dedicated Programmable Logic Controller (PLC) and monitored through a Control System Supervisory Control and Data Acquisition (SCADA) system. All analyzing, monitoring and control module equipment information is routed through the SCADA system for operator monitoring and control. Control of equipment can be accomplished locally using the Human Machine Interface (HMI) touch screen at the New Liskeard water treatment plant or remotely via the SCADA computer located at the Haileybury water treatment plant. Operators can also access the system using their computers

and cell phones. Alarm capability and set point adjustment along with trend monitoring are also available through SCADA system controls.

Emergency Power

An emergency stand-by 300 kW diesel powered generator with a 1000L fuel tank is available at the Well No. 3 pump house to ensure continued operation of the water treatment facility during a power outage.

A 230 kW diesel generator with a 2000 L fuel tank is on-site at the Shepherdson Street Reservoir

A 260 kW standby diesel generator with two (2) 1000 L fuel tanks are available at the Dymond Reservoir in case of power failures.

Distribution System

The New Liskeard Drinking Water System is classified as a Large Municipal Residential Drinking Water System that provides water to the communities of New Liskeard and Dymond. The distribution system consists of approximately 5750 residents and 2300 service connections and is comprised of various pipe materials including cast iron, ductile iron and PVC ranging from 4 to 16 " in New Liskeard and 6 to 12 " in Dymond. Approximately 535 m of 150 mm diameter HDPE feeder main to the Dymond Reservoir was installed in May 2020. There are several isolation valves to allow for the repair and maintenance of selected sections of the distribution system, three air relief valves and five pressure reducing valves. Approximately 313 fire hydrants are connected to the system to aid in fire protection.

This distribution system is broken down into three (3) service zones. It should be noted that the feeder main from the McCamus water treatment plant to the storage reservoir on Shepherdson Road also acts as a distribution line within Zone I. The three zones are supplied with potable water in the following manner:

Zone I – Gravity Zone is supplied with water through a distribution line (also the feeder main to the reservoir from the WTP) from the Shepherdson Road reservoir. Zone I is also isolated from Zones II and III via natural topography and closed valves. Zone I also supplies water from Shepherdson Road to the Dymond Reservoir which feeds the Dymond Distribution System.

Zone II – Intermediate Zone is fed through a separate distribution line from the Shepherdson Road reservoir through pumping. The area is generally comprised of residential units as well as the recently developed (2011) Dymond Industrial Park. The interconnected distribution piping between this zone and Zone I (gravity) is isolated via closed gate valves.

Zone III – High Zone is fed through a separate distribution line from the Shepherdson Road reservoir through pumping. The area is generally comprised of limited industrial users and is the main feed for Temiskaming Hospital.

3. List of Water Treatment Chemicals Used

- Chlorine Gas – disinfection
- Sodium Hypochloride – disinfection; re-chlorination at the reservoirs

All treatment chemicals meet AWWA and NSF/ANSI standards.

4. Significant Expense Incurred in 2023

OCWA is committed to maintaining the assets of the drinking water system and sustains a program of scheduled inspection and maintenance activities using a computerized Work Management System (WMS).

Significant expenses incurred in the drinking water system include the following:

- PLC/SCADA upgrade to tie in pH and temperature
- Purchased and replaced chlorinator solenoids,
- New Liskeard Reservoir lightning strike - repair PLC and instrumentation damaged by the strike (HMI, PLC, UPS, signal isolators, VFD cards, 2 pressure transmitters, radio communications, intrusion alarm, security camera, level indicator for hypochlorite tank, level indicator for reservoir, flow meter output card, 24 volt power supply, grounding of the radio tower)
- Replaced Well Pump No. 4 after it failed,
- Water treatment chemicals,
- Purchased spare chlorinator,
- Replaced chlorine cylinder bottle mount,
- Dymond Reservoir - replaced faulty photcell on the chlorine analyzer,
- Purchased air regulators,
- Replaced several valves in the distribution system,
- Quality and Environmental Management System (QEMS) external surveillance audit conducted by SAI Global.

5. Details of Notices Reported & Submitted to the Spills Action Center

Based on information kept on record by OCWA, thirteen (13) adverse water quality incidents (AWQIs) were reported to the Ministry's Spills Action Centre in 2023.

- Eleven (11) AWQIs occurred during Category 2 watermain breaks or planned repairs.
- Two (2) AWQIs had adverse total coliforms results.

Refer to *Appendix A* for a summary of AWQIs.

6. Microbiological Testing

Table 1: Summary of Microbiological Results

Sample Type	# of Samples	Range of <i>E.coli</i> Results (min to max)	Range of Total Coliform Results (min to max)	# of HPC Samples	Range of HPC Results (min to max)
Raw – Well 3	52	0 to 0	0 to 1	N/A	N/A
Raw – Well 4	47*	0 to 0	0 to 4	N/A	N/A
Treated	52	0 to 0	0 to 0	52	< 10 to 50
Distribution	208	0 to 0	0 to 1**	104	< 10 to 220

Maximum Acceptable Concentration (MAC) for treated and distribution samples: *E. coli* = 0 CFUs/100 mL and MAC for Total Coliforms = 0 CFUs/100 mL

“<” denotes less than the laboratory’s method detection limit

Notes:

One microbiological sample is collected and tested each week from the raw and treated water supply. A total of four microbiological samples are collected and tested each week from the distribution system. At least 25% of the distribution samples must be tested for HPC bacteria.

* Well No. 4 was removed from service on October 9th at 1141 AM when the well pump failed. The pump was replaced and the well was put back into service on November 27th at 1005 AM.

** One (1) total coliform was detected in a distribution sample collected at 883275 Hwy 65# (Ebert's Welding Limited) in the New Liskeard distribution system. The sample was collected on July 10, 2023 at 9:29 AM. Free chlorine residual = 1.27 mg/L

Refer to *Appendix B* for a monthly summary of the above microbiological data.

7. Operational Testing

Table 2: Summary of Raw Water Turbidity Results

Parameter	# of Samples	Range of Results (min to max)	Unit of Measure
Turbidity – Well 3	48	0.15 to 6.33	NTU
Turbidity – Well 4	43	0.30 to 3.80	NTU

Notes:

Turbidity samples are required once every month.

