The Corporation of the Town of Mattawa
P.O. Box 390, 160 Water St.,
Mattawa, Ontario, P0H 1V0

2017 Summary Report for Municipalities— Mattawa Drinking Water System

per O. Reg 170 / 03 Schedule 22

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February 21, 2018

PLANT: # Mattawa Drinking Water System

DWS NUMBER: 2100001905

PLANT TYPE: Municipal Drilled Wells

OWNER: The Corporation of the Town of Mattawa

OPERATORS: The Corporation of the Town of Mattawa (Certified Municipal Staff)

ADDRESS: Corporation of the Town of Mattawa
P.O. Box 390
160 Water Street
Mattawa, Ont., P0H 1V0

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DESCRIPTION:

- Water Source is from two deep drilled wells. Well #1 – 26.67m & Well #2 – 23.77m.
- Storage by in-ground concrete reservoir w/ 690 Cubic Meter capacity.
- Distribution system is gravity fed from the reservoir when the pumps are idle, and concurrently fed from the pumps and the reservoir when the well pumps are producing water
- Average water pressure throughout distribution system is between 97 and 102 psi.
- Distribution system comprises of a mixture of PVC, ductile iron and cast iron.
- Pump # 1 is rated at 53.0 L/s and pump #2 is rated at 22.7 L/s.
- The only treatment required for this system is disinfection. Disinfection is presently achieved by U.V. exposure via Trojan Swift Reactors. Chlorination is being used to maintain residuals throughout the distribution system to meet our Drinking Water Works Permit, Municipal Drinking Water Licence and O.Reg 170/03 as amended.

REPORTS TO THE MINISTRY
Per Section 18 of the Safe Drinking Water Act:

- On December 20, 2017 we experienced a major watermain break that caused our reservoir levels to drop below the level required for the waterplant to start in Auto mode. This means our distribution pressure dropped to below 20 p.s.i. and we needed to start the plant in manual mode. Once the plant was restarted we isolated the main break and began repairs. The MOEC (SAC) and MOH were notified. All equipment and parts coming into contact with the exposed main was disinfected and after repairs the system was flushed and sampled. No indications of contamination was identified through the testing and both MOECC and MOH were satisfied (reference: AWQI# 138412)

COMPLIANCE WITH TERMS & CONDITIONS OF THE DRINKING WATER WORKS PERMIT:

- As far as we have been able to ascertain, with the exception of the items listed in the next section, in 2017 we operated the Town of Mattawa Waterworks in accordance with our Municipal Drinking Water Licence #195-101 (Issue 2), our Drinking Water Works Permit #195-201(Issue 2), and O.Reg 170/03 as amended.
- Chlorine readings in the distribution system are being taken using handheld chlorine meters.
- Chlorine at the plant is being monitored at the plant using an in-line analyzer.
- Water flows are measured in cubic meters. Our SCADA system records the meter readings and provides for an ongoing report of the water produced during each daily period. As such, daily flows are easily found on the SCADA system.
- A detailed Operations Manual and Contingency Plan has been completed and implemented.
- As far as we can ascertain we have not exceeded the maximum flow rate of 6,540 m^3/day.

NON - COMPLIANCE WITH TERMS & CONDITIONS OF THE DRINKING WATER WORKS PERMIT:

Non-Compliance	During a January 2017 MOECC Drinking Water Inspection it was noted that Section 16.2.3 of Schedule B of Municipal Drinking Water Licence No. 195-101 (Issue No. 2) requires that the operations and maintenance manual or manuals, shall include (at a minimum) the validated operating conditions for UV disinfection equipment, including a copy of the validation certificate. Section 16.2.3 came into force on January 25th, 2017. At the time of the inspection, a copy of the validated operating conditions for UV disinfection equipment was not included in the Operations and Maintenance Manual.
Measures taken to comply	A copy of the UV Swift 12 Validation Certificate was added to the Operations and Maintenance Manuals and submitted on February 14th, 2017.
Non-Compliance	The MOECC was informed during our October 2017 Drinking Water System Inspection that the current requirement to collect Haloacetic Acid samples (HAA's) was not conducted during the first three quarters of 2017. This requirement came into force on January of 2017, and led to the only Non-Compliance in 2017.
Measures taken to comply	HAA samples were collected for the fourth quarter in October before the officer was informed, and HAA's were put on the sampling calendar for all future quarterly samples. No further action was required by the MOECC.

