CITY OF TIMMINS

TIMMINS WATER FILTRATION PLANT

Provincial Regulation 170/03
Summary Report
For the Period
January 1st to December 31st, 2022

Submitted to:

Ken Krcel – Director of Public Works & Environmental Services

Prepared by:

Mark Johnston, CET, CMM III– Chief Operator of Water Treatment Operations

Date Submitted:

March 2, 2023

Contents

Section 1: Executive Summary

The 2022 Summary Report for the Timmins Water Filtration Plant is being submitted to satisfy Schedule 22 of Ontario Regulation 170/03, the requirement to prepare and distribute a summary report of water quality. As per Ontario Regulation 170/03, the summary report must contain the following information:

- List the requirements of the Safe Drinking Water Act, the corresponding regulations, the system's Drinking Water Works Permit, any order of which the system failed to ensure compliance at any time during the period of January 1st to December 31st, 2022, and to specify the duration of any non-compliant situations;

- For each period of non-compliance, describe the measures and corrective actions taken to restore the system's integrity;

- Provide a summary of the quantities and flow rates of the raw waters treated and the waters supplied to the distribution system during the period of January 1st to December 31st, 2022, including maximum daily flows, instantaneous peak flows and monthly averages; and

- A comparison of the actual flows to the rated capacity and flow rates approved in the Drinking Water Works Permit.

Water consumption in 2022 totalled 8,383,085 cubic metres of water for an average daily flow of 22,905 m^3/day. The peak daily flow of 32,009 m^3 occurred on April 24th, 2022. This is similar compared to water consumption in 2021, and consistent with consumption from previous years.

In 2022, a total of 860 distribution samples and 102 treated water samples were collected and tested for bacteriological parameters. One these samples exceeded O. Reg. 169/03 standards for total Coliforms and became an Adverse Water Quality Incident (AWQI 158573). There three additional AWQIs in the distribution system for low Free Chlorine Residual and two additional AWQIs in the distribution system for samples that exceeded O. Reg. 169/03 standards for total Coliforms.

1. AWQI 158549 – June 1, 2022 - Free Chlorine Residual (0.00mg/l) was recorded during a bacteriologic sample collected at the Mattagami WPCP.
   - As per requirements of O. Reg. 170, the Ministry of Environment and Porcupine Health Unit were contacted for reporting of the AWQI
   - Watermain was flushed again by distribution staff.
   - Samples were collected at fire hydrants upstream, original location and downstream over the next two days and tested for total coliforms and E. coli
   - Bacteriological sample from AWQI location came back with 2 total coliform which resulted in a separate AWQI (158573). AWQI was closed on June 8, 2022.

2. AWQI 158573 – June 1, 2022 - Total Coliforms (2) was recorded during a bacteriologic samples collected at the Mattagami WPCP.
   - As per requirements of O. Reg. 170, the Ministry of Environment and Porcupine Health Unit were contacted for reporting of the AWQI
   - Watermain was flushed again by distribution staff.
   - Samples were collected at fire hydrants upstream, original location and downstream over the next two days and tested for total coliforms and E. coli

- No samples further tested positive for total coliforms or E. coli and the AWQI was closed on June 8th.

3. AWQI 158613 – June 8, 2022 - Free Chlorine Residual (0.00mg/l) was recorded during a bacteriologic sample collected at the Jaguar Dr. South sample station.
   - As per requirements of O. Reg. 170, the Ministry of Environment and Porcupine Health Unit were contacted for reporting of the AWQI
   - Watermain was flushed again by distribution staff.
   - Samples were collected at fire hydrants upstream, original location and downstream over the next two days and tested for total coliforms and E. coli
   - No samples tested positive for total coli forms or E. coli and the AWQI was closed on June 13th.

4. AWQI 159360 – July 30, 2022 - Total Coliforms (105) was recorded during a bacteriologic samples collected at the Lonergan and Airport Rd Bleeder.
   - As per requirements of O. Reg. 170, the Ministry of Environment and Porcupine Health Unit were contacted for reporting of the AWQI
   - Watermain was flushed again by distribution staff.
   - Samples were collected at fire hydrants upstream and original location over the next two days and tested for total coliforms and E. coli
   - Bacteriological sample from upstream location came back with 4 total coliform which resulted in a separate AWQI (159393). AWQI was closed on August 5, 2022.

5. AWQI 159393 – August 1, 2022 - Total Coliforms (4) was recorded during a bacteriologic samples collected at the Mattagami WPCP.
   - As per requirements of O. Reg. 170, the Ministry of Environment and Porcupine Health Unit were contacted for reporting of the AWQI
   - Watermain was flushed again by distribution staff.
   - Samples were collected at fire hydrants upstream, original location and downstream over the next two days and tested for total coliforms and E. coli
   - No samples further tested positive for total coliforms or E. coli and the AWQI was closed on August 5th.

