



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

New Liskeard Drinking Water System

# 2021 ANNUAL/SUMMARY REPORT

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



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## INTRODUCTION

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.

Section 11 of Regulation 170/03 requires the owner to produce an Annual Report. This report must include the following:

1. Description of system & 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 reports have been prepared by the Ontario Clean Water Agency (OCWA) on behalf of the Owner and presented to council as the 2021 Annual/Summary Report.



New Liskeard Drinking Water System

Section 11

# 2021 ANNUAL REPORT



## Section 11 - ANNUAL REPORT

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### 1.0 INTRODUCTION

|                                       |   |
|---------------------------------------|---|
| <b>Drinking-Water System Name</b>     | <b>New Liskeard Drinking Water System</b>         |
| <b>Drinking-Water System Number</b>   | 220000344   |
| <b>Drinking-Water System Owner</b>    | The Corporation of the City of Temiskaming Shores |
| <b>Drinking-Water System Category</b> | Large Municipal, Residential System               |
| <b>Reporting Period</b>               | January 1, 2021 to December 31, 2021              |

**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 the report required under O. Reg. 170/03 Schedule 22 will be available for inspection:**

City of Temiskaming Shores  
325 Farr Drive, P.O. Box 2050  
Haileybury, ON P0J 1K0

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

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

### **The Annual Report was not provided to any other Drinking Water System Owners**

The Ontario Clean Water Agency prepared the 2021 Annual Report for the New Liskeard Drinking Water System and provided a copy to the system owner; the City of Temiskaming Shores. The New Liskeard Drinking Water System is a stand-alone system that does not receive water from or send water to another system.

**Notification to system users that the Annual Report is available for viewing is accomplished through:**

- Notice on the city's Facebook page
- Notice via a Community Bulletin in the local newspaper



## **2.0 NEW LISKEARD DRINKING WATER SYSTEM (DWS No. 220000344)**

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 305 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 (m<sup>3</sup>/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. The clearwells are continuously monitored for free chlorine residual levels, level and temperature.



### ***Water Storage and Pumping Capabilities***

The clearwells are located directly below the water treatment plant and have a total storage capacity of 271 m<sup>3</sup> (clearwell No. 1: 126 m<sup>3</sup>; clearwell No. 2: 145 m<sup>3</sup>). The baffles in the clearwell help to ensure sufficient chlorine contact time (CT). The free chlorine residual, pH 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 m<sup>3</sup>. 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 m<sup>3</sup>. 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.

### **3.0 LIST OF WATER TREATMENT CHEMICALS USED OVER THE REPORTING PERIOD**

The following chemicals were used in the New Liskeard Drinking Water System treatment process:

- Chlorine Gas – Primary Disinfection
- Sodium Hypochlorite – Secondary Disinfection





All treatment chemicals meet AWWA and NSF/ANSI standards.

#### 4.0 SIGNIFICANT EXPENSES INCURRED TO THE DRINKING WATER SYSTEM

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:

##### *Water Treatment System*

- Replaced backflow preventer for CL-17 analyzer feed water at the Dymond Reservoir
- Replaced faulty chlorine injection solenoids
- Replaced two faulty solenoids feeding the filter No. 2 turbidimeter
- Replaced chlorine post CL-17 free chlorine residual analyzer at the Dymond Reservoir
- Replaced portable chlorine residual colourimeters
- Replaced sodium hypochlorite pump head at the Dymond Reservoir
- Serviced chlorinator – replaced injector valves
- Replaced copper line on pressure reducing valves with stainless steel
- Replaced the free pre-chlorine residual analyzer at the water treatment plant
- Replaced the CL-17 free chlorine residual analyzer at the Shepherson Reservoir
- Purchased new pH meters

##### *Distribution System*

- Installed a new watermain crossing under Highway 11 using approximately 50 m steel casing, approximately 55 m of 150 mm diameter watermain and four 150 mm valves.

#### 5.0 DETAILS ON NOTICES OF ADVERSE TEST RESULTS AND OTHER PROBLEMS REPORTED TO & SUBMITTED TO THE SPILLS ACTION CENTER

Based on information kept on record by OCWA, three (3) adverse water quality incidents were reported to the Ministry’s Spills Action Centre in 2021.

| <b>Date</b>   | <b>AWQI No.</b> | <b>Details</b>  |
|---------------|-----------------|---|
| April 7, 2021 | 153815          | Loss of pressure due to a Category 2 watermain break/repair on Jaffray St. affecting six (6) buildings. The local Health Unit was notified and a precautionary boil water advisory (BWA) was issued for the affected area. Two sets of three bacteriological samples were collected 24 hours apart. Samples were collected on April 7 <sup>th</sup> and 8 <sup>th</sup> . A sample collected at 33 Jaffray Street at the break site on April 8 <sup>th</sup> had a result of NDOGT for total coliforms and <i>E. coli</i> . The laboratory notified the operating authority on April 9 <sup>th</sup> and the incident was reported as an AWQI (No. 153837). |



| Date          | AWQI No. | Details   |
|---------------|----------|---|
|               |          | <p><u>Corrective Action:</u> The affected area was flushed and a free chlorine residual was maintained above 0.2 mg/L. Two sets of 3 bacteriological samples were collected upstream, downstream and at the break site 24 hours apart (April 9<sup>th</sup> and 10<sup>th</sup>). These sample results were acceptable having zero total coliforms and <i>E. coli</i>. The BWA was lifted on April 12<sup>th</sup> at approximately 9:45 AM.</p> <p>Notifications and reports completed as required.</p> <p><u>Resolution:</u> Section 2B completed and emailed to MOE SAC, MOH and Owner on April 13, 2021.</p> <p>*NDOGT – No Date Overgrown with Target</p>  |
| April 9, 2021 | 153837   | <p>NDOGT for total coliforms and <i>E.coli</i> was detected in a drinking water sample collected at 33 Jaffray Street at the site of a watermain break. The free chlorine residual was 0.69 mg/L. The sample was collected on April 8<sup>th</sup> at 1250 hours in response to a watermain repair. The local Health Unit issued a precautionary boils water advisory (BWA) for the affected area.</p> <p><u>Corrective Action:</u> The area was flushed and the free chlorine residual was maintained above 0.2 mg/L. Resamples were collected upstream, downstream and at the site of the adverse result on April 9<sup>th</sup> and 10<sup>th</sup> as per the Health Unit (the Health Unit required two consecutive sets of samples to have acceptable results to lift the BWA). Re-sample results indicated zero total coliforms and <i>E. coli</i>. BWA lifted on April 12<sup>th</sup> at approximately 9:45 AM.</p> <p>Notifications and reports completed as required.</p> <p><u>Resolution:</u> Section 2B completed and emailed to MOE SAC, MOH and Owner on April 13, 2021.</p> <p>*NDOGT – No Date Overgrown with Target</p> |
| April 8, 2021 | 153729   | <p>Loss of pressure due to a Category 2 watermain break/repair on Highway 11 at Drive-in Theater Road affecting a motel with restaurant, 1 building that houses 2 businesses and apartments, and one restaurant. The local Health Unit was notified and a precautionary boil water advisory (BWA) was issued for the affected area.</p> <p>Temporary line installed disinfected, flushed and sampled until repairs were completed in September 2021 when the main was re-routed. The BWA was lifted April 11<sup>th</sup>.</p> <p>Notifications and reports completed as required.</p> <p><u>Resolution:</u> Section 2B completed and emailed to MOE SAC, MOH and Owner on April 12, 2021.</p>  |



