Schedule A

2018 Drinking Water System Operations Report

City of Barrie
Water Operations Branch

Drinking Water System
Operations Report

For the Period of

JANUARY 1ST, 2018 TO DECEMBER 31ST, 2018

System Rating:	Water Treatment Subsystem Class IV Water Distribution and Supply Subsystem Class IV Water Distribution Subsystem Class II
Drinking Water System No.:	220001192
Municipal Drinking Water Licence No.:	014-101, Issue No. 5

Effective Date: 2019-02-25

TABLE OF CONTENTS

LIST OF FIGURES

1 Introduction

The purpose of this report is to summarize the City of Barrie (the City) Municipal Drinking Water System's (the System) operating year from January 1st, 2018 to December 31st, 2018. This report is a compilation of information that demonstrates the commitment of the Water Operations Branch (the Branch) to provide safe drinking water while remaining transparent, financially accountable and demonstrate initiative in driving continual improvement.

The Branch's commitment is driven by the following five (5) priorities:

1. To ensure the delivery of safe drinking water that meets or exceeds regulatory requirements
2. To ensure the delivery of safe drinking water that meets or exceeds expectations and promote customer confidence
3. To employ and retain a respectful, competent, motivated and adaptive workforce that is dedicated to teamwork, continual learning and improvement for the long term
4. To continually improve operational performance in a timely, sustainable and cost effective manner
5. To maintain an effective balance between expenditures and revenues

The following sections provide details of the 2018 achievements that support the Branch priorities listed above.

2 Program Review

2.1 Water Operations Branch

The primary objective of the Branch is the production and delivery of potable water from two sources; 1) a deep groundwater aquifer accessed through twelve (12) active groundwater wells and 2) surface water from Lake Simcoe that is drawn to the Surface Water Treatment Plant (SWTP) from an intake in Kempenfelt Bay.

Comprised of four (4) key groups and five (5) organizational Sections, the Branch works collaboratively to ensure high quality drinking water is produced and delivered to City residents. Highlights regarding the performance and operations of these Sections are discussed in Sections 2.2 to 2.5 of this report.

2.1.1 Training

The Branch recognizes the importance of employee training as not only a legislated requirement for certified Operators but also a positive way to foster improved performance and adaptability of its workforce. In 2018, approximately 4,700 hours of staff training occurred and thirty one (31) Operators were awarded certificate renewals or upgrades.

2.1.2 Research and Educational Partnerships

In partnership with both the University of Toronto and University of Waterloo, the Branch provides sponsorship to the Natural Sciences and Engineering Research Council which supports university students in advanced studies and promotes discovery research. Not only does the partnership allow the Branch to participate in water treatment research but it also helps guide the research conducted by these schools. The current research work being conducted by the Universities is primarily associated with SWTP processes which routinely utilizes our membrane filtration pilot plant located within the SWTP. This allows Staff to actively participate in the research projects and be some of the first benefactors of the research being conducted.

2.1.3 Budget and Costs

In 2018, approximately 93% of the projected operating budget was expended. Efficiencies and the impacts of weather and consumption variations accounted for savings of 7% of the projected operating budget. References to financials within this report are based on the 2018 ledger prior to finalization and excludes debenture costs.

Accounts for utilities (natural gas and hydro) in both the Surface Water Supply and Ground Water Supply Sections were under spent, however the Branch relies on Energy Management staff to establish these budgets each year. Additionally, a warmer winter meant less overtime spending across the Water Distribution and Water Customer Services Sections as staff had fewer watermain breaks and service leaks to deal with in afterhours/overtime situations, normally associated with more severe, extended cold winter temperatures.

The graph below illustrates the total revenues of the Branch and demonstrates the distribution of revenues.

