

February, 2021

Reeve Rilla Race and Council  
The Township of Chapple  
P.O. Box 4  
Barwick, Ontario  
POW 1A0

**Re: 2020 Annual Summary Report for the Barwick Drinking-Water System**

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

The annual summary must cover the period of January 1<sup>st</sup> to December 31<sup>st</sup> in a year and must *be prepared not later than March 31<sup>st</sup>* of the following year. Pursuant to the legislative requirements, enclosed for your records is the 2020 Annual Summary for the Barwick Drinking-Water System.

Pursuant to the legislative requirements, *Schedule 22 Summary Reports for Municipalities*, the annual summary must:

- (a) list the requirements of the Act, the regulations, the system's approval, drinking water works permit, municipal drinking water licence, and any orders applicable to the system that were not met at any time during the period covered by the report; and,
- (b) for each requirement referred to in clause (a) that was not met, specify the duration of the failure and the measures that were taken to correct the failure."

- O. Reg. 170/03 s. 22 (2)

"The report must also include the following information for the purpose of enabling the owner of the system to assess the rated capability of their system to meet existing and planned uses of the system:

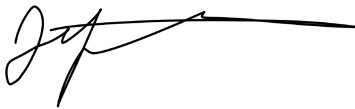
1. A summary of the quantities and flow rates of the water supplied during the period covered by the report, including monthly average and maximum daily flows.
2. A comparison of the summary referred to in paragraph 1 to the rated capacity and flow rates approved in the system's approval, drinking water works permit or municipal drinking water licence, or if the system is receiving all of its water from another system under an agreement pursuant to subsection 5 (4), to the flow rates specified in the written agreement."

-O. Reg. 170/03 s. 22 (3)

In addition, Section 12 (1) - 4 - gives the direction that a copy of the annual summary for the system is given, without charge, to every person who requests a copy and be made available for inspection by any member of the public during normal business hours. The reports should be made available at the office of the municipality, or at a location that is accessible to the users of the water system.

This report was prepared by the Ontario Clean Water Agency on behalf of the Township of Chapple and is based on information kept on record by OCWA at the Barwick Drinking-Water System. The report covers the period January 1<sup>st</sup> through to December 31<sup>st</sup> 2020.

Yours truly,

A handwritten signature in black ink, appearing to read 'Jeff', followed by a long horizontal line extending to the right.

Jeff St. Pierre  
Regional Hub Manager  
Northwestern Ontario Regional Hub  
705-943-5578

Copy to: Peggy Johnson – CAO/Clerk Treasurer  
Operations Staff – Barwick Well Supply

# 2020 Schedule 22 Annual Summary Report Barwick Drinking-Water System

February 2021

Prepared by the



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

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## ***Section 1: Introduction***

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This report is a summary of water quality information for the Barwick Drinking-Water System, published in accordance with Schedule 22 of Ontario's Drinking-Water Systems Regulation for the reporting period of January 1st to December 31st 2020. The Barwick Drinking-Water System is categorized as a Small Municipal Residential Drinking Water System.

This report is prepared by The Ontario Clean Water Agency on behalf of the Corporation of the Township of Chapple. A copy of the Summary Report is to be provided to the members of the municipal council by March 31st 2021.

## ***Section 2: What Does This Report Contain?***

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"The report must,

- (a) list the requirements of the Act, the regulations, the system's approval, drinking water works permit, municipal drinking water licence, and any orders applicable to the system that were not met at any time during the period covered by the report; and,
  
- (b) for each requirement referred to in clause (a) that was not met, specify the duration of the failure and the measures that were taken to correct the failure."

- O. Reg. 170/03 s. 22 (2)

"The report must also include the following information for the purpose of enabling the owner of the system to assess the rated capability of their system to meet existing and planned uses of the system:

1. A summary of the quantities and flow rates of the water supplied during the period covered by the report, including monthly average and maximum daily flows.
  
2. A comparison of the summary referred to in paragraph 1 to the rated capacity and flow rates approved in the system's approval, drinking water works permit or municipal drinking water licence, or if the system is receiving all of its water from another system under an agreement pursuant to subsection 5 (4), to the flow rates specified in the written agreement."