Table 3: Continuous Monitoring in the Treatment Process

Parameter	# of Samples	Range of Results (min to max)	Unit of Measure	Standard
Free Chlorine Residual	8760	0.60 to 3.81	NTU	CT ^{Note 2}

Notes:

1. For continuous monitors 8760 is used as the number of samples.
2. CT is the concentration of chlorine in the water times the time of contact that the chlorine has with the water. It is used to demonstrate the level of disinfection treatment in the water. CT calculations are performed for the New Liskeard water plant if the free chlorine residual level drops below 0.40 mg/L to ensure primary disinfection is achieved.

Table 4: Summary of Chlorine Residuals in the Distribution System

Parameter	# of Samples	Range of Results (min to max)	Unit of Measure	Standard
Free Chlorine Residual	368	0.32 to 1.70	mg/L	≥ 0.05

Note: A total of seven operational checks for chlorine residual in the distribution system are collected each week. Four (4) samples are tested one day and three (3) on a second day. The sample sets are collected at least 48-hours apart and samples collected on the same day are from different locations.

Refer to *Appendix C* for a monthly summary of the above operational data.

8. Chemical Testing

Table 5: Summary of Nitrate & Nitrite Data from the Water Treatment Plant

Date of Sample	Nitrate Result	Nitrite Result	Unit of Measure	Exceedance
January 9	< 0.1	< 0.01	mg/L	No
April 11	< 0.1	< 0.01	mg/L	No
July 10	< 0.1	< 0.01	mg/L	No
October 16	< 0.1	< 0.01	mg/L	No

Maximum Allowable Concentration (MAC) for Nitrate = 10 mg/L and for Nitrite = 1 mg/L

Table 6: Summary of Total Trihalomethane Results from the Distribution System

Date of Sample	THM Result	Unit of Measure	Running Average	Exceedance
January 9	44.0	ug/L	Q1 = 39.6	No
April 11	41.8	ug/L	Q2 = 40.0	No
July 10	38.0	ug/L	Q3 = 39.7	No
October 16	55.2	ug/L	Q4 = 44.8	No

Maximum Allowable Concentration (MAC) for Total Trihalomethanes = 100 ug/L (Four Quarter Running Average)

Table 7: Summary of Total Haloacetic Acid Results from the Distribution System

Date of Sample	Result Value	Unit of Measure	Running Average	Exceedance
January 9	36	ug/L	Q1 = 35.5	No
April 11	31	ug/L	Q2 = 38.5	No
July 10	25	ug/L	Q3 = 35.3	No
October 16	39	ug/L	Q4 = 32.8	No

Maximum Allowable Concentration (MAC) for Total Haloacetic Acid = 80 ug/L (Four Quarter Running Average)

Table 8: Summary of Lead Results under Schedule 15.1 (from the distribution system)

Date of Sample	# of Samples	Field pH (min to max)	Field Temperature (°C) (min to max)	Alkalinity (mg/L) (min to max)	Lead (ug/L) (min to max)
March 7	3	7.41 to 7.44	5.5 to 6.3	233 to 237	N/A
September 13	3	7.43 to 7.49	12.2 to 13.1	208 to 227	N/A

Maximum Allowable Concentration (MAC) for Lead -10 ug/L

The system is required to test for total alkalinity and pH in three distribution samples collected during the period of December 15 to April 15 (winter period) and three distribution sample during the period of June 15 to October 15 (summer period). This testing is required in every 12-month period with lead testing in every third 12-month period.

Lead testing was not required this reporting period, but was done in 2021. The results were <0.1, <0.1 and 0.1 ug/L sampled on March 8th and <0.1, <0.1 and <0.1 ug/L sampled on September 22nd. Next lead sampling is scheduled for 2024.

Table 9: Most Recent Schedule 23 Inorganic Results from the Water Treatment Plant

Parameter	Result Value	Unit of Measure	MAC	MAC Exceedance	½ MAC Exceedance
Antimony	< 0.5	ug/L	6	No	No
Arsenic	< 1.0	ug/L	10	No	No
Barium	104	ug/L	1000	No	No
Boron	97	ug/L	5000	No	No
Cadmium	< 0.1	ug/L	5	No	No
Chromium	2	ug/L	50	No	No
Mercury	< 0.1	ug/L	1	No	No
Selenium	0.5	ug/L	50	No	No
Uranium	< 1	ug/L	20	No	No

Note: Sample required every 12 months (sample date = October 16, 2023)

Table 10: Most Recent Schedule 24 Organic Results from the Water Treatment Plant

Parameter	Result Value	Unit of Measure	Standard	MAC Exceedance	½ MAC Exceedance
Alachlor	< 0.308	ug/L	5	No	No
Atrazine + N-dealkylated metabolites	< 0.5	ug/L	5	No	No
Azinphos-methyl	< 0.308	ug/L	20	No	No
Benzene	< 0.1	ug/L	1	No	No
Benzo(a)pyrene	< 0.01	ug/L	0.01	No	No
Bromoxynil	< 0.0971	ug/L	5	No	No
Carbaryl	< 3	ug/L	90	No	No
Carbofuran	< 4	ug/L	90	No	No
Carbon Tetrachloride	< 0.2	ug/L	2	No	No
Chlorpyrifos	< 0.231	ug/L	90	No	No
Diazinon	< 0.231	ug/L	20	No	No
Dicamba	< 0.085	ug/L	120	No	No

Parameter	Result Value	Unit of Measure	Standard	MAC Exceedance	½ MAC Exceedance
1,2-Dichlorobenzene	< 0.2	ug/L	200	No	No
1,4-Dichlorobenzene	< 0.3	ug/L	5	No	No
1,2-Dichloroethane	< 0.2	ug/L	5	No	No
1,1-Dichloroethylene (vinylidene chloride)	< 0.3	ug/L	14	No	No
Dichloromethane	< 1	ug/L	50	No	No
2-4 Dichlorophenol	< 0.2	ug/L	900	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	< 0.364	ug/L	100	No	No
Diclofop-methyl	< 0.121	ug/L	9	No	No
Dimethoate	< 0.231	ug/L	20	No	No
Diquat	< 0.2	ug/L	70	No	No
Diuron	< 10	ug/L	150	No	No
Glyphosate	< 20	ug/L	280	No	No
Malathion	< 0.231	ug/L	190	No	No
Metolachlor	< 0.154	ug/L	50	No	No
Metribuzin	< 0.154	ug/L	80	No	No
Monochlorobenzene	< 0.5	ug/L	80	No	No
Paraquat	1.3	ug/L	10	No	No
Polychlorinated Biphenyls (PCBs)	< 0.08	ug/L	3	No	No
Pentachlorophenol	< 0.3	ug/L	60	No	No
Phorate	< 0.154	ug/L	2	No	No
Picloram	< 0.085	ug/L	190	No	No
Prometryne	< 0.077	ug/L	1	No	No
Simazine	< 0.231	ug/L	10	No	No
Terbufos	< 0.154	ug/L	1	No	No
Tetrachloroethylene	< 0.3	ug/L	10	No	No