6. AWQI 160436 – October 25, 2022 - Free Chlorine Residual (0.00mg/l) was recorded during a bacteriologic sample collected at the Home Depot sample station.
   - As per requirements of O. Reg. 170, the Ministry of Environment and Porcupine Health Unit were contacted for reporting of the AWQI
   - Watermain was flushed again by distribution staff.
   - Samples were collected at fire hydrants upstream, original location and downstream over the next two days and tested for total coliforms and E. coli
   - No samples tested positive for total coliforms or E. coli and the AWQI was closed on November 2nd.

All Schedule 23 and 24 parameters (inorganic and organic) tested were within Ontario Drinking Water Quality Standards.

Quarterly tests for nitrites and nitrates, THM's and HAA's were tested as per Schedule 13 as well as tests for Sodium and Fluoride. One exceedance for the Running Annual Averages (RAAs) for HAA's was reported as AWQI (158032).

Schedule 16, Subsection 4 states a Duty to report if an observation other than an adverse test result.

- On March 21, 2022 a Precautionary Boil Water Advisory was issued to all customers in Porcupine due to the loss of pressure and loss of water for the area which was require to repair a watermain break. An AWQI report was made (158030).
- On November 17, 2022 a Precautionary Boil Water Advisory was issued to all customers east if Bristol Road (Porcupine) due to the loss of pressure and loss of water for the area which was require to repair a watermain break. An AWQI report was made (160729).

Lead samples were collected as per Schedule 15.1 in the distribution system. Two exceedances were reported as AWQIs (158109 & 158147).

In 2022, the City had various capital projects.

Relining of 250mm Mattagami River Crossing	402,368.00
Relining of Watermain on Airport Rd.	2 529 114.16
Replacement of Piping & Valves at TWFP	348 597.17
Asbestos Removal on Pipe Insulation	59 901.86
High Lift Pump #6 & 7 Engineering Design	18 970.00
Low Lift Pump #1 Replacement	119 370.00
Engineering Design for Generator for MacLean Reservoir	19 634.00
Connecting Link Watermain Replacement	739 423.75
Channel Repairs	59 901.00

Looking forward to the future, major projects are budgeted in 2023 include:

Caustic Soda Liner Change	85,000.00
Maclean Drive, new Natural Gas Backup Generator	150,000.00
MMS System, Training and Support	25,000.00
Overflow protection at plant, Study/Engineering and implementation	80,000.00
Plant Security & Keyless Entry updates	45,000.00
Plant intrusion alarms	25,000.00
Replace HLP#6 & 7	300,000.00
Residual management - upgrades - outside the plant.	100,000.00
SCADA Instrumentation	90,000.00
New SCBA Units	38,000.00
Filter Surface Sweep Valves	42,000.00

Regards,

Mark Johnston CET, CMM III
Chief Operator
Timmins Water Filtration Plant
The Corporation of the City of Timmins

Section 2: Introduction / Technical Brief

The goal of the Timmins Water Filtration Plant and associated facilities is to provide customers within the City of Timmins with valued service through responsible water resource management. The Timmins Water Filtration Plant is solely owned by the Corporation of the City of Timmins, and provides and promotes reliable cost-effective systems for the continual safe delivery of consistently high-quality potable water.

In response to an outbreak of Escherichia (E. coli) in Walkerton, the former Ontario Provincial Ministry of the Environment (MOE) announced 'Operation Clean Water' and enacted the Safe Drinking Water Act in 2002. The Safe Drinking Water Act prescribes strict, enforceable, mandatory requirements for the testing and treatment of all municipal drinking water systems, and the necessary protocols when standards are not met. The regulation also identifies accountability for drinking water safety with those persons who dictate an intimate responsibility for the safety of the system and supports the consumer's right to timely and accurate reporting of water quality information. The Safe Drinking Water Act and associated releases recognizes the facility operators and the members of City Council, as responsible individuals who are inherently responsible for potable water infrastructure and public health and safety.

Schedule 22 of Ontario Regulation 170/03 requires all waterworks to produce and distribute this Summary Report. The report for 2022 shall be submitted to the Director of Public Works & Environmental Services by March 31st, 2022. An electronic copy of the report will be made available on the official web site at **www.timmins.ca**

Timmins Water Filtration Plant

The Timmins Water Filtration Plant is a conventional water filtration plant located at 110 Feldman Road. The facility receives surface waters from the Mattagami River, at a maximum daily rate of 54,600 m^3/ day, through a single 1500 mm diameter screened intake pipe. The raw water flows by gravity into a raw water well where a combination of four (4) low lift pumps transfer the water into a mixing chamber for chemical conditioning.

At the flash mix chamber, Sodium Hydroxide (caustic soda) is added to increase alkalinity of the water to allow subsequent reactions with alum and a cationic polymer. At this point, the water travels to a series of two Actiflo trains for settling and removal of colour and turbidity. The Actiflo system was implemented during a major construction project in May, 2008. The footprint of the two Actiflo Trains occupies the same physical space as the old Degremeont clarifier. However, with the addition of micro-sand into the clarification process, the clarification and solids removal occurs rapidly with a retention time of less than 1 hour. This allows for the plant to treat the same amount of water within a much smaller footprint. The old MicroFloc Plant has been converted into a residuals management system to treat water generated as waste in the plant for backwashes. This water now leaves the plant at the suspended solids loading lower than the required concentration of 25 mg/L.