- O. Reg. 170/03 s. 22 (3)

## Section 3: Daily Flow Rates

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In accordance with the ***Municipal Drinking Water Licence 285-101 Schedule C: System – Specific Conditions 1.0 Performance Limits***, the Barwick drinking-water system shall not be operated to exceed the rated capacity for maximum flow rate from the treatment subsystem to the distribution system of **950 m<sup>3</sup> / day**.

The drinking-water system may be operated temporarily at a rate above the rated capacity where necessary for:

- i) the purposes of fighting a large fire or,
- ii) the maintenance of the drinking-water system

The Barwick Drinking-Water facility operated below the rated capacity of 950m<sup>3</sup>/day in 2020. The average monthly raw flow rate was 1,262.99 m<sup>3</sup>; the average raw daily flow rate was 41.64 m<sup>3</sup>, with a maximum raw daily flow rate of 96.60 m<sup>3</sup>.

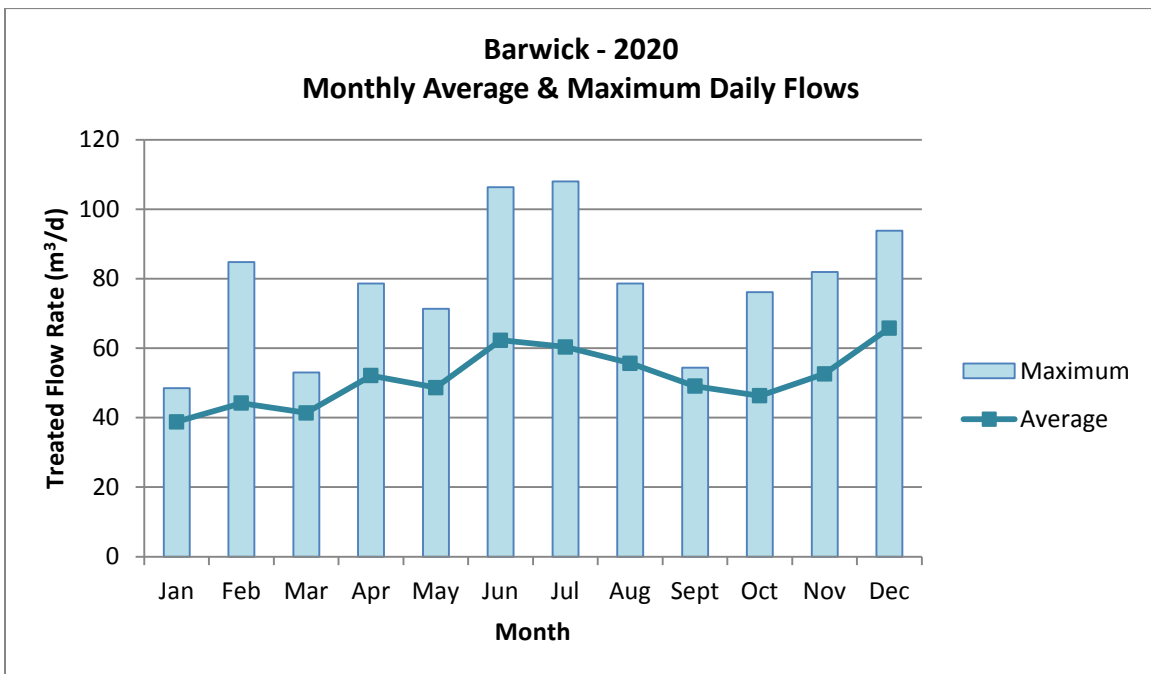
In 2020, the average monthly treated flow rate was 1,569.18 m<sup>3</sup>; the average daily treated flow rate was 51.44 m<sup>3</sup>; and the maximum daily treated flow rate for the year was 108.00 m<sup>3</sup> representing 11.37% of the allowable daily volume.

A summary of raw and treated flows, including maximum raw flow into the treatment system as well as treated average, maximum and total flow rates are included in the tables below.

The quantity of raw water supplied during the reporting period did not exceed the terms and conditions of the *Permit to Take Water* nor did the flows directed to the treatment system exceed the rated capacity for this system.