Parameter	Result Value	Unit of Measure	Standard	MAC Exceedance	½ MAC Exceedance
2,3,4,6-Tetrachlorophenol	< 0.3	ug/L	100	No	No
Triallate	< 0.154	ug/L	230	No	No
Trichloroethylene	< 0.2	ug/L	5	No	No
2,4,6-Trichlorophenol	< 0.2	ug/L	5	No	No
2-methyl-4-chlorophenoxyacetic acid (MCPA)	< 6.07	ug/L	100	No	No
Trifluralin	< 0.154	ug/L	45	No	No
Vinyl Chloride	< 0.1	ug/L	1	No	No

Note: Sample required every 12 months (sample date = *October 16, 2023*)

Inorganic or Organic Parameter(s) that Exceeded Half the Standard Prescribed in Schedule 2 of Ontario Drinking Water Quality Standards

No inorganic or organic parameter(s) listed in Schedule 23 and 24 of Ontario Regulation 170/03 (parameters listed in Table 9 and Table 10 of this report) exceeded half the standard found in Schedule 2 of the Ontario Drinking Water Standard (O. Reg.169/03) during the reporting period.

Table 11: Most Recent Sodium Data (from the Water Treatment Plant)

Date of Sample	# of Samples	Result Value	Unit of Measure	MAC	Exceedance
October 16, 2023	1	17	mg/L	20	No

Note: Sample required every 60 months. Next sampling scheduled for October 2028.

The aesthetic objective for sodium in drinking water is 200 mg/L at which it can be detected by a salty taste. It is required that the local Medical Officer of Health be notified when the concentration exceeds 20 mg/L so that persons on sodium restricted diets can be notified by their physicians.

Table 12: Most Recent Fluoride Data Sampled at the Water Treatment Plant

Date of Sample	# of Samples	Result Value	Unit of Measure	MAC	Exceedance
October 16, 2023	1	0.70	mg/L	1.5	No

Note: Sample required every 60 months. Next sampling scheduled for October 2028.

9. Additional Testing Performed in Accordance with a Legal Instrument

Section 2.0 to Schedule D of Municipal Drinking Water Licence #218-103-3 issued on July 23, 2021 provides relief from regulatory requirements Schedule 1-2(2) 4i and 16-3(1) 4 which states that:

Notwithstanding the provisions of Ontario Reg. 170/03, the Owner is not required to comply with the following:

- The free chlorine residual at 399 Radley Hill Road is never less than 0.05 mg/L.
- A result indicating that the free chlorine residual is less than 0.05 mg/L in a sample of drinking water at 399 Radley Hill Road is an adverse result of a drinking water test for the purpose of section 18 of the Ontario Safe Drinking Water Act (SDWA, 2002) if a report under subsection 18(1) of the SDWA has not been made in respect of free chlorine residual in the preceding 24 hours.

In exchange, the following conditions apply:

- An ultraviolet light (UV) point of entry treatment unit owned or leased by the owner of the system is connected to the plumbing of every building and other structure that is served by the drinking water system at 399 Radley Hill Road.
- The UV unit(s) is validated through biodosimetry testing for a dose of 40 mJ/cm².
- In the event that the UV unit malfunctions, loses power or ceases to provide the appropriate level of disinfection:
 - The UV unit has a feature that ensures that no water is directed to users of water treated by the unit and a certified operator takes appropriate action at the location where the unit is installed if such an event occurs before water is again directed to users of water treated by the unit, or
 - The UV unit has a feature that causes an alarm to sound immediately at the building or structure where the point of entry treatment unit is installed and a location where a certified operator is present, if a certified operator is not always present at the building or structure where the point of entry treatment unit is installed. If an alarm sounds, a certified operator must take appropriate action as soon as possible.

Table 13: Summary of UV Dosage

UV System	# of Samples	Range of Results <i>(min to max)</i>	Unit of Measure	Standard
UV Unit	78	79.6 to 315	mJ/cm ²	40

Schedule 22 – Summary Reports for Municipalities

10. Requirements the System Failed to Meet

According to information kept on record by OCWA for the reporting period, the New Liskeard Drinking Water System has complied with all the requirements set out in the system's Municipal Drinking Water Licence (MDWL), its Drinking Water Works Permit (DWWP), the Act and its Regulations.

Thirteen (13) adverse water quality incidents were reported to the Ministry's Spills Action Center during the reporting period. Refer to *Section 5 - Details of Notices Reported & Submitted to the Spills Action Center* on page 9 of this report for details.

11. Summary of Quantities and Flow Rates

11.1 Flow Monitoring

Municipal Drinking Water Licence (MDWL) No. 218-103 requires the owner to install a sufficient number of flow measuring devices to permit the continuous measurement and recording of:

- the flow rate and daily volume of water conveyed from the treatment system to the distribution system,
- the flow rate and daily volume of water conveyed into the treatment system.

The systems' Permit to Take Water (PTTW) No. 4417-AF2JAM requires that on each day water is taken from the source, the date, the volume of water taken on that date and the rate at which it was taken be recorded.

The New Liskeard drinking water system has two flow meters to monitor the raw water from each well entering the treatment plant and one to monitor the treated water entering the distribution system. These flow metering devices were calibrated in accordance to manufacturers' specifications on an annual basis and are operating as required.

11.2 Rated Capacity & Flow Rates

The system's Permit to take Water (PTTW) No. 4417-AF2JAM allows the plant to withdraw a maximum volume of 4000 cubic meters from each wells each day and a total combined volume of 8000 cubic meters each day. A review of the raw water flow data indicates that the system did not exceed these allowable limits:

A review of the raw water flow data indicates that the total daily volume of water taken from each well never exceeded the allowable limits. The maximum water taking from Well No. 3 was 3433 m³, the maximum taking from Well No. 4 was 2811 m³ and the combined maximum was 5296 m³.