## 6.0 MICROBIOLOGICAL TESTING PERFORMED DURING THE REPORTING PERIOD

### Summary of Microbiological Data

| Sample Type  | # of Samples | Range of <i>E.coli</i> Results<br>(min to max) | Range of Total Coliform Results<br>(min to max) | # of HPC Samples | Range of HPC Results<br>(min to max) |
|--------------|--------------|--|---|------------------|--------------------------------------|
| Raw – Well 3 | 52           | 0 to 0   | 0 to 2  | N/A              | N/A                                  |
| Raw – Well 4 | 52           | 0 to 0   | 0 to 0  | N/A              | N/A                                  |
| Treated      | 52           | 0 to 0   | 0 to 0  | 52               | < 10 to 60                           |
| Distribution | 208          | 0 to 0   | 0 to 0  | 104              | < 10 to 60                           |

Maximum Acceptable Concentration (MAC) for *E. coli* = 0 Counts/100 mL

MAC for Total Coliforms = 0 Counts/100 mL

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

“>” denotes greater than the laboratory’s method detection limit.

**Notes:**

1. 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 New Liskeard distribution system. At least 25% of the distribution samples must be tested for HPC bacteria.

Refer to [Appendix A](#) for a monthly summary of microbiological test results.

## 7.0 OPERATIONAL TESTING PERFORMED DURING THE REPORTING PERIOD

### Summary of Raw Water Turbidity Data

| Parameter          | Number of Samples | Range of Results<br>(min to max) | Unit of Measure |
|--------------------|-------------------|----------------------------------|-----------------|
| Turbidity – Well 3 | 50                | 0.10 to 1.83                     | NTU             |
| Turbidity – Well 4 | 50                | 0.11 to 2.69                     | NTU             |

**Notes:**

1. Turbidity samples are required once every month.

### Continuous Monitoring in the Treatment Process

| Parameter              | # of Samples | Range of Results<br>(min to max) | Unit of Measure | Standard |
|------------------------|--------------|----------------------------------|-----------------|----------|
| Free Chlorine Residual | 8760         | 0.74 to 3.89                     | mg/L            | CT       |

**Notes:**

1. For continuous monitors use 8760 as the number samples for one year.
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.



**Summary of Chlorine Residual Data in the Distribution System**

| Number of Samples | Free Chlorine<br>(min to max) | Unit of Measure | Standard |
|-------------------|-------------------------------|-----------------|----------|
| 388               | 0.38 to 1.65                  | mg/L            | ≥ 0.05   |

**Note:** Four (4) chlorine residual samples are collected one day and three (3) on a second day of each week. The sample sets must be collected at least 48-hours apart and samples collected on the same day must be from different locations.

**Summary of Nitrate & Nitrite Data** (sampled at the plant’s point of entry into the distribution every quarter)

| Date of Sample | Nitrate Result | Nitrite Result | Unit of Measure | Exceedance |
|----------------|----------------|----------------|-----------------|------------|
| January 11     | < 0.05         | < 0.05         | mg/L            | No         |
| April 12       | < 0.05         | < 0.05         | mg/L            | No         |
| July 12        | < 0.05         | < 0.05         | mg/L            | No         |
| October 12     | < 0.05         | < 0.05         | mg/L            | No         |

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

**Summary of Total Trihalomethane Data** (sampled in the distribution system every quarter)

| Date of Sample | THM Result | Unit of Measure | Running Average | Exceedance |
|----------------|------------|-----------------|-----------------|------------|
| January 11     | 31.4       | ug/L            |                 |            |
| April 12       | 45.7       | ug/L            |                 |            |
| July 12        | 47.9       | ug/L            | 42.8            | No         |
| October 12     | 46.0       | ug/L            |                 |            |

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

**Summary of Total Haloacetic Acid Data** (sampled in the distribution system every quarter)

| Date of Sample | Result Value | Unit of Measure | Running Average | Exceedance |
|----------------|--------------|-----------------|-----------------|------------|
| January 11     | 32           | ug/L            |                 |            |
| April 12       | 40           | ug/L            |                 |            |
| July 12        | 31           | ug/L            | 37              | No         |
| October 12     | 45           | ug/L            |                 |            |

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

**Summary of Most Recent Lead Data under Schedule 15.1**

(applicable to the following drinking water systems; large municipal residential systems, small, municipal residential systems, and non-municipal year-round residential systems)

The New Liskeard Drinking Water System qualified for the ‘Exemption from Plumbing Sampling’ as described in section 15.1-5 (9-10) of Ontario Regulation 170/03. The exemption applies to a drinking water system if; in two consecutive periods at reduced sampling, not more than 10% of all samples from plumbing exceed the maximum allowable concentration of 10 ug/L for lead. As such, the system was required to test for total alkalinity and pH in three distribution samples



collected during the periods of December 15 to April 15 (winter period) and 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.

Two rounds of lead, alkalinity and pH testing were carried out on March 8<sup>th</sup> and September 22<sup>nd</sup> of 2021. Results are summarized in the table below.

**Summary of Lead Data** (sampled in the distribution system)

| Date of Sample | # of Samples | Field pH<br>(min to max) | Field Temperature (°C)<br>(min to max) | Alkalinity (mg/L)<br>(min to max) | Lead (ug/L)<br>(min to max) |
|----------------|--------------|--------------------------|--|-----------------------------------|-----------------------------|
| March 8        | 3            | 7.0 to 7.4               | 2.8 to 5.4                             | 234 to 236                        | <0.1 to 0.1                 |
| September 22   | 3            | 8.41 to 8.65             | 11.2 to 11.6                           | 229 to 235                        | <0.1 to <0.1                |

**Note:** Next lead sampling scheduled for 2024

**Most Recent Schedule 23 Inorganic Data Tested at 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    | 98.0         | ug/L            | 1000 | No             | No               |
| Boron     | 88.0         | ug/L            | 5000 | No             | No               |
| Cadmium   | < 0.1        | ug/L            | 5    | No             | No               |
| Chromium  | < 1.0        | ug/L            | 50   | No             | No               |
| Mercury   | < 0.1        | ug/L            | 1    | No             | No               |
| Selenium  | 0.4          | ug/L            | 50   | No             | No               |
| Uranium   | < 1.0        | ug/L            | 20   | No             | No               |

**Note:** Sample required every 36 months (sample date = October 5, 2020). Next sampling scheduled for October 2023

**Most Recent Schedule 24 Organic Data Tested at the Water Treatment Plant**

| Parameter                            | Result Value | Unit of Measure | MAC  | MAC Exceedance | ½ MAC Exceedance |
|--------------------------------------|--------------|-----------------|------|----------------|------------------|
| Alachlor                             | < 0.354      | ug/L            | 5    | No             | No               |
| Atrazine + N-dealkylated metabolites | < 0.5        | ug/L            | 5    | No             | No               |
| Azinphos-methyl                      | < 0.265      | 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                           | < 0.092      | ug/L            | 5    | No             | No               |
| Carbaryl                             | < 1.0        | ug/L            | 90   | No             | No               |
| Carbofuran                           | < 2.0        | ug/L            | 90   | No             | No               |
| Carbon Tetrachloride                 | < 0.2        | ug/L            | 2    | No             | No               |
| Chlorpyrifos                         | < 0.265      | ug/L            | 90   | No             | No               |
| Diazinon                             | < 0.265      | ug/L            | 20   | No             | No               |
| Dicamba                              | < 0.08       | ug/L            | 120  | No             | No               |