Flows from each of the Actiflo Trains then enter six (6) dual media filters to remove the small particles of flocculation which are too light in weight to settle. Once the water has gone through the filters it is pumped into the blending chamber where final chlorination takes place. Water then enters a single 4.54 million liter chlorine contact chamber (CT Chamber) where the incoming waters are forced to follow a serpentine path, preventing the short-circuiting of water and providing the maximum residence time to ensure adequate disinfection of microbiological parameters.

The ultra violet (UV) treatment system started in June 2017 at the Timmins Water Filtration Plant. Water is directed from Filters 1,2,3 and 4,5,6 to the UV process, where water undergoes disinfection processes by passing through UV reactors, and chlorine injection. Water from the UV system then enters the Clearwells for storage. The addition of UV disinfection along with Chlorine Disinfection ensures the waters are treated with the multi-barrier approach increasing the disinfection properties, (log removal) of pathogens.

Reservoirs at Water Filtration Plant

Two (2) 4.54 million liter storage tanks called clearwells are situated directly after the CT Chamber and hold the treated water prior to pumping into the distribution system. The addition of caustic soda for pH control also provides the necessary alkalinity adjustment to effectively reduce water corrosion within the distribution system just prior to distribution pumps. Four (4) electric high lift pumps are used to supply the required amount of water and pressure to a maximum of 875 kPa (Zone 1) to satisfy the needs of the population base. In the event of a power outage a large diesel generator will start automatically to ensure a non-interruption of electrical service at the plant.

Other Reservoirs within Distribution System

In addition to the storage at the Plant, there are three (3) reservoirs located within the distribution system.

- Hollinger Park Standpipe
  - Above ground, single cell, steel storage facility
  - Volume of 10, 400 m^3
  - Dimensions are 39.6 m high x 18.3 m diameter
  - Hypochlorite re-chlorination capability with chemical feed pumps

- Maclean Drive Reservoir
  - In ground, dual cell concrete reservoir
  - Volume of 10, 400 m^3
  - 2 high lift pumps, each capable of supplying the potable water demands for Timmins and Mountjoy at a pressure of 650 kPa
  - Hypochlorite re-chlorination capability with chemical feed pumps

- Tisdale Reservoir
  - In ground, dual cell concrete reservoir
  - Volume of 5,678 m^3
  - Chlorine gas re-chlorination capability
  - 2 booster pumps to maintain supply in South Porcupine and Whitney,
  - Isolated to pressure Zone 3.

Booster Stations

In addition, the Moneta Booster pumping station, located on Goldmine Road, boosts the pressure to (Zone 2) Schumacher, MacDonald Lake, and the transmission mains to South Porcupine. The discharge pressure leaving the booster station is 590 kPa. The booster station normally operates with 4 high lift pumps (3 operating and 1 standby). In the event of low demand periods, 3 jockey pumps (2 operating and 1 standby) are available. A diesel generator is available in the event of electrical power disruption. The Moneta Booster Station is fully controlled from the Water Filtration Plant SCADA system.

Zones of Distribution

The communities of South Porcupine, Porcupine, and Whitney receive all their drinking water from the Timmins Water Filtration Plant via the Moneta Booster Station. Due to an elevation drop, the pressure entering these communities is higher than acceptable guidelines. As such, the water flows through a pressure reducing station to drop the pressures (Zone 3) to an acceptable range. The Goldmine Road PRV building also has the capability of Post Chlorination with Sodium hypochlorite.

The MacDonald Lake Treatment Plant has been converted to a Booster Station and now operates on the Timmins distribution system network. In addition, the Shaw Well system was disconnected in December 2006 and now operates on the Timmins distribution system network. Hence, all potable waters supplied to the residents of Timmins, Schumacher, MacDonald Lake, Buffalo Ankerite, Delnite, South Porcupine and Porcupine have since been connected to ensure a constant supply of esthetically clean potable water which is free of microbiological activity.

The Winding Woods subdivision water distribution and supply subsystem and Northglenn Trailer park private distribution and supply system was connected to the Timmins distribution network in 2009. The existing pumping station at Winding woods is used to monitor water quality including Chlorine Residuals at the Northern endpoint of the distribution network.

Facility Specifics

i. The Timmins Water Filtration Plant is a Class IV System. Certificate # 454. This type of facility requires that the Overall Responsible Operator (ORO) have a Class IV Treatment License. In our situation, the Chief Water Operator is designated ORO and is a Certified Engineering Technologist with a Class IV Water Treatment License and Class IV Water Distribution and Supply License. The Maintenance Supervisor has a Class III Water Treatment License and Class IV Water Distribution and Supply License. One Control Room Operator that have a Class IV Water Treatment License is also designated at times to be acting ORO.

ii. The Timmins Distribution System is a Class III system. Certificate # 3257. This type of system requires that the Overall Responsible Operator (ORO) have a Class III Distribution License or Higher. In our situation, one ORO with a Class III is established.

iii. Municipal Drinking Water License #220-101 Issue #5 Date of Issue: June 11th, 2021

iv. Drinking Water Works Permit Number 220-201 Issue #4 Date of Issue: June 11th, 2021

v. Drinking Water System: Large Municipal Residential

vi. Permit to Take Water Number: 8121-B3EL5Q Expiry Date: August 9, 2028

vii. Maximum rate of Raw Water Taking: 54,600 m^3/day

viii. Waterworks Number: 220003065

Section 3: Water Treatment Summary

Section 3 describes the type and amount of drinking water treatment chemicals used in the production of potable water at the Timmins Water Filtration Plant in the 2022 fiscal year.