### Monthly Raw & Treated Flow Rates for 2020

Month	Average Daily Raw Flow Rate (m <sup>3</sup> /d)	Maximum Daily Raw Flow Rate (m <sup>3</sup> /d)	Average Daily Treated Flow Rate (m <sup>3</sup> /d)	Maximum Daily Treated Flow Rate (m <sup>3</sup> /d)	Total Monthly Treated Flow Rate (m <sup>3</sup> /month)
January	34.44	54.7	38.79	48.50	1202.50
February	38.97	75.8	44.21	84.80	1282.10
March	34.01	48.6	41.39	53.00	1283.20
April	36.60	54.6	52.12	78.60	1563.50
May	44.20	67.1	48.65	71.30	1508.10
June	54.59	82.9	62.27	106.30	1868.10
July	48.93	90.0	60.34	108.00	1870.50
August	44.07	96.6	55.64	78.60	1724.70
September	38.25	47.0	49.08	54.40	1472.50
October	35.03	48.3	46.33	76.10	1436.20
November	36.06	42.4	52.62	81.90	1578.71
December	54.45	84.8	65.81	93.80	2040.01
2020 Total Treated Flows (m <sup>3</sup> )				<b>18,830.12</b>	



## **Section 4: System Failures and Correction**

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The Ministry of Environment conducted an *unannounced* inspection of the Barwick Drinking Water System on October 7, 2020. The final inspection report identified seven non-compliances as summarized in the table below.

The 2020 final inspection rating record for the Barwick Drinking Water System was 77.64%.

Item	Non-Compliance Identified	Compliance Date	Action Being Taken to Address item	Status
1	<p><b>Records did not indicate that the treatment equipment was operated in a manner that achieved the design capabilities required under Ontario Regulation 170/03 or a Drinking Water Works Permit and/or Municipal Drinking Water Licence issued under Part V of the SDWA at all times that water was being supplied to consumers.</b></p> <p>Reg 170/03, Schedule 1, requires that the municipality ensure the water treatment equipment required by O. Reg 170/03, is operated in a manner that achieves the design capabilities it is required to have under that Schedule. The Barwick Well Supply has been determined to be a true groundwater supply (May, 2003); therefore, the minimum level of disinfection required is 2-log (99%) removal or inactivation of viruses before the water is delivered to the first consumer. A review of the continuous data demonstrated that the minimum chlorine residual observed during the inspection review period was maintained to achieve primary disinfection; however, on August 26, 2019 and September 26, 2019, primary disinfection could not be confirmed.</p> <p>On August 26, 2019, the continuous trending shows the minimum recorded treated water chlorine residual was 0.22 mg/L. In responding to this alarm, the issue with the chlorine dosing pump was fixed and 650 mL of chlorine was added to the clearwell and pumpwell, ahead of the chlorine analyzer. Due to the addition of chlorine directly into these locations, CT cannot be confirmed.</p> <p>On September 26, 2019, the lowest reported chlorine residual was 0.09 mg/L. To address the low residual, chlorine was added to the reservoir and pumpwell at various times throughout the day. The operator noted chlorine residuals were reading high and low due to the lack of mixing in the system. It cannot be confirmed if CT was achieved on this day.</p>	Dec 30, 2020	<p>Effective immediately the owner and operating authority is to ensure that chlorine is not directly added to any part of the disinfection process unless it is authorized through the facility's Drinking Water Works Permit. By December 30, 2020, the operating authority is to confirm that all operators have been made aware that manually adding chlorine into the reservoir or pumpwell is not permitted. By the same date, the operating authority is to submit to the undersigned officer, written confirmation that the above action has taken place.</p>	Complete



**Action(s) Required:**

Effective immediately the owner and operating authority is to ensure that chlorine is not directly added to any part of the disinfection process unless it is authorized through the facility's Drinking Water Works Permit. By December 30, 2020, the operating authority is to confirm that all operators have been made aware that manually adding chlorine into the reservoir or pumpwell is not permitted. By the same date, the operating authority is to submit to the undersigned officer, written confirmation that the above action has taken place.