**Most Recent Schedule 24 Organic Data Tested at the Water Treatment Plant**

| Parameter                                  | Result Value | Unit of Measure | MAC | MAC Exceedance | ½ MAC Exceedance |
|--|--------------|-----------------|-----|----------------|------------------|
| 1,2-Dichlorobenzene                        | < 0.3        | ug/L            | 200 | No             | No               |
| 1,4-Dichlorobenzene                        | < 0.3        | ug/L            | 5   | No             | No               |
| 1,2-Dichloroethane                         | < 0.3        | ug/L            | 5   | No             | No               |
| 1,1-Dichloroethylene (vinylidene chloride) | < 0.3        | ug/L            | 14  | No             | No               |
| Dichloromethane                            | < 1.0        | ug/L            | 50  | No             | No               |
| 2-4 Dichlorophenol                         | < 0.2        | ug/L            | 900 | No             | No               |
| 2,4-Dichlorophenoxy acetic acid (2,4-D)    | < 0.343      | ug/L            | 100 | No             | No               |
| Diclofop-methyl                            | < 0.114      | ug/L            | 9   | No             | No               |
| Dimethoate                                 | < 0.265      | ug/L            | 20  | No             | No               |
| Diquat                                     | < 0.2        | ug/L            | 70  | No             | No               |
| Diuron                                     | < 7.0        | ug/L            | 150 | No             | No               |
| Glyphosate                                 | < 20.0       | ug/L            | 280 | No             | No               |
| Malathion                                  | < 0.265      | ug/L            | 190 | No             | No               |
| Metolachlor                                | < 0.177      | ug/L            | 50  | No             | No               |
| Metribuzin                                 | < 0.177      | ug/L            | 80  | No             | No               |
| Monochlorobenzene                          | < 0.5        | ug/L            | 80  | No             | No               |
| Paraquat                                   | 1.9          | ug/L            | 10  | No             | No               |
| Polychlorinated Biphenyls (PCBs)           | < 0.06       | ug/L            | 3.0 | No             | No               |
| Pentachlorophenol                          | < 0.3        | ug/L            | 60  | No             | No               |
| Phorate                                    | < 0.177      | ug/L            | 2   | No             | No               |
| Picloram                                   | < 0.08       | ug/L            | 190 | No             | No               |
| Prometryne                                 | < 0.089      | ug/L            | 1   | No             | No               |
| Simazine                                   | < 0.265      | ug/L            | 10  | No             | No               |
| Terbufos                                   | < 0.177      | ug/L            | 1   | No             | No               |
| Tetrachloroethylene                        | < 0.3        | ug/L            | 10  | No             | No               |
| 2,3,4,6-Tetrachlorophenol                  | < 0.2        | ug/L            | 100 | No             | No               |
| Triallate                                  | < 0.177      | 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) | < 5.72       | ug/L            | 100 | No             | No               |
| Trifluralin                                | < 0.177      | ug/L            | 45  | No             | No               |
| Vinyl Chloride                             | < 0.1        | ug/L            | 1   | No             | No               |

**Note:** Sample required every 36 months (sample date = October 5, 2020). Next sampling scheduled for October 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 exceeded half the standard found in Schedule 2 of the Ontario Drinking Water Standard (O.



Reg.169/03) during the reporting period.

**Most Recent Sodium Data at the Water Treatment Plant**

| Date of Sample  | # of Samples | Result Value | Unit of Measure | Standard | Exceedance |
|-----------------|--------------|--------------|-----------------|----------|------------|
| October 9, 2018 | 1            | 14.7         | mg/L            | 20       | Yes        |

**Note:** Sample required every 60 months. Next sampling scheduled for October 2023.

**Most Recent Fluoride Data at the Water Treatment Plant**

| Date of Sample  | # of Samples | Result Value | Unit of Measure | Standard | Exceedance |
|-----------------|--------------|--------------|-----------------|----------|------------|
| October 9, 2018 | 1            | 0.718        | mg/L            | 1.5      | No         |

**Note:** Sample required every 60 months. Next sampling scheduled for October 2023.

**Additional Testing Performed in Accordance with a Legal Instrument**

Schedule D, Section 2.0 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 biosimetry testing for a dose of 40 mJ/cm<sup>2</sup>.
- 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.

***Ultraviolet Dosage***

| <b>UV System</b> | <b># of Samples</b> | <b>Range of Results<br/><i>(min to max)</i></b> | <b>Unit of Measure</b> | <b>Limit</b> |
|------------------|---------------------|---|------------------------|--------------|
| <b>UV Unit</b>   | 90                  | 171 to 330                                      | mJ/cm <sup>2</sup>     | 40           |





New Liskeard Drinking Water System

Schedule 22

# 2021 SUMMARY REPORT

## FOR MUNICIPALITIES



## Schedule 22 - SUMMARY REPORTS FOR MUNICIPALITIES

### 1.0 INTRODUCTION

|  |   |
|--|---|
| <b>Drinking-Water System Name</b>              | <b>New Liskeard Drinking Water System</b> |
| <b>Municipal Drinking Water Licence (MDWL)</b> | 218-103-3 (issued July 23, 2021)          |
| <b>Drinking Water Works Permit (DWWP)</b>      | 218-203-4 (issued July 23, 2021)          |
| <b>Permit to Take Water (PTTW)</b>             | 4417-AF2JAM (issued November 2, 2016)     |
| <b>Reporting Period</b>                        | January 1, 2021 to December 31, 2021      |

### 2.0 REQUIREMENTS THE SYSTEM FAILED TO MEET

According to information kept on record by OCWA, the New Liskeard Drinking Water System failed to meet the following requirements during the 2021 reporting period:

| Drinking Water Legislation   | Requirement(s) the System Failed to Meet  | Duration                               | Corrective Action(s)   | Status   |
|--|---|--|--|----------|
| Section 31(1)(b) of part V of the Safe Drinking Water Act, 2002                                      | The owner/operating authority was not in compliance with the requirement to prepare Form 1 documents as required by their Drinking Water Works Permit.  | September 24, 2021 to November 4, 2021 | For future projects, a meeting will be held with the Owner and OCWA (ORO, PCT, SOM) prior to any work being done in the distribution system to ensure all regulatory paperwork will be completed and all regulatory procedures will be followed. | Complete |
| Condition 3.3.1 of Schedule B of the Drinking Water Works Permit No. 218-203-4 (dated July 23, 2021) | A section of watermain was added to the distribution system, but a Form 1 was not completed prior to the work.<br><br>Failure to complete a Form 1 prior to the watermain addition being placed into service is a violation of the noted legislation. |  |  |          |

It should also be mentioned that, three (3) adverse water quality incidents were reported to the Ministry's Spills Action Center during the reporting period. Refer to Section 5.0 – *Details on Notices of Adverse Test Results and Other Problems Reported to & Submitted to the Spills Actions Center* on page 7 of this report for details.