Sodium Hydroxide (Caustic Soda 50%- membrane grade) is a liquid that is pumped directly into the finished water for pH adjustment of the water entering the distribution system and into the rapid mix tank for alkalinity adjustment. Caustic is added at a feed rate of approximately 7 mg/L to the rapid mix tank and 10 mg/L to the finished water. A maximum total of 26,000 litres of caustic soda is stored on site.

Aluminum sulphate tetradecahydrate, ALUM, {formula as $Al_2(SO_4)_3 \bullet 14\ H_2O$} is supplied in liquid form and introduced to the raw water for the pretreatment of colloidal suspensions. The ALUM provides the mechanism for the removal of colour, odour and particulate matter prior to filtration. A total of 31 metric tonnes is stored on the site at any given period.

Polyfloc CP 1801, an organic flocculant or cationic polymer, utilized as a settling agent is supplied in granular form and must be mixed / dissolved prior to use within the facility. As a result of the ionic charge, the flocculant upon reaction with the conditioned particulate matter joins together to form large particles which drop out of suspension within the clarifiers to improve filter performance and reduce overall turbidity levels. A total of 1 metric tonnes is stored on the site at any given period.

Elemental chlorine, in the form of liquefied gas is utilized for primary and secondary disinfection of potable waters entering the blending chamber. The overflow of waters is then directed to the contact chamber. Following sufficient contact time, the waters are stored within the clearwells for later use within the distribution system. The free chlorine residual at the point of entry to the distribution system is controlled between 1.50 mg/L and 1.80 mg/L in summer months, and 1.80 mg/l to 2.10 mg/l in summer months. A total of 11 metric tonnes is stored on the site at any given period. Elemental chlorine, in the form of liquefied gas is also utilized for post disinfection of potable waters at the Tisdale Reservoir. A total of 1.5 metric tonnes is stored on the site at any given period.

Chlorine, in the form of Sodium hypochlorite (NaOCl) is used for post-chlorination to ensure a free chlorine residual of at least 0.20 mg/L at the furthest point within the distribution system. These systems are located at the Hollinger Pumphouse, and at the MacLean Drive Reservoir. A total of four (4) metric tonnes are stored at the Hollinger Pumphouse and one (1) metric tonne at the MacLean Drive Reservoir at any given period.

Chlorine, in the form of Sodium hypochlorite (NaOCl) is utilized for cleaning and disinfection of maintenance and construction items at all locations. All components which have been removed from service must first be thoroughly disinfected with Sodium hypochlorite prior to being reinstalled and returned to normal service within the potable water system.

Actisand, is microsand that has been cleaned and screened for a uniform size. It is utilized as a seed for floc formation by providing surface area that enhances flocculation and acts as ballast to aid in rapid settlement. The sand is in constant recycling through the pretreatment process but will eventually be lost out of the process and needs to be replenished.

Polyfloc AP1100P, an organic flocculant or anionic polymer, utilized as a settling agent is supplied in granular form and must be mixed / dissolved prior to use within the facility. As a result of the opposite ionic charge, when combined with the residual flocculant utilized with the pre-treatment, the particles join together to form larger particles which drop out of suspension. This chemical is used to assist the residual management clarifiers to reduce overall turbidity levels and suspended particles of our waste water. A total of 500 kg is stored on the site at any given period.

Sodium Bisulphite, ($NaHSO_3$) is a common reducing agent used to combine with Chorine. It is added to our residual management discharge to reduce the residual chlorine in the water returning to the Mattagami River. A total of 1 metric tonne is stored on the site at any given period.

TABLE 3.1- CHEMICAL USAGE FOR THE TIMMINS FILTRATION PLANT IN 2022

Facility	Chemical Addition Mean Value kg/day	Water Produced Mean Value m^3/day	Applied Dosage Mean Value mg/L (ppm)
TWFP Polyfloc CP1801	6.38	22,905	0.278
TWFP Alum	1565	22,905	68.34
TWFP Chlorine	66.5	22,905	2.90
TWFP Caustic Soda	892	22,905	38.9
TWFP Actisand	134	22,905	5.86
TWFP Polyfloc AP1100†	0.274	22,905	11.96 ppb
TWFP Sodium Bisulphite†	11.57	22,905	0.51

†Chemicals used only for wastewater at facility.

Section 4: Monitoring Requirements / Summary of Water Quality Results

Section 4 summarizes the water quality data required by the Ontario Drinking Water System, Ontario Regulation 170/03 for the period of January 1st to December 31st, 2022.