2	<p><b>Operators were not examining continuous monitoring test results or they were not examining the results within 72 hours of the test.</b></p>	Immediately	Effective immediately, the operating authority shall ensure that the continuous data is being reviewed within 72 hours after the tests are conducted and that any anomalies are documented.	Complete
	<p>O. Reg. 170/03, Schedule 6, section 6-5(1)3 requires that continuous treated water chlorine monitoring records be examined within 72 hours after the tests are conducted. During the review period, on occasion, the treated water chlorine residual dropped below the alarm set point and there was no explanation for the drop in the log book on the day of the low residual or when the continuous data review was completed. This was observed on the following dates:</p>	Jan 11 2021	The operating authority is to ensure that all operators are aware of the data they are to be reviewing and documenting any observed anomalies. Operators are to be cross checking any reading that should have caused an alarm with the log book records, to ensure the alarm notified an operator and the reason for the alarm is captured. Any gaps in missing data should be explained.	Complete
	<ul style="list-style-type: none"> <li>- May 21, 2019</li> <li>- July 14, 2019</li> <li>- July 18, 2019</li> <li>- July 5, 2020</li> <li>- July 6, 2020</li> <li>- July 23, 2020</li> </ul>	Jan 18 2021	A review of records will take place during the month of January 2021, by the undersigned officer, to verify that the above is being completed.	Complete
	<p>On these days, explanations of anomalies in the continuous data were not provided; therefore, it cannot be concluded that the continuous data was being reviewed as required.</p>	Jan 25 2021	By January 11, 2021, the following shall be submitted to the undersigned officer, for the previous week:	Complete
	<p><b>Action(s) Required:</b></p>	Feb 1 2021	<ul style="list-style-type: none"> <li>- a copy of all log book entries</li> <li>- a copy of all Daily Facility Reports</li> <li>- a copy of all applicable Alarm Reports</li> </ul>	Complete
	<p>Effective immediately, the operating authority shall ensure that the continuous data is being reviewed within 72 hours after the tests are conducted and that any anomalies are documented. The operating authority is to ensure that all operators are aware of the data they are to be reviewing and documenting any observed anomalies. Operators are to be cross checking any reading that should have caused an alarm with the log book records, to ensure the alarm notified an operator and the reason for the alarm is captured. Any gaps in missing data should be explained. A review of records will take place during the month of January 2021, by the undersigned officer, to verify that the above is being completed. By January 11, 2021, the following shall be submitted to the undersigned officer, for the previous week:</p>		<p>The above information shall continue to be submitted for all subsequent Monday's during the month of January 2021. To provide further clarification, the schedule is as follows:</p> <ol style="list-style-type: none"> <li>1. January 11, 2021 - submit</li> </ol>	

<ul style="list-style-type: none"> <li>- a copy of all log book entries</li> <li>- a copy of all Daily Facility Reports</li> <li>- a copy of all applicable Alarm Reports</li> </ul> <p>The above information shall continue to be submitted for all subsequent Monday's during the month of January 2021. To provide further clarification, the schedule is as follows:</p> <ol style="list-style-type: none"> <li>1. January 11, 2021 - submit records for week of January 3, 2021 to January 9, 2021</li> <li>2. January 18, 2021 - submit records for week of January 10, 2021 to January 16, 2021</li> <li>3. January 25, 2021- submit records for week of January 17, 2021 to January 23, 2021</li> <li>4. February 1, 2021 - submit records for week of January 24, 2021 to January 30, 2021</li> </ol>	<p>records for week of January 3, 2021 to January 9, 2021</p> <ol style="list-style-type: none"> <li>2. January 18, 2021 - submit records for week of January 10, 2021 to January 16, 2021</li> <li>3. January 25, 2021- submit records for week of January 17, 2021 to January 23, 2021</li> <li>4. February 1, 2021 - submit records for week of January 24, 2021 to January 30, 2021</li> </ol>
<p><b>3 Operators-in-charge had not been designated for all subsystems which comprised the drinking water system.</b></p> <p>O. Reg. 128/04, section 25(1) states that the owner or operating authority of a subsystem or a person authorized by the owner or operating authority shall designate one or more operators as operator-in-charge (OIC) of the subsystem. Section 26 of O. Reg 128/04 (Certification of Drinking Water System Operators and Water Quality Analysts) outlines the responsibilities of an Operator-in-Charge (OIC). If multiple OIC's are designated during an operational shift, it must be demonstrated what processes each OIC was responsible for. During the review period, the following was observed, that made OIC designation unclear:</p> <ul style="list-style-type: none"> <li>- multiple OIC's listed for the day, but only one of the OIC's was on-site or made entries for the day. As a result, it is not clear what duties the other OIC was responsible for when entries were not made by the other OIC</li> <li>- March 22, 2020, log entry made identifying ORO, but not OIC</li> <li>- March 24, 2020, there was only one operator designated as OIC, but that operator made a log book entry stating, "after discussion with the OIC" they turned down the lime dosing pump. That operator was supposed to be the OIC</li> <li>- April 8, 2020, one operator was designated as OIC during the operating shift, but another operator responded after hours and indicated they were OIC</li> <li>- April 18, 2020, a backwash wash was initiated, but the OIC was not indicated for this day</li> <li>- June 19, 2020, one operator was designated as ORO/OIC for the day, but another operator made all the entries that day and that operator was not signed in as an operator</li> <li>- A letter dated January 7, 2020, details that three operators are designated as OIC, but it is unclear</li> </ul>	<p>Effectively immediately, the owner and operating authority is to develop a system that clearly defines who is designated as OIC on a particular day. OIC's must perform the duties as outlined in subsection 26(2) in regard to the processes within their responsibility. Therefore, an OIC is expected to be responsible for a process or processes within a subsystem or facility. This responsibility needs to be clearly identifiable by other operators and verifiable by an Inspector.</p> <p>If multiple operators are logged in as OIC, logbook entries need to clearly demonstrate that those operators were performing the duties of an OIC, making independent decisions and were "in charge" of work being done to treatment processes for that day (i.e. fulfilled the duties of an OIC). By December 31, 2020, the owner or operating authority is to submit, in writing, to the undersigned officer, the process that will be used to clearly identify who is OIC on any given day. The written response will also acknowledge that if multiple OIC's are designated on the same day, the area of responsibility will also be documented. An assessment of the way in which OIC's are designated and documented will be completed with the</p>