### 3.0 SUMMARY OF QUANTITIES & FLOW RATES

#### **Flow Monitoring**

Municipal Drinking Water Licence (MDWL) #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, and
- the flow rate and daily volume of water conveyed into the treatment system.

The flow monitoring equipment identified in the MDWL is present and operating as required. These flow meters are calibrated on an annual basis as specified in the manufacturers’ instructions.

### Water Usage

The following Water Usage Tables summarize the quantities and flow rates of water taken and produced during the 2021 reporting period, including average monthly volumes, maximum monthly volumes, total monthly volumes and maximum flow rates.

### Raw Water

#### 2021 - Monthly Summary of Water Takings from the Source (Well No. 3 and Well No. 4)

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   | Year to Date |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------------|
| Total Volume (m <sup>3</sup> )                        | 35840 | 36210 | 40553 | 38160 | 45006 | 55959 | 49617 | 57444 | 50157 | 46343 | 47486 | 41712 | 544488       |
| Average Volume (m <sup>3</sup> /d)                    | 1156  | 1293  | 1308  | 1272  | 1452  | 1865  | 1601  | 1853  | 1672  | 1495  | 1583  | 1346  | 1492         |
| Maximum Volume (m <sup>3</sup> /d)                    | 1541  | 1826  | 2674  | 2062  | 2202  | 3136  | 2418  | 2769  | 3028  | 2133  | 2322  | 1830  | 3136         |
| PTTW - Maximum Allowable Volume (m <sup>3</sup> /day) | 4000  | 4000  | 4000  | 4000  | 4000  | 4000  | 4000  | 4000  | 4000  | 4000  | 4000  | 4000  | 4000         |
| Maximum Flow Rate (L/min)                             | 4469  | 4342  | 4363  | 4487  | 4396  | 4445  | 4409  | 4405  | 4268  | 4312  | 4296  | 4307  | 4487         |
| PTTW - Maximum Allowable Flow Rate (L/min)            | 4500  | 4500  | 4500  | 4500  | 4500  | 4500  | 4500  | 4500  | 4500  | 4500  | 4500  | 4500  | 4500         |

#### Well No. 4

|   | Jan   | Feb   | Mar   | Apr   | May   | Jun   | Jul   | Aug   | Sep   | Oct   | Nov   | Dec   | Year to Date |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------------|
| Total Volume (m <sup>3</sup> )                        | 36176 | 33918 | 40393 | 39604 | 47255 | 56792 | 54569 | 60352 | 43813 | 51192 | 44156 | 48546 | 556766       |
| Average Volume (m <sup>3</sup> /d)                    | 1167  | 1211  | 1303  | 1320  | 1524  | 1893  | 1760  | 1947  | 1460  | 1651  | 1472  | 1566  | 1525         |
| Maximum Volume (m <sup>3</sup> /d)                    | 1461  | 1543  | 1695  | 1636  | 2207  | 2531  | 2469  | 2668  | 2056  | 2076  | 1901  | 2904  | 2904         |
| PTTW - Maximum Allowable Volume (m <sup>3</sup> /day) | 4000  | 4000  | 4000  | 4000  | 4000  | 4000  | 4000  | 4000  | 4000  | 4000  | 4000  | 4000  | 4000         |
| Maximum Flow Rate (L/min)                             | 2756  | 2606  | 2579  | 2890  | 2914  | 2897  | 3286  | 2893  | 2862  | 2799  | 2776  | 2738  | 3286         |
| PTTW - Maximum Allowable Flow Rate (L/min)            | 4500  | 4500  | 4500  | 4500  | 4500  | 4500  | 4500  | 4500  | 4500  | 4500  | 4500  | 4500  | 4500         |



**Combined Raw Water Taking (Well No. 3 and Well No. 4)**

|   | Jan   | Feb   | Mar   | Apr   | May   | Jun    | Jul    | Aug    | Sep   | Oct   | Nov   | Dec   | Year to Date |
|---|-------|-------|-------|-------|-------|--------|--------|--------|-------|-------|-------|-------|--------------|
| Total Volume (m <sup>3</sup> )              | 72016 | 70127 | 80946 | 77755 | 92161 | 112654 | 104190 | 118595 | 93871 | 97535 | 90628 | 90237 | 1100716      |
| Average Volume (m <sup>3</sup> /d)          | 2323  | 2505  | 2611  | 2592  | 2973  | 3755   | 3361   | 3826   | 3129  | 3146  | 3021  | 2911  | 3016         |
| Maximum Volume (m <sup>3</sup> /d)          | 2731  | 3058  | 3413  | 3378  | 4287  | 4885   | 4528   | 4711   | 3913  | 3679  | 3460  | 3241  | 4885         |
| MDWL - Rated Capacity (m <sup>3</sup> /day) | 8000  | 8000  | 8000  | 8000  | 8000  | 8000   | 8000   | 8000   | 8000  | 8000  | 8000  | 8000  | 8000         |

The system’s Permit to Take Water #4417-AF2JAM, issued November 2, 2016, allows the City to withdraw water at the following rates:

|                              |                          |                |
|------------------------------|--------------------------|----------------|
| Well No. 3:                  | 4000 m <sup>3</sup> /day | 4,500 L/minute |
| Well No. 4:                  | 4000 m <sup>3</sup> /day | 4,500 L/minute |
| Total Combined Daily Volume: | 8000 m <sup>3</sup> /day |                |

A review of the raw water flow data indicates that the wells did not exceed the maximum allowable volumes or maximum flow rates during the reporting period.