The Permit also allows a maximum flow rate of 4500 L/minute from each well. Well No. 3 and Well No. 4 operated within their allowable flow rates having a maximum flow rate of 4082 and 3785 L/minute respectively.

It is important to note that Well No. 4 was removed from service on October 9th at 1141 AM when the well pump failed. The pump was replaced and the well was put back into service on November 27th at 1005 AM.

Condition 1.0 (1.1) to Schedule C of MDWL No. 218-103 states that the maximum daily volume of treated water that flows from the treatment subsystem to the distribution system not exceed a maximum flow of 7865 m³ on any calendar day. The New Liskeard DWS complied with this limit having a recorded maximum volume of 5073 m³/day, which is 65 % of the rated capacity.

The following tables (Table 14, Table 15, Table 16 and Table 17) indicate the quantities and flow rates of water taken and produced during the reporting period, including monthly average flows, maximum daily flows and total monthly volumes. A comparison of the water data is made to the rated capacity and flow rates specified in the system's Permit to Take Water and the Municipal Drinking Water License.

Figure 1 is a comparison of the rate specified in the system's Municipal Drinking Water Licence to the average and maximum flows entering the treatment system.

Table 18 lists historical maximum raw and treated flows from 2018 to 2023.

Table 14: 2023 – Monthly Summary of Water Takings from the Source (Well No. 3)

Regulated by Permit to Take Water (PTTW) #4417-AF2JAM, issued November 2, 2016

Well No. 3	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Total Volume (m ³)	37833	34904	35318	36705	49898	60549	51795	52450	49731	83463	89582	51951	634180
Average Volume (m ³ /d)	1220	1247	1139	1224	1610	2018	1671	1692	1658	2692	2986	1676	1736
Maximum Volume (m ³ /d)	2437	2472	1444	1635	2783	2974	2794	2797	2206	3274	3433	2811	3433
PTTW - Maximum Allowable Volume (m ³ /day)	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
Maximum Flow Rate (L/min)	4082	3910	3885	3790	3360	3746	3359	3830	3269	3277	3259	3672	4082
PTTW - Maximum Allowable Flow Rate (L/min)	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500

Table 15: 2023 – Monthly Summary of Water Takings from the Source (Well No. 4)

Well No. 4	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Total Volume (m ³)	36810	41854	46709	49421	54883	57495	56764	57418	53585	15193	6225	53082	529440
Average Volume (m ³ /d)	1187	1495	1507	1647	1770	1917	1831	1852	1786	490	208	1712	1450
Maximum Volume (m ³ /d)	1602	1883	1903	2131	2242	2613	2395	2594	2231	2162	2159	2811	2811
PTTW - Maximum Allowable Volume (m ³ /day)	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
Maximum Flow Rate (L/min)	2585	2553	2514	2518	2526	2488	2449	2416	2291	2142	3785	2875	3785
PTTW - Maximum Allowable Flow Rate (L/min)	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500

Well 4 was taken out of service on October 9th when the well pump failed. The pump was replaced and the well was put back into service on November 27th.

Table 16: 2023 – Monthly Summary of Combined Water Takings from the Source (Well No. 3 & 4)

Combined (Well 3 & 4)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
<i>Total Volume (m³)</i>	74643	76758	82027	86126	104781	118044	108559	109868	103316	98656	95807	105033	1163619
<i>Average Volume (m³/d)</i>	2408	2741	2646	2871	3380	3935	3502	3544	3444	3182	3194	3388	3186
<i>Maximum Volume (m³/d)</i>	2663	4268	2843	3265	4612	4971	5189	5296	3861	3867	3433	4495	5296
<i>PTTW - Maximum Allowable Flow Rate (L/min)</i>	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000

Table 17: 2023 – Monthly Summary of Treated Water Supplied to the Distribution System

Regulated by Municipal Drinking Water Licence (MDWL) #218-103-3, issued July 23, 2021

Treatment Plant	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Total Volume (m ³)	69807	72225	76891	81085	98903	112180	102610	103888	97649	95327	92903	99347	1102814
Average Volume (m ³ /d)	2252	2579	2480	2703	3190	3739	3310	3351	3255	3075	3097	3205	3020
Maximum Volume (m ³ /d)	2440	4103	2669	3073	4426	4762	4967	5073	3696	3695	3397	4333	5073
MDWL - Rated Capacity (m ³ /day)	7865	7865	7865	7865	7865	7865	7865	7865	7865	7865	7865	7865	7865

Table 18: 2023 – Historical Maximum Flows (2018 to 2023)

Year	Maximum Raw Flow (m ³ /d)	Max. Day % of PTTW Allowable (8000 m ³ /d)	Maximum Treated Flow (m ³ /d)	Max. Day % of MDWL Capacity (7865 m ³ /d)
2023	5296	66%	5073	65%
2022	5211	65%	4984	63%
2021	4885	61%	4708	60%
2020	5921	74%	6326	80%
2019	5464	68%	6112	78%
2018	6163	77%	5993	76%