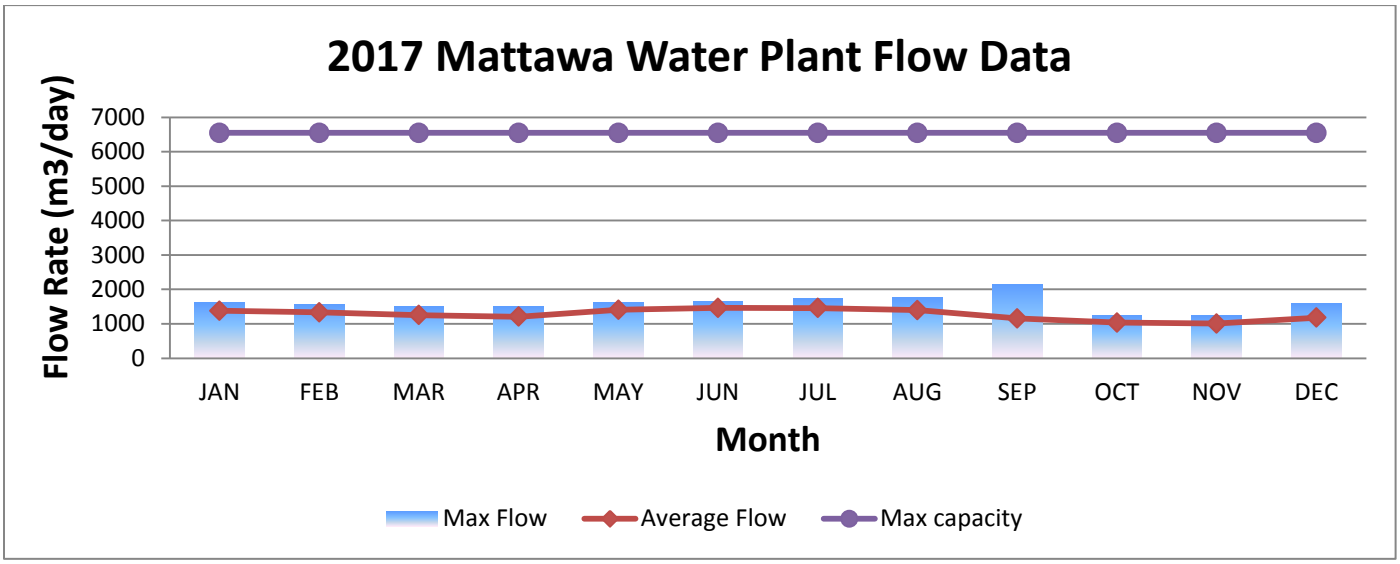
SUMMARY & DISCUSSION OF WATER PRODUCTION:

- From January 1st, 2017 to December 31st, 2017 the waterworks produced and supplied 464,413.30 cubic meters of drinking water to the distribution system. This represents a 4.12% ***decrease*** in production over 2016.

- The monthly average quantity of water supplied by this facility compared to the capacity of the wells is listed in table form below:

Summary of Water Production for 2017

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Total Flow for month	42769.5	37354.5	38819.7	36205.7	43539.9	43831.3	45192.3	43306.0	34675.3	32025.6	30181.7	36511.8
Avg Day Flow – m^3	1379.7	1334.1	1252.3	1206.9	1404.5	1461.0	1457.8	1397.0	1155.8	1033.1	1006.1	1177.8
Max. Day Flow - m^3:	1619.15	1573.20	1507.03	1508.53	1622.17	1660.39	1724.95	1765.79	2141.58	1253.57	1236.15	1602.52
Rated Capacity - m^3/Day	6546.38	6546.38	6546.4	6546.4	6546.4	6546.38	6546.38	6546.38	6546.38	6546.38	6546.38	6546.38
% (Avg Day / Rated):	21.1%	20.4%	19.1%	18.4%	21.5%	22.3%	22.3%	21.3%	17.7%	15.8%	15.4%	18.0%
% (Max Day / Rated):	24.7%	24.0%	23.0%	23.0%	24.8%	25.4%	26.3%	27.0%	32.7%	19.1%	18.9%	24.5%



SUMMARY OF FLOW RATE EXCEEDANCES & ANALYTICAL RESULTS:

Flow Rates

During this period there were **no** exceedances of the rated capacity flow rate. Over the course of the past 11 years the municipality has undertaken a comprehensive leak detection program. This program has been effective in reducing losses to the degree that our normal production range has dropped from 2,500 – 3,000 m^3 per day down to within a normal production range of 1,300 to 1,600 m^3 per day. In 2017 our average water consumption was 1,272 m^3/day. September had a peak flow of 2,141 m^3 per day, due to a large fire in town.