TABLE 4.1- SUMMARY OF MICRIOBIOLOGICAL TEST PARAMETERS

	Number of Samples	Range of E.Coli Or Fecal Results (min #)-(max #)	Range of Total Coliform Results (min #)-(max #)	Number of HPC Samples	Range of HPC Results (min #)-(max #)
Raw	**102**	**0-450**	**6-840**	**4**	**24-320**
Treated	**102**	**0-0**	**0-0**	**91**	**0-<10**
Distribution	**860**	**0-0**	**0-2**	**375**	**0-110**

In 2022, there were 11 AWQI (Adverse Water Quality Incident) events reported and are summarized in Table 5.1 below. In general, of the 860 bacteriological samples collected from the distribution system sampling locations, 1 set showed a total coliform presence. Indicator bacteria are not disease causing but provide an indication of a potential bacterial onset.

TABLE 4.2- PLANT SAMPLES

	Number of Grab Samples	Range of Results (min #)-(max #)
Turbidity Entering Distribution	8760	0.07-1.99
Chlorine	8760	1.02-5.00
Fluoride (If the DWS provides fluoridation)	N/A	N/A

The control room operator through the use of the Delta-V Supervisory Control and Data Acquisition System (SCADA), continuously monitors, records and trends all operational parameters from the plant on a 24/7 basis. All non-compliant conditions from within the TWFP result in both an audible alarm and a visual display until such time that they are acknowledged and addressed by the Control Room Operator. The operator tests and monitors hourly for all operational parameters, including pH, filtered water turbidity, finished (system) water turbidity, colour, free chlorine residual, UV transmittance, and chemical dosage settings (i.e.: caustic soda, aluminium sulphate, cationic polymer and elemental chlorine).

Annual and quarterly samples reflecting the maximum residence time in the distribution system are collected and analysed for all microbiological parameters and those conditions listed in Schedule 23 (Inorganics), and Schedule 24 (Organics), Iron, Lead, Sodium, THM's, and Fluoride as outlined within Ontario Regulation 170/03. Of these there was 1 quarter with RAA (Running Annual Average) of high HAA's (Haloacetic Acids) which resulted in an AWQI.

TABLE 4.3- SUMMARY OF THM RESULTS FOR DISTRIBUTION SYSTEM

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Quarterly Average	**74.2**	**101.2**	**129.9**	**77.9**
System THM – Entering Distribution	**53**	**62**	**76**	**47**
Maximum Acceptable Concentration - THM	**100**	**100**	**100**	**100**
4 Quarter Average THM RAA (100 MAC)	98.8	98.1	97.7	95.8
***All units as µg/L (ppb)**				

TABLE 4.4- SUMMARY OF HAA RESULTS FOR DISTRIBUTION SYSTEM

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Quarterly Average	**58.6**	**75.6**	**83.3**	**68.2**
System HAA – Entering Distribution	**40.9**	**37.2**	**53.3**	**42.7**
Maximum Acceptable Concentration – HAA	**80**	**80**	**80**	**80**
4 Quarter Average HAA RAA (80 MAC)	81.1	76.0	73.4	71.5
***All units as µg/L (ppb)**				

TABLE 4.5- INORGANIC TEST PARAMATERS IN DISTRIBUTION SYSTEM

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	02/24/2022	<0.0006	mg/L	None
Arsenic	02/24/2022	0.0002	mg/L	None
Barium	02/24/2022	0.00557	mg/L	None
Boron	02/24/2022	0.005	mg/L	None
Cadmium	02/24/2022	<0.000003	mg/L	None
Chromium	02/24/2022	<0.00008	mg/L	None
***Lead**				
Mercury	02/24/2022	<0.00001	mg/L	None
Selenium	02/24/2022	<0.00004	mg/L	None
Sodium	02/24/2022	16.8	mg/L	None
Uranium	02/24/2022	0.000003	mg/L	None
Fluoride	02/24/2022	<0.06	mg/L	None
Nitrate	02/24/2022 06/13/2022 08/23/2022 11/22/2022	0.112 0.074 0.089 0.052	mg/L	None
Nitrite	02/24/2022 06/13/2022 08/23/2022 11/22/2022	<0.003 <0.003 <0.003 <0.003	mg/L	None

*only for drinking water systems testing under Schedule 15.2; this includes large municipal non-residential systems, small municipal non-residential systems, non-municipal seasonal residential systems, large non-municipal non-residential systems, and small non-municipal non-residential systems