Treated Water

**2021 - Monthly Summary of Treated Water Supplied to the Distribution System**

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

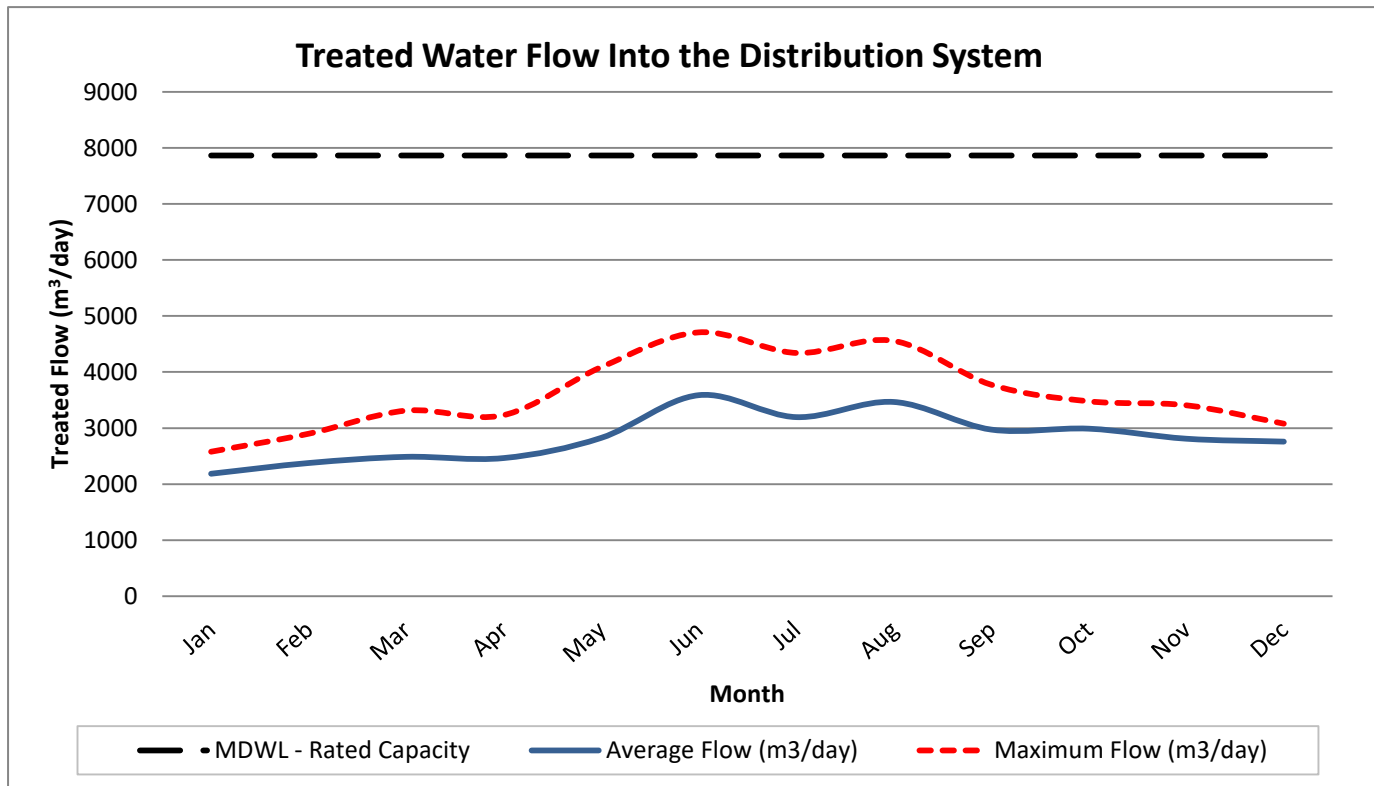
|   | Jan   | Feb   | Mar   | Apr   | May   | Jun    | Jul   | Aug    | Sep   | Oct   | Nov   | Dec   | Year to Date |
|---|-------|-------|-------|-------|-------|--------|-------|--------|-------|-------|-------|-------|--------------|
| Total Volume (m <sup>3</sup> )              | 67735 | 66533 | 77087 | 73943 | 87574 | 107615 | 99056 | 107439 | 89190 | 92663 | 84299 | 85499 | 1038634      |
| Average Volume (m <sup>3</sup> /d)          | 2185  | 2376  | 2487  | 2465  | 2825  | 3587   | 3195  | 3466   | 2973  | 2989  | 2810  | 2758  | 2846         |
| Maximum Volume (m <sup>3</sup> /d)          | 2578  | 2899  | 3312  | 3231  | 4087  | 4708   | 4341  | 4556   | 3774  | 3478  | 3407  | 3078  | 4708         |
| MDWL - Rated Capacity (m <sup>3</sup> /day) | 7865  | 7865  | 7865  | 7865  | 7865  | 7865   | 7865  | 7865   | 7865  | 7865  | 7865  | 7865  | 7865         |

Schedule C, Section 1.0 (1.1) of MDWL No. 218-103 states that the maximum daily volume of treated water that flows from the treatment subsystem to the distribution system shall not exceed 7865 m<sup>3</sup> on any calendar day. The New Liskeard DWS complied with this limit having a recorded maximum volume of 4708 m<sup>3</sup>/day on June 7<sup>th</sup>, which represents 59.8 % of the rated capacity.

Figure 1 compares the average and maximum flow rates into the distribution system to the approved rated capacity of the system as identified in the MDWL.

**Figure 1: 2021 - Comparison of Treated Water Flows to the Rated Capacity**

|                                    | Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
|------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Average Flow (m <sup>3</sup> /day) | 2185 | 2376 | 2487 | 2465 | 2825 | 3587 | 3195 | 3466 | 2973 | 2989 | 2810 | 2758 |
| Maximum Flow (m <sup>3</sup> /day) | 2578 | 2899 | 3312 | 3231 | 4087 | 4708 | 4341 | 4556 | 3774 | 3478 | 3407 | 3078 |
| MDWL - Rated Capacity              | 7865 | 7865 | 7865 | 7865 | 7865 | 7865 | 7865 | 7865 | 7865 | 7865 | 7865 | 7865 |
| % Rated Capacity                   | 33   | 37   | 42   | 41   | 52   | 60   | 55   | 58   | 48   | 44   | 43   | 39   |





### Summary of 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 <sup>3</sup> /day |                              |
| Average Daily Flow for 2021          | 2846 m <sup>3</sup> /day | 36.2 % of the rated capacity |
| Maximum Daily Flow for 2021          | 4708 m <sup>3</sup> /day | 59.8 % of the rated capacity |
| Total Treated Water Produced in 2021 | 1,038,633 m <sup>3</sup> |                              |

### Historical Flows

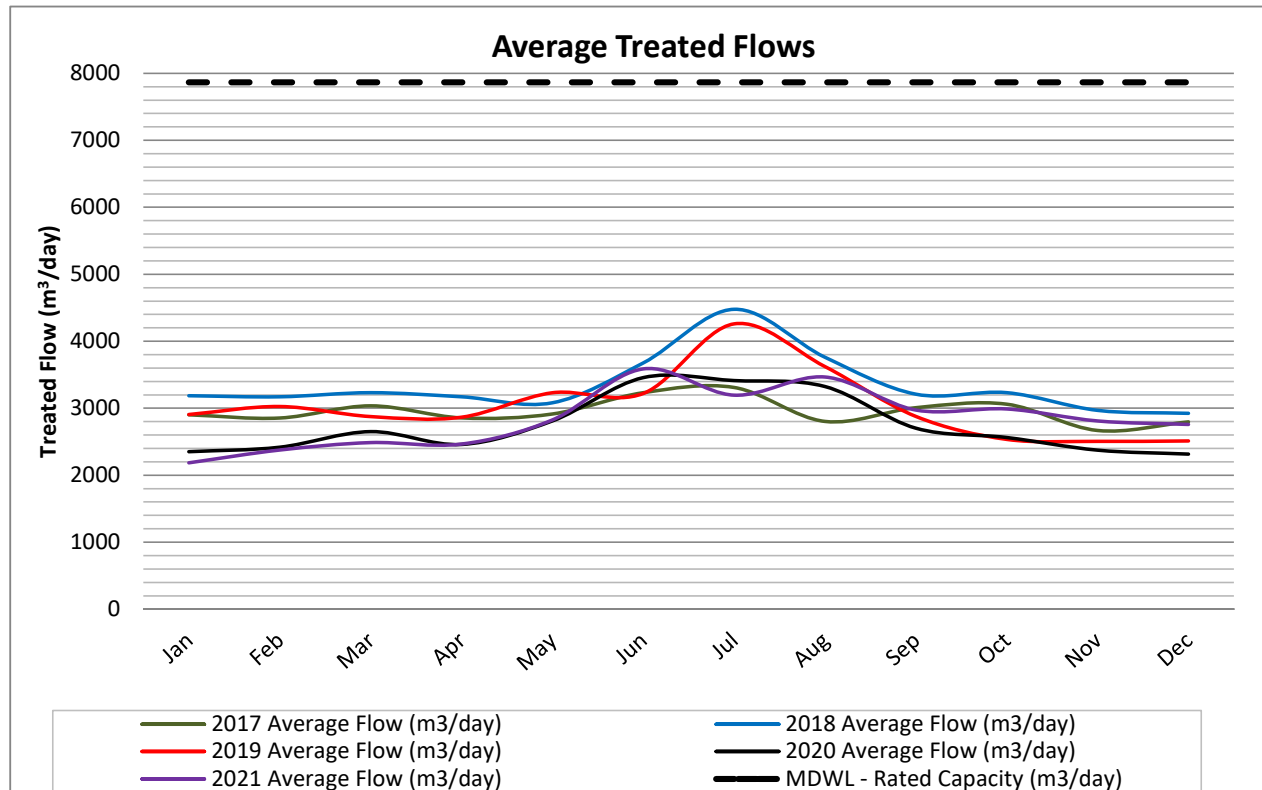
#### New Liskeard Water Treatment Plant – Flow Comparison