<p>when one of these operators may be operating in this role, especially on weekends and after hours.</p> <p><b>Action(s) Required:</b> Effective immediately, the owner and operating authority is to develop a system that clearly defines who is designated as OIC on a particular day. OIC's must perform the duties as outlined in subsection 26(2) in regard to the processes within their responsibility. Therefore, an OIC is expected to be responsible for a process or processes within a subsystem or facility. This responsibility needs to be clearly identifiable by other operators and verifiable by an Inspector. If multiple operators are logged in as OIC, logbook entries need to clearly demonstrate that those operators were performing the duties of an OIC, making independent decisions and were "in charge" of work being done to treatment processes for that day (i.e. fulfilled the duties of an OIC). By December 31, 2020, the owner or operating authority is to submit, in writing, to the undersigned officer, the process that will be used to clearly identify who is OIC on any given day. The written response will also acknowledge that if multiple OIC's are designated on the same day, the area of responsibility will also be documented. An assessment of the way in which OIC's are designated and documented will be completed with the submission of records for the month of January 2021.</p>	<p>submission of records for the month of January 2021.</p>
<p><b>4 All operators did not possess the required certification.</b> O. Reg. 128, section 25(5) states that a person who holds an operator-in-training's certificate shall not be designated as an operator-in-charge. During the review period (starting August 16, 2019), an operator-in-training was designated as an operator-in-charge. On September 26, 2019, the OIT designated as OIC was having difficulties maintaining adequate primary disinfection. The manner in which they addressed this issue, (i.e. pouring chlorine directly into the clearwell and pumpwell), is not approved under the facility's DWWP. Adequate oversight was not provided on this day, by an operator with the appropriate certification.</p> <p><b>Action(s) Required:</b> Effective immediately, the owner and operating authority is to ensure that an operator-in-training is not designated as an operator-in-change.</p>	<p>Immediately</p> <p>Effective immediately, the owner and operating authority is to ensure that an operator-in-training is not designated as an operator-in-change.</p> <p>Complete</p>
<p><b>5 All microbiological water quality monitoring requirements for distribution samples prescribed by legislation were not being met.</b></p>	<p>Immediately</p> <p>Effective immediately, the owner and operator shall ensure that a distribution microbiological</p> <p>Complete</p>