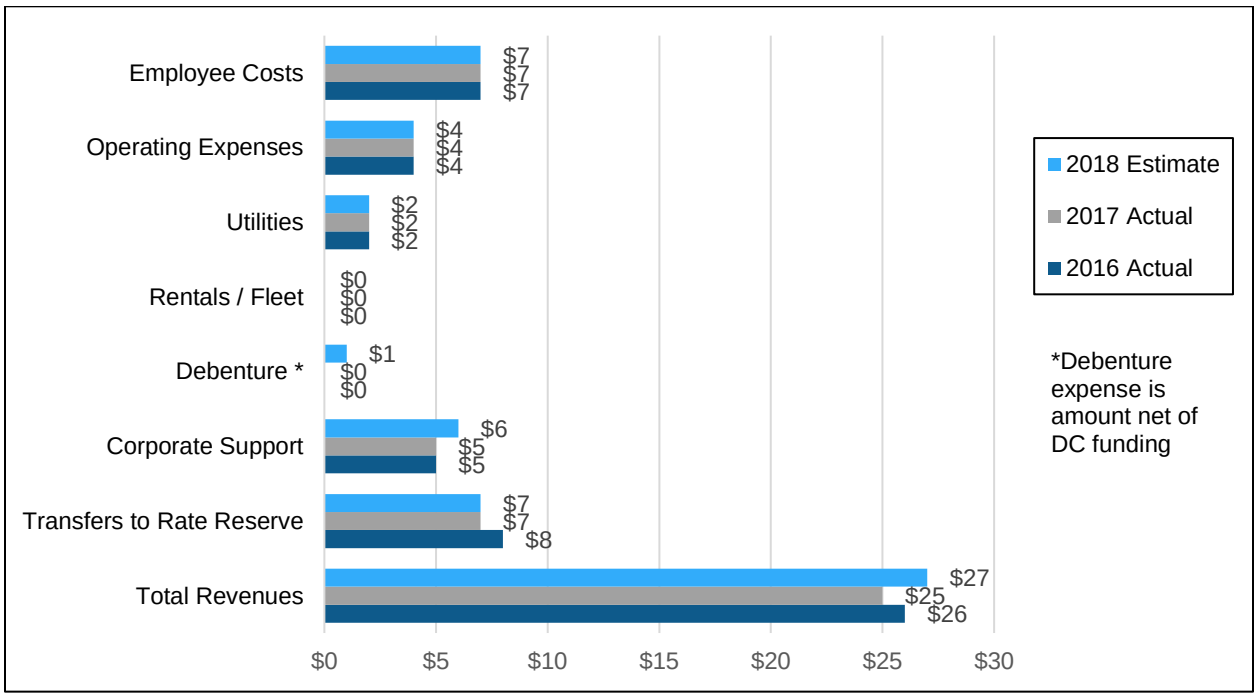


Figure 1. Water Operations Revenues and Fund Allocation

In accordance with O.Reg. 453/07, the Operating Authority developed a financial plan to ensure sustainability of the drinking water system. The Financial Plan is valid for a six (6) year period and contains details of the financial position, financial operations, and cash flow of the System. The Financial Plan was updated in October of 2015 and a copy can be found at www.barrie.ca/waterservices.

2.2 Water Treatment Services

Water Treatment is one of the first steps in ensuring the production and distribution of safe drinking water. Water Treatment Services is responsible for all water treatment processes, storage tank monitoring, ongoing operation and maintenance, and water quality sampling. This involves overseeing a System consisting of the SWTP and associated low lift pumping station (LLPS), 12 groundwater wells, 3 in-ground storage facilities, 7 booster stations, and 3 elevated storage towers.

2.2.1 Treatment System Performance

In 2018, a total of 13,300 ML of drinking water was produced, which represents a slight 1.96% increase from 2017. This seems to follow an overall trend of increased water conservation within the City in the past eight (8) years (Figure 2).