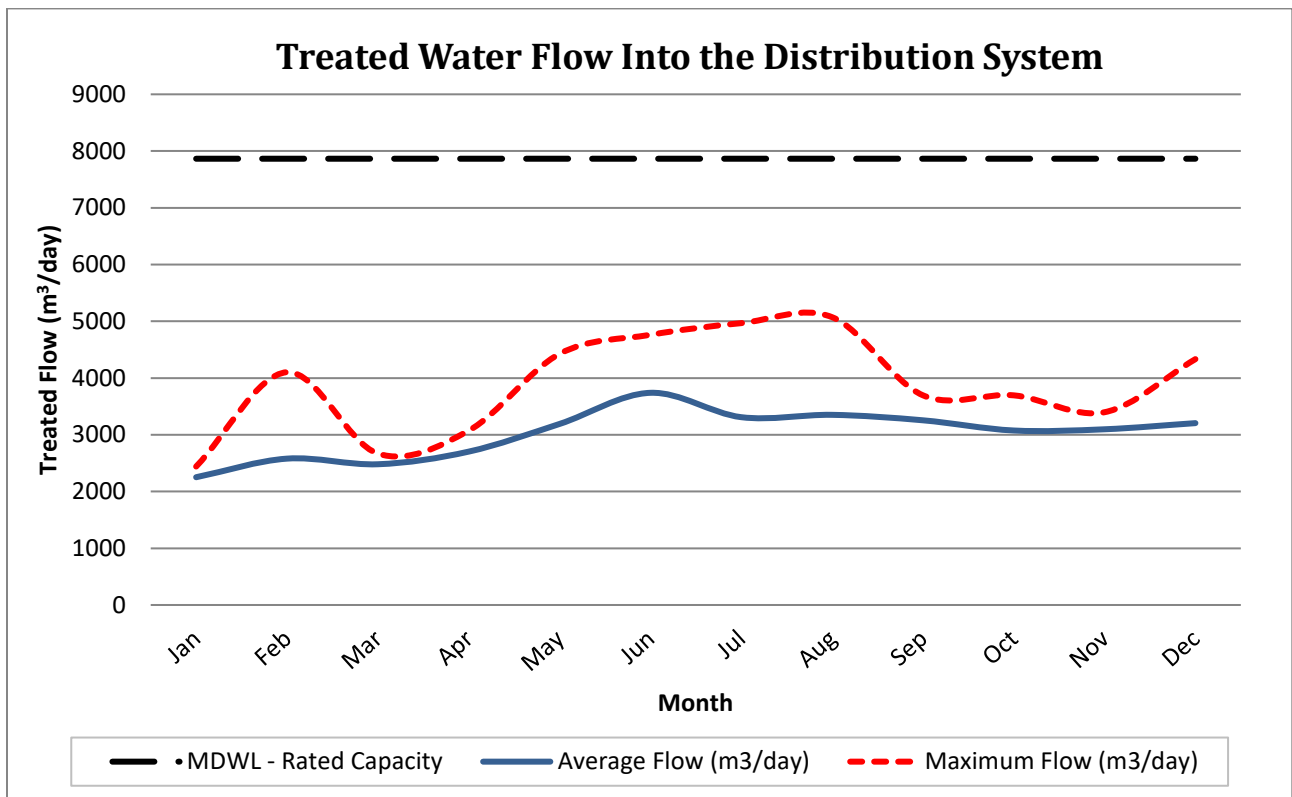


Figure 1: Comparison of Treated Flows to the Maximum Rated Capacity

11.3 System Performance

The following information is provided to enable the Owner to assess the capability of the system to meet existing and future water usage needs:

Rated Capacity of the Plant (MDWL)	7865 m ³ /day	
Average Daily Flow for 2023	3020 m ³ /day	38 % of the rated capacity
Maximum Daily Flow for 2023	5073 m ³ /day	65 % of the rated capacity
Total Treated Water Produced in 2023	1,102,814 m ³	

Conclusion

The water quality data collected in 2023 demonstrates that the New Liskeard drinking water system provided high quality drinking water to its users.

The system was able to operate in accordance with the terms and conditions of the Permit to Take Water and in accordance with the rated capacity of the Municipal Drinking Water Licence while meeting the community’s demand for water use.

The system complied with all regulatory requirements of the Safe Drinking Water Act and its Regulations and met the terms and conditions outlined in its Municipal Drinking Water License and Drinking Water Works Permit.

All Adverse Water Quality Incidents were reported to the Ministry’s Spills Action Center and the corrective actions were completed as required and resolved as soon as possible.

APPENDIX A

Summary of Adverse Water Quality Incidents (AWQIs)

New Liskeard DWS

Notices Reported & Submitted to the Spills Action Center

Incident #1: Category 2 - Emergency Watermain Repair / Loss of Pressure / BWA

AWQI No.	1-31Y0TY
Date	February 26, 2023
Details	<p>Watermain break at 141 Dymond Street. Replaced 12' of a 4 inch service line to the New Liskeard Public School.</p> <p>A precautionary boil water advisory (BWA) was issued by the local Health Unit for the East wing of the school. The school bagged the affected fountains and notified students and staff about the BWA during a morning announcement.</p>
Corrective Actions	<p>Repair parts were disinfected as required. After the repair was complete, the pressure was restored and the area was flushed until an acceptable free chlorine residual was achieved (1.18 mg/L).</p> <p>Two sets of 2 bacteriological samples were collected 24 hours apart (upstream and at the site of the break) on February 26th and 27th. All results were acceptable having no total coliforms and <i>E.coli</i>. The Health Unit lifted the BWA on March 1st at approximately 12:15 PM.</p>

Incident #2: Category 2 - Planned Watermain Repair / Loss of Pressure / BWA

AWQI No.	162028
Date	May 30, 2023
Details	<p>A valve replacement on Armstrong Street North. A defective 10 inch valve was replaced resulting in a loss of pressure to approximately 10 apartments and 25 businesses.</p> <p>The local Health Unit issued a BWA to the affected businesses and residences.</p>
Corrective Actions	<p>Valves and repair parts were disinfected as required and the pressure was restored. The area was flushed until an acceptable free chlorine residual was achieved (1.21 mg/L).</p> <p>Two sets of 3 bacteriological samples were collected (upstream, downstream and at the site of the break) on May 31st and June</p>

New Liskeard DWS

Notices Reported & Submitted to the Spills Action Center

1st. Sample results indicated no total coliforms or *E.coli*. The BWA was lifted on June 5th at approximately 2:00 PM.

Incident #3: Category 2 - Emergency Watermain Repair / Loss of Pressure / BWA

AWQI No.	162244
Date	June 20, 2023
Details	<p>A watermain main break in front of 183 Caroline Court in Dymond resulted in a loss of pressure to approximately 30 homes.</p> <p>The local Health Unit issued a precautionary BWA for the affected homes.</p>
Corrective Actions	<p>After a section of the main, a corporation stop and service line were replaced, the pressure was restored and the area was flushed until an acceptable free chlorine residual was achieved (0.94 mg/L).</p> <p>Two sets of 3 bacteriological samples were collected 24 hours apart (upstream, downstream and at the site of the break) on June 20th and June 21st. Sample results indicated no total coliforms or <i>E.coli</i>. The BWA was lifted on June 23rd at approximately 12:00 PM</p>