Our flow measuring devices were calibrated on April 28th, 2017.

Quarterly Sampling

All tests required from our Nitrates/Nitrites & THMs quarterly sampling program yielded results below Ontario Drinking Water Standards (ODWS) Maximum Acceptable Concentration (M.A.C.). THM's were taken at the far end of the distribution system, while the Nitrates, Nitrites were taken at the plant exit (treated water sample tap). THMs were far below the M.A.C., with a 4 quarter running average of 0.0170 mg/L. The current M.A.C. is 0.100 mg/L.

We began quarterly HAA sampling beginning in October of 2017. The first result was < 0.02 mg/L.

Schedule 23 of O. Reg. 170/03 - Inorganics

These parameters were tested for in July of 2015 & all results were well below the M.A.C. They are due to be sampled and tested next this year in July of 2018.

Schedule 24 of O. Reg. 170/03 – Organics

These parameters were tested for in July of 2015 & all results were well below the M.A.C. or below detectable limits. They are due to be sampled and this year in July of 2018.

Bacteriological

Three times during the year a coliform result came back as positive in the raw water supply, although each time was several months apart from the last. Regular testing did not indicate a negative trend forming. All treated water samples were clear of any adverse indicators, as were all distribution samples.

Free Chlorine Residual

During 2017, chlorine residual was conducted using an in-line analyzer in the water works station and handheld meters in the distribution system. Chlorine residual tests in the distribution system were carried out at various locations and various times through the day, every day of 2017. The free chlorine residual values in the distribution system ranged from 0.20 to 1.69 mg/L. Chlorine tests were conducted at least 365 times during this year.

There were no incidences to report where the maximum free chlorine residual exceeded 4.0 mg/L in either the distribution system or at the point where the water enters the distribution system.

There were no incidents to report where the free chlorine residual was less then 0.05 mg/L.

Turbidity

O. Reg 170/03 requires testing each production well on a monthly basis for turbidity. Turbidity levels of the raw water at the plant ranged between 0.07 and 0.23 NTUs. Raw water turbidity is being tested with a portable turbidimeter.

TREATMENT CHEMICALS AND DOSAGE:

Sodium Hypochlorite is the only treatment/disinfection chemical used at this water production facility. The metering pumps are set to provide treated water free chlorine residuals between 0.50 mg/L and 0.70 mg/L. We monitor free chlorine residual values in the distribution system so as to work towards maintaining sufficient free chlorine levels in the distribution system to keep the water safe and aesthetically pleasing while on its way to end users. At different times throughout the year we adjust dosage to reflect the needs of the system.

ROUTINE MAINTENANCE AND UPGRADES:

Well & Pump #1

International Water Supply conducted a pumping test of Well Pump #1, and then pulled the pump for some routine maintenance (standard wear parts replaced and the pump painted with an NSF61-approved asphaltic paint). While the pump was removed, the well casing was scoured with a brush, and all debris was air-lifted from the well and run through a filter sock to collect particulate matter.

The well was inspected with CCTV, disinfected as per MOECC instructions and Pump #1 was re-inserted, set and connected. A brief pumping test was performed to confirm proper operation.

A complete replacement of Pump #2 and an air-scouring of Well #2 has been budgeted and planned for the spring of 2018

Valve Exerciser

A new Wachs valve exerciser was purchased in the spring of 2017 to assist in the distribution valve exercising and hydrant flushing program.

Clean Water and Wastewater Fund (CWWF)

Several upgrades were initiated to the in-ground water reservoir and water treatment plant through the CWWF. Some of these items include:

- Building a three-season access road to the reservoir to facilitate inspections, etc.
- Installing a backup UPS system for telemetry at the reservoir to provide power for up to three days during power outages
- Improving telemetry between the reservoir and the waterplant by installing radios on the 3G network
- Installing a new free chlorine residual at the waterplant to improve operational performance during chlorine leaks or pump malfunctions
- Installation of a new chart recorder for trending and SCADA recording in the waterplant PLC

As of December 2017 approximately 36 percent of the approved budget for these upgrades has been spent.

Prepared by:

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