| Year        | Maximum Treated Flow (m <sup>3</sup> /d) | Average Daily Flow (m <sup>3</sup> /d) | Average Day % of Rated Capacity (7865 m <sup>3</sup> /d) |
|-------------|--|--|--|
| <b>2021</b> | <b>4708</b>                              | <b>2846</b>                            | <b>36.2%</b>   |
| 2020        | 6326                                     | 2738                                   | 34.8%  |
| 2019        | 6112                                     | 3036                                   | 38.6%  |
| 2018        | 5993                                     | 3341                                   | 42.5%  |
| 2017        | 4511                                     | 2953                                   | 37.5%  |

Figure 2 compares the average treated water flows from 2017 to 2021.

**Figure 2: New Liskeard Water Treatment System - Average Treated Water Flows from 2017 to 2021**

|   | Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
|---|------|------|------|------|------|------|------|------|------|------|------|------|
| 2017 Average Flow (m <sup>3</sup> /day)     | 2902 | 2854 | 3036 | 2856 | 2914 | 3232 | 3310 | 2803 | 3008 | 3060 | 2668 | 2796 |
| 2018 Average Flow (m <sup>3</sup> /day)     | 3187 | 3171 | 3232 | 3171 | 3081 | 3676 | 4477 | 3761 | 3210 | 3232 | 2968 | 2924 |
| 2019 Average Flow (m <sup>3</sup> /day)     | 2906 | 3026 | 2875 | 2866 | 3231 | 3220 | 4260 | 3622 | 2878 | 2535 | 2505 | 2512 |
| 2020 Average Flow (m <sup>3</sup> /day)     | 2351 | 2418 | 2651 | 2459 | 2810 | 3457 | 3413 | 3324 | 2702 | 2563 | 2374 | 2315 |
| 2021 Average Flow (m <sup>3</sup> /day)     | 2185 | 2376 | 2487 | 2465 | 2825 | 3587 | 3195 | 3466 | 2973 | 2989 | 2810 | 2758 |
| MDWL - Rated Capacity (m <sup>3</sup> /day) | 7865 | 7865 | 7865 | 7865 | 7865 | 7865 | 7865 | 7865 | 7865 | 7865 | 7865 | 7865 |





## **CONCLUSION**

The water quality data collected in 2021 demonstrates that the New Liskeard drinking water system provided high quality drinking water to its users. Three adverse water quality incidents occurred during watermain repairs and were immediately reported, responded to and resolved.

The New Liskeard Drinking Water 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 licence while meeting the community's demand for water use.