Incident #4: Category 2 - Watermain Repair / Loss of Pressure / BWA

AWQI No.	162511
Date	July 10, 2023
Details	<p>While changing a service to the high school (Timiskaming District Secondary School) it was discovered that the 6 inch main water line into the school was leaking. A new T and valve were installed.</p> <p>This resulted in a loss of pressure and the issuance of a precautionary BWA by the local Health Unit to approximately 30 residences, the school and two businesses on Niven Street between Whitewood Avenue and Dymond Avenue as well as a portion of Pinewoods Center.</p>

New Liskeard DWS

Notices Reported & Submitted to the Spills Action Center

Corrective Actions	<p>After the repair was complete, the pressure was restored and the area was flushed until an acceptable free chlorine residual was achieved (FCR = 1.12 mg/L).</p> <p>Two sets of 3 bacteriological samples were collected 24 hours apart (upstream, downstream and at the site of the break) on July 11th and 12th. Sample results indicated zero total coliforms or <i>E.coli</i>. The BWA was lifted on July 14th at approximately 1:05 PM</p>
---------------------------	---

Incident #5: Total Coliform

SAC Event No.	162538
Date	July 12, 2023
Details	<p>One (1) total coliform was detected in a distribution sample collected at 883275 Hwy 65# (Ebert's Welding Limited) in the New Liskeard distribution system. The sample was collected on July 10, 2023 at 9:29 AM. Free chlorine residual = 1.27 mg/L</p>
Corrective Actions	<p>Re-samples were collected (upstream, downstream and the site of the adverse result) on July 12th and results were acceptable having zero total coliforms and <i>E.coli</i>.</p>

Incident #6: Category 2 - Emergency Watermain Repair / Loss of Pressure / BWA

AWQI No.	163013
Date	August 13, 2023
Details	<p>A watermain break occurred on a 6" cast iron main at 95 Dixon Street affecting approximately 50 homes. Suspected cause of the break is failure of a pressure relief valve which resulted in water hammer and a pipe blow-out.</p> <p>A precautionary BWA was issued for the affected area by the local MOH.</p>

New Liskeard DWS

Notices Reported & Submitted to the Spills Action Center

Corrective Actions	<p>A section of pipe was replaced. Pipe and repair parts were disinfected. Flushing performed at Dixon and Broadway (FCR = 1.20 mg/L).</p> <p>Two sets of 3 bacteriological samples were collected 24 hours apart (upstream, downstream and at the site of the work) on August 14th and 15th . Sample results indicated no total coliforms or <i>E.coli</i>. The BWA was lifted on August 17th at approximately 12:00 PM (noon).</p>
---------------------------	---

Incident #7: Category 2 - Planned Watermain Repair / Loss of Pressure / BWA

AWQI No.	163038
Date	August 16, 2023
Details	<p>Replacement of a valve on an 8" watermain at the corner of Whitewood Avenue and Golding Street, affecting 2 businesses. Approximately 100 homes has low pressure during this time.</p> <p>A precautionary BWA was issued for the affected businesses by the local MOH.</p>
Corrective Actions	<p>The valve and repair parts were disinfected as required.</p> <p>After the repair was complete, pressure was restored and flushing performed at hydrant No. 36 (FCR = 0.77 mg/L) and hydrant No. 35 (FCR = 1.38 mg/L)</p> <p>Two sets of 3 bacteriological samples were collected 24 hours apart (upstream, downstream and at the site of the work) on August 16th and 18th. Sample results indicated no total coliforms or <i>E.coli</i>. The BWA was lifted on August 21 at approximately 11:40 AM.</p>

Incident #8: Category 2 - Planned Watermain Repair / Loss of Pressure / BWA

AWQI No.	163054
Date	August 17, 2023

New Liskeard DWS

Notices Reported & Submitted to the Spills Action Center

Details	<p>Replacement of 2 valves in the area of Armstrong Street, between Sharpe and Murray streets, affecting 30 buildings and 1 apartment with 15 units.</p> <p>A precautionary BWA was issued for the affected area by the local MOH.</p>
Corrective Actions	<p>Valves and repair parts were disinfected as required.</p> <p>After the repair was complete, pressure was restored and flushing performed until an acceptable free chlorine achieved (0.94 mg/L).</p> <p>Two sets of 3 bacteriological samples were collected 24 hours apart (upstream, downstream and near the site of the work) on August 18th and 19th. Sample results indicated no total coliforms or <i>E.coli</i>. The BWA was lifted on August 21st at approximately 10:30 AM.</p>

Incident #9: Category 2 - Planned Watermain Repair / Loss of Pressure / BWA

AWQI No.	163111
Date	August 22, 2023
Details	<p>Replacement of a valve on a watermain on Laurette Street, between Crystal Court and Drive-in-theater Road, affecting approximately 38 homes.</p> <p>A precautionary BWA was issued for the affected area by the local MOH.</p>
Corrective Actions	<p>Valves and repair parts were disinfected as required. After the repair was complete, the pressure was restored and flushing performed until an acceptable free chlorine achieved (0.74 mg/L).</p> <p>Two sets of 3 bacteriological samples were collected 24 hours apart (upstream, downstream and at the site of the work) on August 22th and 23th. Sample results indicated no total coliforms or <i>E.coli</i>. The BWA was lifted on August 25th at approximately 12:30 PM.</p>

New Liskeard DWS

Notices Reported & Submitted to the Spills Action Center

Incident #10: Category 2 - Emergency Watermain Repair / Loss of Pressure / BWA

AWQI No.	163372
Date	September 12, 2023
Details	<p>Category 2 emergency watermain repair due to a broken valve on Whitewood Avenue caused a loss of pressure to approximately 20 homes and 25 businesses in the area (Whitewood Ave from Paget Street to Edith Street and also part of Mary Street and Farah Avenue). A precautionary BWA was issued by the local MOH for the affected area.</p>
Corrective Actions	<p>After the repair was complete, the pressure was restored and the area was flushed until an acceptable free chlorine residual was achieved (1.56 mg/L).</p> <p>Two sets of 3 bacteriological samples were collected 24 hours apart (upstream, downstream and at the site of the break) on September 12th and 13th. Sample results indicated zero total coliforms and <i>E.coli</i>. The BWA was lifted on September 15th at approximately 12:30 PM</p>