TABLE 4.6- ORGANIC TEST PARAMETERS IN DISTRIBUTION SYSTEM

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
1,1-Dichloroethylene	02/24/2022	<0.00033	mg/l	None
1,2-Dichlorobenzene	02/24/2022	<0.00041	mg/l	None
1,2-Dichloroethane	02/24/2022	<0.00035	mg/l	None
1,4-Dichlorobenzene	02/24/2022	<0.00036	mg/l	None
2,3,4,6-Tetrachlorophenol	02/24/2022	<0.00020	mg/l	None
2,4,6-Trichlorophenol	02/24/2022	<0.00025	mg/l	None
2-4 Dichlorophenol	02/24/2022	<0.00015	mg/l	None
2,4-Dichlorophenoxy acetic acid (2,4-D)	02/24/2022	<0.00019	mg/l	None
Alachlor	02/24/2022	<0.00002	mg/l	None
Atrazine + N-dealkylated metobolites	02/24/2022	<0.00001	mg/l	None
Azinphos-methyl	02/24/2022	<0.00005	mg/l	None
Benzene	02/24/2022	<0.00032	mg/l	None
Benzo(a)pyrene	02/24/2022	<0.000004	mg/l	None
Bromoxynil	02/24/2022	<0.00033	mg/l	None
Carbaryl	02/24/2022	<0.00005	mg/l	None
Carbofuran	02/24/2022	<0.00001	mg/l	None
Carbon Tetrachloride	02/24/2022	<0.00017	mg/l	None
Chlorobenzene	02/24/2022	<0.0003	mg/l	None
Chlorpyrifos	02/24/2022	<0.00002	mg/l	None
Diazinon	02/24/2022	<0.00002	mg/l	None
Dicamba	02/24/2022	<0.00020	mg/l	None
Dichloromethane	02/24/2022	<0.00035	mg/l	None
Diclofop-methyl	02/24/2022	<0.00040	mg/l	None
Dimethoate	02/24/2022	<0.00006	mg/l	None
Diquat	02/24/2022	<0.001	mg/l	None
Diuron	02/24/2022	<0.00003	mg/l	None
Glyphosate	02/24/2022	<0.001	mg/l	None
Malathion	02/24/2022	<0.00002	mg/l	None
Metolachlor	02/24/2022	<0.00001	mg/l	None
Metribuzin	02/24/2022	<0.00002	mg/l	None
Paraquat	02/24/2022	<0.001	mg/l	None
Pentachlorophenol /PCP	02/24/2022	<0.00015	mg/l	None
Phorate	02/24/2022	<0.00001	mg/l	None
Picloram	02/24/2022	<0.001	mg/l	None
Polychlorinated Biphenyls(PCB)	02/24/2022	<0.00004	mg/l	None
Prometryne	02/24/2022	<0.00003	mg/l	None
Simazine	02/24/2022	<0.00001	mg/l	None
Terbufos	02/24/2022	<0.00001	mg/l	None
Tetrachloroethylene	02/24/2022	<0.00035	mg/l	None
Triallate	02/24/2022	<0.00001	mg/l	None
Trichloroethylene	02/24/2022	<0.00044	mg/l	None
Trifluralin	02/24/2022	<0.00002	mg/l	None
Vinyl Chloride	02/24/2022	<0.00017	mg/l	None

Section 5: Summary of Adverse Test Results and Corrective Actions

Section 5 summarizes the adverse water quality test results and the corresponding corrective actions taken as required by the Ontario Drinking Water System, Ontario Regulation 170/03 for the period of January 1st to December 31st, 2022.

TABLE 5.1- SUMMARY OF ADVERSE TEST RESULTS AND CORRECTIVE ACTION

Incident Date (dd/mm/yy)	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
21/03/2022	Haloacetic Acids (HAAs) AWQI No. 158032	81.1	µg/L RAA	Chlorine dose have been reduced at primary disinfection to reduce THM and HAA formed at process in Clear-wells. Trim Chlorination is being used to top of levels to maintain residuals in the end points of the system. Trim Chlorination has also been lowered during lower temperature periods. The City is also collecting samples from the main and within locations where samples are taken in private facilities to determine source of THM and HAA.	28/03/2022
21/03/2022	Duty to report other observations: loss of water supply AWQI No. 158030	n/a	n/a	Precautionary Boil Water Advisory was issued to all customers in Porcupine due to the loss of pressure and loss of water for the area. Water supply was restored and water sampled at multiple locations 2 days in a row in the affected system. Precautionary Boil Water Advisory was then lifted on receipt of negative sample results.	24/03/2022
04/04/2022	Lead AWQI No. 158109	28.7	µg/L	Flushed hydrants and resampled AWQI location as well as an upstream and downstream location. Resample came back below ODWS however the downstream hydrant resulted in a separate AWQI for lead (AWQI No. 158147).	07/04/2022
07/04/2022	Lead AWQI No. 158147	10.8	µg/L	Flushed hydrants and resampled AWQI location as well as an upstream and downstream location, all results were below ODWS.	14/04/2022
01/06/2022	Free Chlorine Residual in Distribution AWQI No. 158549	0.00	ppm	Flushed and restored residuals. Sampled AWQI location as well as upstream and downstream. Bacti sample from AWQI location came back with 2 total coliform which resulted in a separate AWQI (158573)	03/06/2022
01/06/2022	Total Coliform AWQI No. 158573	2	CFU/100mL	Flushed and restored residuals. Sampled AWQI location as well as upstream and downstream. All results came back clear.	03/06/2022
08/06/2022	Free Chlorine Residual in Distribution AWQI No. 158613	0.00	ppm	Flushed and restored residuals. Sampled AWQI location as well as upstream and downstream. All results came back clear.	13/06/2022