# **APPENDIX A**

Monthly Summary of Microbiological  
Test Results

**NEW LISKEARD DRINKING WATER SYSTEM  
2021 SUMMARY OF MICROBIOLOGICAL TEST RESULTS**

| RAW WATER  | 01/2021 | 02/2021 | 03/2021 | 04/2021 | 05/2021 | 06/2021 | 07/2021 | 08/2021 | 09/2021 | 10/2021 | 11/2021 | 12/2021 | Total | Avg    | Max | Min  |
|--|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|-------|--------|-----|------|
| <b>Well 3 / Total Coliform: TC - cfu/100mL</b>             |         |         |         |         |         |         |         |         |         |         |         |         |       |        |     |      |
| Count Lab  | 4       | 4       | 5       | 4       | 5       | 4       | 4       | 5       | 4       | 4       | 5       | 4       | 52    |        |     |      |
| Max Lab  | 0       | 0       | 0       | 0       | 0       | 0       | 2       | 0       | 0       | 1       | 0       | 0       |       |        | 2   |      |
| Mean Lab   | 0       | 0       | 0       | 0       | 0       | 0       | 0.75    | 0       | 0       | 0.25    | 0       | 0       |       | 0.077  |     |      |
| Min Lab  | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       |       |        |     | 0    |
| <b>Well 3 / E. Coli: EC - cfu/100mL</b>                    |         |         |         |         |         |         |         |         |         |         |         |         |       |        |     |      |
| Count Lab  | 4       | 4       | 5       | 4       | 5       | 4       | 4       | 5       | 4       | 4       | 5       | 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    |
| <b>Well 4 / Total Coliform: TC - cfu/100mL</b>             |         |         |         |         |         |         |         |         |         |         |         |         |       |        |     |      |
| Count Lab  | 4       | 4       | 5       | 4       | 5       | 4       | 4       | 5       | 4       | 4       | 5       | 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    |
| <b>Well 4 / E. Coli: EC - cfu/100mL</b>                    |         |         |         |         |         |         |         |         |         |         |         |         |       |        |     |      |
| Count Lab  | 4       | 4       | 5       | 4       | 5       | 4       | 4       | 5       | 4       | 4       | 5       | 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    |
| <b>TREATED WATER</b>                                       |         |         |         |         |         |         |         |         |         |         |         |         |       |        |     |      |
| <b>Treated Water POE / Total Coliform: TC - cfu/100mL</b>  |         |         |         |         |         |         |         |         |         |         |         |         |       |        |     |      |
| Count Lab  | 4       | 4       | 5       | 4       | 5       | 4       | 4       | 5       | 4       | 4       | 5       | 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    |
| <b>Treated Water POE / E. Coli: EC - cfu/100mL</b>         |         |         |         |         |         |         |         |         |         |         |         |         |       |        |     |      |
| Count Lab  | 4       | 4       | 5       | 4       | 5       | 4       | 4       | 5       | 4       | 4       | 5       | 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    |
| <b>Treated Water POE / HPC - cfu/mL</b>                    |         |         |         |         |         |         |         |         |         |         |         |         |       |        |     |      |
| Count Lab  | 4       | 4       | 5       | 4       | 5       | 4       | 4       | 5       | 4       | 4       | 5       | 4       | 52    |        |     |      |
| Max Lab  | < 30    | < 20    | < 60    | < 30    | < 10    | < 10    | < 10    | < 20    | < 30    | < 10    | < 10    | < 10    |       |        | 60  |      |
| Mean Lab   | < 15    | < 12.5  | < 24    | < 15    | < 10    | < 10    | < 10    | < 12    | < 15    | < 10    | < 10    | < 10    | <     | 12.885 |     |      |
| Min Lab  | < 10    | < 10    | < 10    | < 10    | < 10    | < 10    | < 10    | < 10    | < 10    | < 10    | < 10    | < 10    |       |        |     | < 10 |
| <b>DISTRIBUTION WATER</b>                                  |         |         |         |         |         |         |         |         |         |         |         |         |       |        |     |      |
| <b>1st Bacti/Residual / Total Coliform: TC - cfu/100mL</b> |         |         |         |         |         |         |         |         |         |         |         |         |       |        |     |      |
| Count Lab  | 4       | 4       | 5       | 4       | 5       | 4       | 4       | 5       | 4       | 4       | 5       | 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    |
| <b>1st Bacti/Residual / E. Coli - cfu/100mL</b>            |         |         |         |         |         |         |         |         |         |         |         |         |       |        |     |      |
| Count Lab  | 4       | 4       | 5       | 4       | 5       | 4       | 4       | 5       | 4       | 4       | 5       | 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    |
| <b>2nd Bacti/Residual / Total Coliform: TC - cfu/100mL</b> |         |         |         |         |         |         |         |         |         |         |         |         |       |        |     |      |
| Count Lab  | 4       | 4       | 5       | 4       | 5       | 4       | 4       | 5       | 4       | 4       | 5       | 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    |
| <b>2nd Bacti/Residual / E. Coli - cfu/100mL</b>            |         |         |         |         |         |         |         |         |         |         |         |         |       |        |     |      |
| Count Lab  | 4       | 4       | 5       | 4       | 5       | 4       | 4       | 5       | 4       | 4       | 5       | 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    |
| <b>2nd Bacti/Residual / HPC - cfu/mL</b>                   |         |         |         |         |         |         |         |         |         |         |         |         |       |        |     |      |
| Count Lab  | 4       | 4       | 5       | 4       | 5       | 4       | 4       | 5       | 4       | 4       | 5       | 4       | 52    |        |     |      |
| Max Lab  | < 10    | < 10    | < 60    | < 10    | < 10    | < 10    | < 10    | < 20    | < 10    | < 10    | < 10    | < 10    |       |        | 60  |      |
| Mean Lab   | < 10    | < 10    | < 22    | < 10    | < 10    | < 10    | < 10    | < 12    | < 10    | < 10    | < 10    | < 10    | <     | 11.346 |     |      |
| Min Lab  | < 10    | < 10    | < 10    | < 10    | < 10    | < 10    | < 10    | < 10    | < 10    | < 10    | < 10    | < 10    |       |        |     | < 10 |
| <b>3rd Bacti/Residual / Total Coliform: TC - cfu/100mL</b> |         |         |         |         |         |         |         |         |         |         |         |         |       |        |     |      |
| Count Lab  | 4       | 4       | 5       | 4       | 5       | 4       | 4       | 5       | 4       | 4       | 5       | 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    |
| <b>3rd Bacti/Residual / E. Coli - cfu/100mL</b>            |         |         |         |         |         |         |         |         |         |         |         |         |       |        |     |      |
| Count Lab  | 4       | 4       | 5       | 4       | 5       | 4       | 4       | 5       | 4       | 4       | 5       | 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    |
| <b>4th Bacti/Residual / Total Coliform: TC - cfu/100mL</b> |         |         |         |         |         |         |         |         |         |         |         |         |       |        |     |      |
| Count Lab  | 4       | 4       | 5       | 4       | 5       | 4       | 4       | 5       | 4       | 4       | 5       | 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    |
| <b>4th Bacti/Residual / E. Coli - cfu/100mL</b>            |         |         |         |         |         |         |         |         |         |         |         |         |       |        |     |      |
| Count Lab  | 4       | 4       | 5       | 4       | 5       | 4       | 4       | 5       | 4       | 4       | 5       | 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    |
| <b>4th Bacti/Residual / HPC - cfu/mL</b>                   |         |         |         |         |         |         |         |         |         |         |         |         |       |        |     |      |
| Count Lab  | 4       | 4       | 5       | 4       | 5       | 4       | 4       | 5       | 4       | 4       | 5       | 4       | 52    |        |     |      |
| Max Lab  | < 10    | < 10    | < 10    | < 20    | < 10    | < 10    | < 10    | < 20    | < 10    | < 30    | < 10    | < 10    |       |        | 30  |      |
| Mean Lab   | < 10    | < 10    | < 10    | < 12.5  | < 10    | < 10    | < 10    | < 12    | < 10    | < 15    | < 10    | < 10    | <     | 10.769 |     |      |
| Min Lab  | < 10    | < 10    | < 10    | < 10    | < 10    | < 10    | < 10    | < 10    | < 10    | < 10    | < 10    | < 10    |       |        |     | < 10 |