Incident #11: Category 2 - Planned Watermain Repairs / Loss of Pressure / BWA

AWQI No.	163359
Date	September 29, 2023
Details	<p>Valve replacement on Bolger Avenue - Isolation of the main caused a loss of pressure to approximately 28 residential houses, 1 school and 1 church. A precautionary BWA was issued by the local Health Unit for the affected area.</p> <p>Valve replacement on Jaffray Street - Isolation of the main is caused a loss of pressure for approx. 4 residential houses and 3 businesses. A precautionary BWA was issued by the local Health Unit for the affected area.</p>
Corrective Actions	<p>After the work was complete and pressure was restored, both areas were flushed until an acceptable free chlorine residuals were achieved (1.07mg/L on Bolger and 1.29 mg/L on Jaffray).</p>

New Liskeard DWS

Notices Reported & Submitted to the Spills Action Center

<p>Two sets of bacteriological samples were collected in both areas. The samples collected for the Jaffray St. BWA were acceptable.</p> <p>The downstream sample collected for the Bolger collected on September 29th at 213 Whitewood Avenue had a result of 1 total coliform. Resamples were collected on September 30th and all results were acceptable having zero total coliforms and <i>E.coli</i>.</p> <p>The BWAs were lifted on October 3rd at approximately 10:00 AM.</p>
--

Incident #12: Total Coliform

AWQI No.	163665
Date	September 30, 2023
Details	<p>One (1) total coliform was detected in a distribution sample collected at 213 Whitewood Avenue in the New Liskeard distribution system. The sample was collected on September 29, 2023 at 12:20 PM (free chlorine residual = 1.02 mg/L).</p> <p>The sample was collected after a category 2 watermain repair (valve replacement) on Bolger Avenue. (AWQI 163659).</p>
Corrective Actions	Re-samples were collected (upstream, downstream and the site of the adverse result) on September 30 th and results were acceptable having zero total coliforms and <i>E.coli</i> .

Incident #13: Category 2 - Planned Watermain Repair / Loss of Pressure / BWA

AWQI No.	163701
Date	October 4, 2023
Details	<p>Replacement of a valve on Broadwood Avenue caused a loss of pressure to approximately 30 homes.</p> <p>A precautionary BWA was issued for the affected area by the local MOH.</p>
Corrective Actions	After the repair was complete, the pressure was restored and the area was flushed until an acceptable free chlorine residual was achieved (0.91 mg/L).

New Liskeard DWS

Notices Reported & Submitted to the Spills Action Center

Two sets of 3 bacteriological samples 24 hours apart (upstream, downstream and at the site of the break) on October 4th and 5th. Sample results indicated no total coliforms or *E.coli*. The BWA was lifted on October 10th at approximately 9:00 AM.

APPENDIX B

Monthly Summary of Microbiological Test Results

**NEW LISKEARD DRINKING WATER SYSTEM
2023 Summary of Microbiological Test Results**

Raw Water	01/2023	02/2023	03/2023	04/2023	05/2023	06/2023	07/2023	08/2023	09/2023	10/2023	11/2023	12/2023	Total	Avg	Max	Min
Well 3 / Total Coliform: TC - cfu/100mL																
Count Lab	5	4	4	4	5	4	5	4	4	5	4	4	52			
Max Lab	0	0	0	0	0	0	1	0	0	0	0	0			1	
Mean Lab	0	0	0	0	0	0	0.2	0	0	0	0	0		0.019		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
Well 3 / E. Coli: EC - cfu/100mL																
Count Lab	5	4	4	4	5	4	5	4	4	5	4	4	52			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
Well 4 / Total Coliform: TC - cfu/100mL																
Count Lab	5	4	4	4	5	4	5	4	4	1	2	5	47			
Max Lab	0	0	1	0	0	0	3	0	0	0	2	4			4	
Mean Lab	0	0	0.25	0	0	0	0.6	0	0	0	2	1.25		0.244		
Min Lab	0	0	0	0	0	0	0	0	0	0	2	0				0
Well 4 / E. Coli: EC - cfu/100mL																
Count Lab	5	4	4	4	5	4	5	4	4	1	2	5	47			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
Treated Water																
Treated Water POE / Total Coliform: TC - cfu/100mL																
Count Lab	5	4	4	4	5	4	5	4	4	5	4	4	52			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
Treated Water POE / E. Coli: EC - cfu/100mL																
Count Lab	5	4	4	4	5	4	5	4	4	5	4	4	52			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
Treated Water POE / HPC - cfu/mL																
Count Lab	5	4	4	4	5	4	5	4	4	5	4	4	52			
Max Lab	< 20	< 20	< 40	< 10	< 10	< 10	< 10	< 10	< 20	< 40	< 50	< 10			50	
Mean Lab	< 12	< 12.5	< 17.5	< 10	< 10	< 10	< 10	< 10	< 12.5	< 16	< 20	< 10		< 12.5		
Min Lab	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10				< 10
Distribution Water																
1st Bacti/Residual / Total Coliform: TC - cfu/100mL																
Count Lab	5	4	4	4	5	4	5	4	4	5	4	4	52			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
1st Bacti/Residual / E. Coli - cfu/100mL																
Count Lab	5	4	4	4	5	4	5	4	4	5	4	4	52			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
2nd Bacti/Residual / Total Coliform: TC - cfu/100mL																
Count Lab	5	4	4	4	5	4	5	4	4	5	4	4	52			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
2nd Bacti/Residual / E. Coli - cfu/100mL																
Count Lab	5	4	4	4	5	4	5	4	4	5	4	4	52			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
2nd Bacti/Residual / HPC - cfu/mL																
Count Lab	5	4	4	4	5	4	5	4	4	5	4	4	52			
Max Lab	70	< 30	< 100	< 40	< 20	< 20	< 60	< 10	< 40	< 10	< 220	< 10			220	
Mean Lab	26	< 15	< 40	< 17.5	< 14	< 12.5	< 20	< 10	< 22.5	< 10	< 62.5	< 10		< 21.346		
Min Lab	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10				< 10
3rd Bacti/Residual / Total Coliform: TC - cfu/100mL																
Count Lab	5	4	4	4	5	4	5	4	4	5	4	4	52			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
3rd Bacti/Residual / E. Coli - cfu/100mL																
Count Lab	5	4	4	4	5	4	5	4	4	5	4	4	52			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
4th Bacti/Residual / Total Coliform: TC - cfu/100mL																
Count Lab	5	4	4	4	5	4	5	4	4	5	4	4	52			
Max Lab	0	0	0	0	0	0	1	0	0	0	0	0			1	
Mean Lab	0	0	0	0	0	0	0.2	0	0	0	0	0		0.019		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
4th Bacti/Residual / E. Coli - cfu/100mL																
Count Lab	5	4	4	4	5	4	5	4	4	5	4	4	52			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
4th Bacti/Residual / HPC - cfu/mL																
Count Lab	5	4	4	4	5	4	5	4	4	5	4	4	52			
Max Lab	< 10	< 10	< 60	< 20	< 30	< 20	< 20	< 10	< 20	< 10	< 30	< 10			60	
Mean Lab	< 10	< 10	< 22.5	< 12.5	< 14	< 12.5	< 14	< 10	< 12.5	< 10	< 15	< 10		< 12.692		
Min Lab	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10				< 10