<p>In accordance with O. Reg. 170/03, Schedule 11, subsection 11-2(1), small municipal residential systems must collect at least one distribution sample every two weeks (at least 10 days and no more than 20 days apart) and have it tested for total coliform bacteria, E. coli, and heterotrophic plate count (HPC). A review of sampling data for the inspection review period confirmed that one distribution sample was collected every two weeks and analyzed for total coliform bacteria, E. coli, and HPC, except for on the following occasions:</p> <ul style="list-style-type: none"> <li>- October 23, 2019 to November 13, 2019, samples taken 21 days apart</li> <li>- November 13, 2019 to December 5, 2019, samples taken 22 days apart</li> <li>- January 6, 2020 to January 13, 2020, samples taken 7 days apart</li> <li>- January 6, 2020, the sample was not analyzed for HPC's</li> </ul> <p><b>Action(s) Required:</b> Effective immediately, the owner and operator shall ensure that a distribution microbiological sample is taken every two weeks and tested for total coliforms, E. coli and heterotrophic plate count, as required by O. Reg. 170/03, Schedule 11, subsection 11-2(1). Samples are to be taken at least 10 days and no more than 20 days from when the previous sample was taken for the purposes of this subsection.</p>		<p>sample is taken every two weeks and tested for total coliforms, E. coli and heterotrophic plate count, as required by O. Reg. 170/03, Schedule 11, subsection 11-2(1). Samples are to be taken at least 10 days and no more than 20 days from when the previous sample was taken for the purposes of this subsection.</p>	
<p><b>6 All fluoride water quality monitoring requirements prescribed by legislation were not conducted within the required frequency.</b> O. Reg. 170/03, Schedule 13, section 13-9, requires that a sample shall be collected and tested for fluoride once every 60 months. Fluoride was last tested on March 9, 2015. The next sample was due on March 9, 2020 (+/- 90 days); however, it was not taken.</p> <p><b>Action(s) Required:</b> A fluoride sample was taken from the treated water tap on December 10, 2020. No further action is required at this time for this non-compliance.</p>	<p>N/A</p>	<p>A fluoride sample was taken from the treated water tap on December 10, 2020. No further action is required at this time for this non-compliance.</p>	<p>Complete</p>
<p><b>7 Where required continuous monitoring equipment, used for the monitoring of chlorine residual and/or turbidity triggered an alarm or an automatic shut-off, a qualified person did not respond in a timely manner and/or did not take appropriate actions.</b> O. Reg. 170/03, Schedule 6, section 1.1 indicates that an alarm must signal immediately to the location where the equipment conducts tests or a</p>	<p>Immediately</p>	<p>Effective immediately, the operating authority is to ensure that an explanation is provided for all regulatory alarms and that alarm responses are documented. The operating authority is to ensure that all operators are aware of the requirement to provide an</p>	<p>Complete</p>

location where a person is present, if a person is not always present at the location the equipment conducts tests. The alarm is to signal if:

- the equipment malfunctions,
- loses power or
- a test result for a parameter is above the maximum alarm standard or below the minimum alarm standard

In addition, a person qualified to examine test results must take appropriate action. If the qualified person is not at the location where the equipment conducts the tests, the qualified person must promptly be dispatched to the location where tests are conducted to take appropriate action.

A qualified person does not need to be promptly dispatched if, within two minutes of the alarm, a further test result indicated that the parameter was no longer above the maximum alarm standard or below the minimum alarm standard, but the qualified person must make an assessment on the alarm.

As indicated earlier in the report, on a number of days, the treated water chlorine residual dropped below the alarm set point and there was no explanation for the low residual in the log book. As a result, it cannot be confirmed if operators responded to or acknowledged these alarms accordingly.

**Action(s) Required:**

Effective immediately, the operating authority is to ensure that an explanation is provided for all regulatory alarms and that alarm responses are documented. The operating authority is to ensure that all operators are aware of the requirement to provide an explanation and response time to all regulatory alarms.

Compliance with this item will be assessed with the submission of records during the month of January 2021.

explanation and response time to all regulatory alarms. Compliance with this item will be assessed with the submission of records during the month of January 2021.

## Section 5: Conclusion

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In the reporting year of 2020, there were no adverse water quality incident (AWQI) reports filed as summarized in the table below.

Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
N/A	N/A	N/A	N/A	N/A	N/A

For the operating year of 2020, the Barwick Drinking-Water System was able to meet the demand of water use within the town without exceeding the Municipal Drinking Water Licence and Permit to Take Water.