# **APPENDIX B**

Monthly Summary of Operational Data

**NEW LISKEARD DRINKING WATER SYSTEM  
2021 SUMMARY OF OPERATIONAL RESULTS**

| <b>RAW WATER</b>  | 01/2021 | 02/2021 | 03/2021 | 04/2021 | 05/2021 | 06/2021 | 07/2021 | 08/2021 | 09/2021 | 10/2021 | 11/2021 | 12/2021 | Total | Avg     | Max  | Min  |
|---|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|-------|---------|------|------|
| <b>Well 3 / Turbidity - NTU</b>                                 |         |         |         |         |         |         |         |         |         |         |         |         |       |         |      |      |
| Count IH  | 4       | 4       | 5       | 4       | 4       | 4       | 4       | 5       | 3       | 4       | 5       | 4       | 50    |         |      |      |
| Total IH  | 2.29    | 2.43    | 1.63    | 1.27    | 0.98    | 2.52    | 3.2     | 2.44    | 1.41    | 4.88    | 3.8     | 2.3     | 29.15 |         |      |      |
| Max IH  | 1       | 0.94    | 0.47    | 0.67    | 0.38    | 0.79    | 0.89    | 0.83    | 0.55    | 1.69    | 1.83    | 0.94    |       |         | 1.83 |      |
| Mean IH   | 0.573   | 0.608   | 0.326   | 0.318   | 0.245   | 0.63    | 0.8     | 0.488   | 0.47    | 1.22    | 0.76    | 0.575   |       | 0.583   |      |      |
| Min IH  | 0.28    | 0.27    | 0.20    | 0.10    | 0.16    | 0.49    | 0.71    | 0.21    | 0.41    | 0.68    | 0.22    | 0.11    |       |         |      | 0.10 |
| <b>Well 4 / Turbidity - NTU</b>                                 |         |         |         |         |         |         |         |         |         |         |         |         |       |         |      |      |
| Count IH  | 4       | 4       | 5       | 4       | 4       | 4       | 4       | 5       | 3       | 4       | 5       | 4       | 50    |         |      |      |
| Total IH  | 2.26    | 5.03    | 1.26    | 1.99    | 2.31    | 1.82    | 3.54    | 3.44    | 1.98    | 6.65    | 2.8     | 1.37    | 34.45 |         |      |      |
| Max IH  | 0.71    | 2.69    | 0.4     | 0.84    | 0.84    | 0.8     | 0.98    | 0.99    | 0.71    | 2.12    | 1       | 0.41    |       |         | 2.69 |      |
| Mean IH   | 0.565   | 1.258   | 0.252   | 0.497   | 0.578   | 0.455   | 0.885   | 0.688   | 0.66    | 1.663   | 0.56    | 0.343   |       | 0.689   |      |      |
| Min IH  | 0.37    | 0.39    | 0.11    | 0.12    | 0.38    | 0.27    | 0.81    | 0.47    | 0.59    | 1.07    | 0.15    | 0.23    |       |         |      | 0.11 |
| <b>TREATED WATER</b>  | 01/2021 | 02/2021 | 03/2021 | 04/2021 | 05/2021 | 06/2021 | 07/2021 | 08/2021 | 09/2021 | 10/2021 | 11/2021 | 12/2021 | Total | Avg     | Max  | Min  |
| <b>Treated Water POE / Cl Residual: Free (0.40 mg/L) - mg/L</b> |         |         |         |         |         |         |         |         |         |         |         |         |       |         |      |      |
| Max OL  | 1.64    | 1.79    | 1.91    | 1.86    | 3.89    | 1.77    | 1.94    | 1.88    | 2.73    | 1.92    | 2.21    | 2       |       |         | 3.89 |      |
| Mean OL   | 1.429   | 1.501   | 1.571   | 1.59    | 1.546   | 1.454   | 1.493   | 1.502   | 1.603   | 1.516   | 1.446   | 1.466   |       | 1.51    |      |      |
| Min OL  | 0.78    | 0.89    | 1.15    | 1.03    | 0.90    | 0.98    | 1.18    | 0.74    | 0.9     | 1.21    | 1.1     | 0.87    |       |         |      | 0.74 |
| <b>DISTRIBUTION WATER</b>                                       | 01/2021 | 02/2021 | 03/2021 | 04/2021 | 05/2021 | 06/2021 | 07/2021 | 08/2021 | 09/2021 | 10/2021 | 11/2021 | 12/2021 | Total | Avg     | Max  | Min  |
| <b>1st Bacti/Residual / Cl Residual: Free - mg/L</b>            |         |         |         |         |         |         |         |         |         |         |         |         |       |         |      |      |
| Count IH  | 8       | 9       | 9       | 15      | 10      | 8       | 9       | 9       | 9       | 8       | 9       | 10      | 113   |         |      |      |
| Max IH  | 1.12    | 1.15    | 1.3     | 1.29    | 1.16    | 1.58    | 1.15    | 1.62    | 1.57    | 0.96    | 0.94    | 1.04    |       |         | 1.62 |      |
| Mean IH   | 0.986   | 1.057   | 1.133   | 0.935   | 0.922   | 1.098   | 1.001   | 1.027   | 1.117   | 0.896   | 0.899   | 0.933   |       | 0.996   |      |      |
| Min IH  | 0.7     | 0.87    | 0.83    | 0.68    | 0.58    | 0.98    | 0.76    | 0.45    | 0.97    | 0.83    | 0.81    | 0.78    |       |         |      | 0.45 |
| <b>2nd Bacti/Residual / Cl Residual: Free - mg/L</b>            |         |         |         |         |         |         |         |         |         |         |         |         |       |         |      |      |
| Count IH  | 8       | 8       | 9       | 15      | 10      | 8       | 9       | 9       | 9       | 8       | 9       | 10      | 112   |         |      |      |
| Max IH  | 1.13    | 1.14    | 1.2     | 1.29    | 1.18    | 1.65    | 1.29    | 1.05    | 1.17    | 1.26    | 1.11    | 1.19    |       |         | 1.65 |      |
| Mean IH   | 0.861   | 0.893   | 0.952   | 0.986   | 1.029   | 1.181   | 1.091   | 0.938   | 1.019   | 1.081   | 0.868   | 1.054   |       | 0.996   |      |      |
| Min IH  | 0.7     | 0.81    | 0.82    | 0.73    | 0.87    | 1       | 0.96    | 0.81    | 0.88    | 0.84    | 0.55    | 0.91    |       |         |      | 0.55 |
| <b>3rd Bacti/Residual / Cl Residual: Free - mg/L</b>            |         |         |         |         |         |         |         |         |         |         |         |         |       |         |      |      |
| Count IH  | 8       | 8       | 9       | 14      | 9       | 8       | 9       | 9       | 9       | 8       | 9       | 10      | 110   |         |      |      |
| Max IH  | 1.06    | 1       | 1.17    | 1.25    | 1.15    | 1.04    | 1.3     | 1.31    | 1.56    | 1.18    | 1.08    | 1.41    |       |         | 1.56 |      |
| Mean IH   | 0.86    | 0.93    | 0.973   | 0.909   | 0.886   | 0.955   | 1.053   | 0.979   | 1.094   | 0.744   | 0.729   | 0.951   |       | 0.923   |      |      |
| Min IH  | 0.77    | 0.89    | 0.88    | 0.67    | 0.56    | 0.86    | 0.81    | 0.7     | 0.54    | 0.55    | 0.38    | 0.69    |       |         |      | 0.38 |
| <b>4th Bacti/Residual / Cl Residual: Free - mg/L</b>            |         |         |         |         |         |         |         |         |         |         |         |         |       |         |      |      |
| Count IH  | 4       | 4       | 5       | 4       | 5       | 4       | 4       | 5       | 4       | 4       | 5       | 5       | 53    |         |      |      |
| Max IH  | 0.88    | 1.15    | 1.1     | 1.36    | 1.14    | 1.32    | 1.1     | 1.14    | 1.09    | 1.29    | 1.2     | 1.04    |       |         | 1.36 |      |
| Mean IH   | 0.843   | 1.038   | 1.012   | 1.135   | 0.998   | 0.99    | 0.935   | 0.93    | 1.018   | 1.008   | 0.872   | 0.9     |       | 0.97    |      |      |
| Min IH  | 0.76    | 0.94    | 0.93    | 1.04    | 0.87    | 0.87    | 0.76    | 0.66    | 0.9     | 0.75    | 0.73    | 0.64    |       |         |      | 0.64 |
| <b>RADLEY HILL ROAD</b>   | 01/2021 | 02/2021 | 03/2021 | 04/2021 | 05/2021 | 06/2021 | 07/2021 | 08/2021 | 09/2021 | 10/2021 | 11/2021 | 12/2021 | Total | Avg     | Max  | Min  |
| <b>Manitoulin Transport / UV Dosage - mJ/cm<sup>2</sup></b>     |         |         |         |         |         |         |         |         |         |         |         |         |       |         |      |      |
| Count IH  | 8       | 8       | 9       | 9       | 9       | 6       | 7       | 8       | 5       | 7       | 9       | 5       | 90    |         |      |      |
| Max IH  | 316.3   | 309.5   | 304.5   | 279     | 245.5   | 215.7   | 315.2   | 330     | 316     | 266.5   | 253.9   | 236     |       |         | 330  |      |
| Mean IH   | 296.025 | 280.85  | 283.116 | 239.9   | 225.922 | 203.818 | 250.314 | 295.2   | 272.14  | 259.114 | 229.178 | 215.76  |       | 255.645 |      |      |
| Min IH  | 271.4   | 217.4   | 255.44  | 209     | 201.5   | 190.8   | 171     | 265     | 244.5   | 242.1   | 199.3   | 185.8   |       |         |      | 171  |

**NOTE:**  
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. No CT calculations were required during the reporting period.