- NOTES:**
- Well No. 4 was removed from service on October 9th due to well pump failure. The pump was replaced and put back into service on November 27th.
 - One (1) total coliform was detected in a distribution sample collected at 883275 Hwy 65# (Ebert's Welding Limited) in the New Liskeard distribution system. The sample was collected on July 10, 2023 at 9:29 AM.

APPENDIX C

Monthly Summary of Operational Results

**NEW LISKEARD DRINKING WATER SYSTEM
2023 Summary of Operational Test Results**

Raw Water	01/2023	02/2023	03/2023	04/2023	05/2023	06/2023	07/2023	08/2023	09/2023	10/2023	11/2023	12/2023	Total	Avg	Max	Min
Well 3 / Turbidity - NTU																
Count IH	5	4	4	4	4	2	5	4	4	4	4	4	48			
Max IH	2.46	1.38	1.62	0.98	6.33	0.31	0.97	1.42	1.33	1.21	0.35	0.57			6.33	
Mean IH	1.16	0.60	1.14	0.61	3.73	0.31	0.58	1.29	1.16	0.80	0.24	0.32		1.02		
Min IH	0.36	0.31	0.73	0.28	0.74	0.31	0.32	1.13	0.99	0.59	0.18	0.15				0.15
Well 4 / Turbidity - NTU																
Count IH	4	4	4	4	4	2	5	4	4	1	1	4	41			
Max IH	2.97	1.85	1.92	3.10	3.80	1.33	2.40	1.16	2.04	2.66	0.54	0.52			3.80	
Mean IH	1.56	1.60	1.43	2.27	2.43	0.94	1.44	1.06	1.77	2.66	0.54	0.43		1.52		
Min IH	0.86	1.03	0.95	1.05	1.73	0.55	0.90	0.97	1.37	2.66	0.54	0.30				0.30
Treated Water	01/2023	02/2023	03/2023	04/2023	05/2023	06/2023	07/2023	08/2023	09/2023	10/2023	11/2023	12/2023	Total	Avg	Max	Min
Treated Water POE / Cl Residual: Free (Min 0.40 mg/L) - mg/L																
Max OL	3.72	2.22	1.76	1.82	1.73	3.56	2.30	2.08	2.16	2.17	3.81	2.73			3.81	
Mean OL	1.41	1.48	1.53	1.53	1.45	1.50	1.42	1.35	1.48	1.54	1.54	1.50		1.48		
Min OL	1.11	1.00	1.27	1.28	1.21	1.06	1.02	0.64	0.60	0.76	0.93	0.90				0.60
Distribution Water	01/2023	02/2023	03/2023	04/2023	05/2023	06/2023	07/2023	08/2023	09/2023	10/2023	11/2023	12/2023	Total	Avg	Max	Min
1st Bacti/Residual / Cl Residual: Free - mg/L																
Count IH	10	8	9	8	10	9	9	9	8	9	9	8	106			
Total IH	8.64	8.31	9.07	8.16	9.75	10.02	8.88	9.53	8.20	9.42	8.74	7.53	106.25			
Max IH	1.20	1.22	1.26	1.35	1.30	1.34	1.39	1.70	1.25	1.24	1.20	1.27			1.70	
Mean IH	0.86	1.04	1.01	1.02	0.98	1.11	0.99	1.06	1.03	1.05	0.97	0.94		1.00		
Min IH	0.54	0.84	0.88	0.86	0.84	0.92	0.41	0.61	0.83	0.84	0.81	0.40				0.40
2nd Bacti/Residual / Cl Residual: Free - mg/L																
Count IH	9	8	9	8	10	9	9	9	8	9	9	8	105			
Total IH	8.01	7.98	9.96	8.64	10.30	9.78	8.68	8.94	7.81	8.89	9.35	8.00	106.34			
Max IH	1.61	1.26	1.37	1.22	1.23	1.34	1.36	1.13	1.29	1.11	1.20	1.26			1.61	
Mean IH	0.89	1.00	1.11	1.08	1.03	1.09	0.96	0.99	0.98	0.99	1.04	1.00		1.01		
Min IH	0.62	0.82	0.69	0.94	0.89	0.71	0.73	0.83	0.85	0.83	0.86	0.75				0.62
3rd Bacti/Residual / Cl Residual: Free - mg/L																
Count IH	9	8	9	8	10	9	9	9	8	9	9	8	105			
Total IH	8.03	7.74	9.05	8.52	10.28	9.81	8.71	7.75	8.20	9.04	9.57	8.07	104.77			
Max IH	1.19	1.20	1.22	1.28	1.26	1.31	1.07	1.34	1.27	1.19	1.35	1.29			1.35	
Mean IH	0.89	0.97	1.01	1.07	1.03	1.09	0.97	0.86	1.03	1.00	1.06	1.01		1.00		
Min IH	0.66	0.77	0.87	0.77	0.90	0.79	0.79	0.41	0.77	0.57	0.78	0.75				0.41
4th Bacti/Residual / Cl Residual: Free - mg/L																
Count IH	5	4	4	4	5	4	5	4	4	5	4	4	52			
Total IH	4.97	3.64	4.47	4.08	5.08	4.57	4.91	3.19	4.05	4.96	4.51	4.46	52.89			
Max IH	1.12	1.14	1.25	1.27	1.24	1.32	1.27	1.04	1.36	1.23	1.24	1.39			1.39	
Mean IH	0.99	0.91	1.12	1.02	1.02	1.14	0.98	0.80	1.01	0.99	1.13	1.12		1.02		
Min IH	0.84	0.77	0.97	0.79	0.78	0.94	0.67	0.32	0.85	0.78	1.00	0.98				0.32