30/07/2022	Total Coliform AWQI No. 159360	105	CFU/100mL	Flushing and re-sampling at the AWQI location and upstream (no downstream as it's an endpoint). The upstream location came back with 4 TC which resulted in a separate AWQI (159393).	04/08/2022
01/08/2022	Total Coliform AWQI No. 159393	4	CFU/100mL	Flushing and re-sampling at the AWQI location, upstream and downstream. All samples came back clear.	04/08/2022
25/10/2022	Free Chlorine Residual in Distribution AWQI No. 160436	0.00	ppm	Flushed and restored residuals. Sampled AWQI location as well as upstream and downstream. All results came back clear.	27/10/2022
17/11/2022	Duty to report other observations: loss of water supply AWQI No. 160729	n/a	n/a	Precautionary Boil Water Advisory was issued to all customers east if Bristol Road (Porcupine) due to the loss of pressure and loss of water for the area. Water supply was restored and water sampled at multiple locations 2 days in a row in the affected system. Precautionary Boil Water Advisory was then lifted on receipt of negative sample results.	24/11/2022

Section 6: Summary of Non-Compliance Issues

Section 6 summarizes the non-compliance issues from the City's most recent inspection from the Ministry of Environment Parks and Conservation.

There was 1 inspection conducted on October 18, 2022 with the final report dated on February 9, 2023 for the period of October 1, 2021 to October 18, 2022.

Two sections of the report, namely, *"Actions Required"* and *"Recommended Actions"* are intended to identify aspects of the drinking water system's operation with the potential for improvement.

"Actions Required" are linked to incidents of non-compliance with regulatory requirements contained within an Act, a Regulation or site-specific approvals, licenses, permits, orders, or instructions. Such violations could result in the issuance of mandatory abatement instruments including Orders, tickets, penalties, or referrals to the Ministry's Investigations and Enforcement Branch.

"Recommended Actions" convey information that the owner and operation authority should consider implementing in order to advance efforts already in place to address such issues as emergency preparedness, the fulsome availability of information to consumers and conformance with existing and emerging industrial standards. Please note items which appear as recommended actions do not, in themselves, constitute violations.

TABLE 6.1- SUMMARY OF 2022 ACTIONS REQUIRED				
NON-COMPLIANCE ISSUE			ACTION REQUIRED	ACTION TAKEN
#	General	Detailed Description		
1	Records did not confirm that the water treatment equipment which provides chlorination or chloramination for secondary disinfection purposes was operated so that at all times and all locations in the distribution system the chlorine residual was never less than 0.05 mg/l free or 0.25 mg/l combined.	There were two (2) instances of low free chlorine residual recorded in the distribution system this inspection period: - June 1st, 2022: 0.0 mg/L at the Mattagami Water Pollution Control Plant. It is presumed that the low residual was due to the sample being collected from a temporary water main. - June 8th, 2022: 0.0 mg/L at the Jaguar Drive sample station. This location is at the endpoint of a watermain loop (unless water flow is directed to Ready Quip) and is a low flow area of the distribution system. This is a violation of the General Obligations for Treatment Equipment set out in Schedule 1 to O. Reg. 170/03.	In accordance with subsection 1-2(2)4 of Schedule 1 to O. Reg 170/03, the owner and operating authority for the system must ensure the treatment equipment is operated so that, at all times and at all locations within the distribution system, the free chlorine residual is never less than 0.05 mg/L.	Flushed water mains and re-sampled AWQI location as well as upstream and downstream (where applicable) for E. coli and total coliforms.
2	1. Subsection 23(1) to O. Reg. 128/04 requires the owner or operating authority of a municipal residential subsystem to designate an operator who holds a certificate for that type of subsystem and is of the same class or higher than the class of that subsystem as the overall responsible operator.	Effective July 11th, 2022, Chief Operator for Distribution was designated as the ORO for the Timmins Distribution System, categorized as "Water Distribution Subsystem Class 3". Based on a review of operator certification, Chief Operator for Distribution holds a "Water Distribution Subsystem Class 2" certificate and therefore cannot be the overall responsible operator designated under subsection 23(1) to O. Reg. 128/04 until a "Water Distribution Subsystem Class 3" certificate is obtained.	If the designated ORO is absent or unable to act, the owner or operating authority may designate an operator who holds a certificate that is applicable to that type of subsystem, and that is not more than one class lower than the class of the subsystem, to act in the place of the ORO for no more than 150 days in any 12-month period in accordance with subsections 23(4) and 23(6) to O. Reg. 128/04.	Effective November 28th, 2022, Mr. Jason Legault was designated as the ORO for the Timmins Distribution System and possesses the required certification. No further action required.

3	Ontario Regulation 128/04 allows a person holding an Operator-in-Training (OIT) certificate to perform the duties of a certified operator in a municipal residential subsystem. This includes the ability of an OIT to work alone as required. However, subsection 25(5) to O. Reg. 128/04 prohibits an OIT from being designated as an Operator-in-Charge (OIC) and therefore cannot perform the tasks and duties prescribed in section 26 to O. Reg. 128/04. Specifically, an OIT is not permitted to: a) set operational parameters for the system or for a process that controls the effectiveness or efficiency of the system; and b) direct or instruct other operators in the system to set such operational parameters.	As mentioned throughout this inspection report, the Timmins WFP is staffed 24 hours, 7 days per week. This requires operators, including OITs, to work alone during night shifts and weekends. In the event the OIT is operating alone, there must be a designated OIC available to provide verbal or written direction, and to perform the duties outlined in section 26 to O. Reg. 128/04. As such, the OIT may only set operational parameters at the verbal or written direction or instruction of the OIC.	all operators holding an OIT certificate are prohibited from performing the duties outlined in section 26 to O. Reg. 128/04 without direction or instruction from the OIC. Any verbal or written direction provided to the OIT shall be recorded in the facility logbook in order to confirm that the OIT is operating in accordance with the legislation. As an alternative to the above, the City of Timmins may choose to implement standard operating procedures (SOP) which provide extensive detail on the operation and maintenance of the Timmins WFP.	Effective February 9th, 2023, the Timmins WFP implemented the following measures to ensure OITs are operating in accordance with the legislation: - An OIC will be present each shift to provide direct instruction when there is an operator holding an OIT certificate. - The Timmins WFP Daily Operator Log has been updated to include any direction provided to the OIT for all operational parameter changes throughout an operating shift. - If the OIC is not present to provide direct instruction, the OIT will document the confirmation of verbal or written direction received from the shift OIC in the operator log. Additionally, the City of Timmins intends to submit standard operating procedures (SOP) to the MECP which provide extensive detail on the operation and maintenance of the Timmins WFP.

TABLE 6.2- SUMMARY OF 2022 RECOMMENDED ACTIONS

RECOMMENDATION AND BEST PRACTICE ISSUE			ACTION RECOMMENDED	ACTION TAKEN
#	General	Detailed Description		
1	Review of logbook maintenance and required information?	Subsection 27(4) to O. Reg. 128/04 requires a person who makes an entry in a log or other record-keeping mechanism to do so in a manner that permits the person to be unambiguously identified as the maker of the entry.	It is recommended that operators ensure to initial/sign all entries made in the logbook and various log sheets.	Communication with Operators to ensure all logbook entries are initialled. The "Reagent Daily Log" will be revised to include a column for operator initials.
2	Designation and log of Operators-in-charge for all subsystems for which comprise the drinking water system.	In order to ensure the system is operated as designed, the owner must ensure one or more operators are designated as operator-in-charge (OIC).	For clarification purposes, operators should be identifying the OIC on each logbook page.	The "Daily Operator Test Report" logbook will be revised to identify the shift OIC.

Section 7: Summary of Quantity of Water Supplied

Section 7 summarizes the quantity of water treated and supplied to the consumer and industrial customer for the period of January 1st to December 31st, 2022.

TABLE 7.1- WATER QUANTITIES TAKEN

Maximum Daily Volume in m^3/day

Maximum Flows	TWFP Rate of Raw Water Taking	TWFP Filtered Water	TWFP Finished to Distribution	TWFP Backwash
Certificate of Approval Volume	**54,600**	**54,600**	**54,600**	**54,600**
Jan-22	24,517	23,020	21,436	3,204
Feb-22	28,337	26,949	24,497	3,498
Mar-22	26,992	25,693	23,716	3,599
Apr-22	32,009	30,541	27,219	3,521
May-22	25,975	24,325	21,364	3,724
Jun-22	27,419	26,067	23,852	3,327
Jul-22	25,661	23,952	22,139	3,025
Aug-22	28,888	27,240	25,153	2,477
Sep-22	24,452	22,806	21,020	3,642
Oct-22	23,907	22,630	19,903	3,252
Nov-22	26,526	21,040	19,453	3,180
Dec-22	24,024	22,103	19,886	3,476
Highest % of Maximum Volume	58.62	55.94	49.85	6.82

TABLE 7.2- WATER TOTAL / AVERAGE / PEAK FLOWS

	Total Flow m^3	Average Daily Flow m^3/day	Maximum Daily Flow m^3/day	Instantaneous Peak Flow L/s	C of A Maximum Flow m^3/day	% Capacity
January	719,339	23,204	24,517	407.6	54,600	44.9
February	667,333	23,833	28,337	440.3	54,600	51.9
March	757,145	24,424	26,992	453.8	54,600	49.4
April	748,675	24,956	32,009	422.4	54,600	58.6
May	688,433	22,208	25,975	437.0	54,600	47.6
June	696,738	23,225	27,419	417.5	54,600	50.2
July	713,392	23,013	25,661	394.9	54,600	47.0
August	722,879	23,319	28,888	427.8	54,600	52.9
September	664,021	22,134	24,452	406.6	54,600	44.8
October	658,226	21,233	23,907	377.8	54,600	43.8
November	655,957	21,865	26,526	352.5	54,600	48.6
December	690,947	22,289	24,024	356.6	54,600	44.0
2022	8,383,085	22,905	32,009	453.8	54,600	41.9