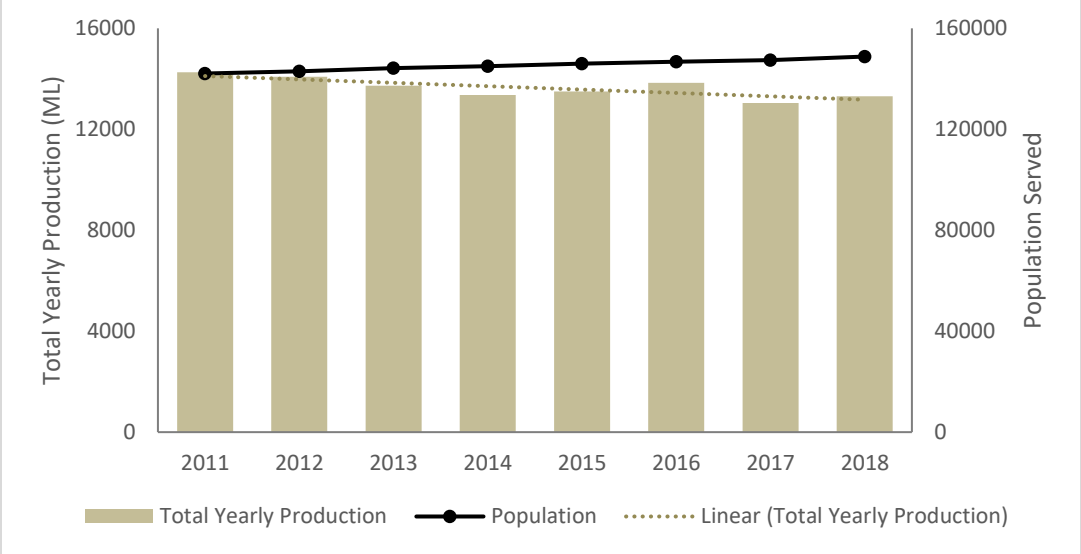


Figure 2. Total yearly production of drinking water (ML) compared to population served

The SWTP completed its eighth (8th) full calendar year of operation in 2018. The SWTP, which is designed to achieve 98% efficiency, averaged 97.5% efficiency in 2018, a 0.1% decrease in efficiency from 2017. Important to note that an unexpected event occurring in September 2018 requiring a large amount of produced water to be sent to the sanitary sewer was removed from this calculation. This event being included would result in a 0.7% decrease in the calculated value, however is not a true reflection of the SWTP's ability to produce water efficiently and effectively. Other factors that cause the SWTP to appear to be operating slightly below the design, include pilot plant usage, service water usage and wastewater produced by filter backwashes.

2.2.2 Preventative Maintenance Highlights

The following sections summarize the significant maintenance activities that were completed within the Water Treatment Services Sections in 2018.

2.2.2.1 Groundwater Supply

In 2018, the Groundwater Supply Section completed the following significant maintenance activities:

- Completed well rehabilitation work at Heritage Well 11 and Johnson Well 13
- Replaced pumps at Centennial Well 15 and Leacock Booster Pump 4
- Completed pump and well maintenance at John Well 5, Heritage Well 11, Johnson Well 13, Brownwood Well 16 and Cross Well 18
- Calibrated all System flow meters and pressure transmitters
- Completed maintenance on treatment systems, which included a number of replacements
- Overhauled all turbidity monitoring equipment
- Cleaned all silicate tanks within the System
- Completed all maintenance activities associated with backflow prevention and cross connection control
- Upgraded fuel systems for emergency back-up generators
- Replaced all SCADA servers
- Installed flush valves for chlorine analyzers to reduce water use at stations
- Replaced shingles on roofs at Cross Wells 17/18, Sarjeant Well 7, Bayview and Anne Booster Stations
- Modified piping at Johnson Well 13 to enable maintenance swabbing between well and contact chamber.
- Commenced an ARC Flash study.

2.2.2.2 Surface Water Supply

In 2018, the Surface Water Supply Section completed the following significant maintenance activities associated with the SWTP:

- Contracted services completed camera inspections of the Low Lift wet well and intake pipe
- Employed the use of remote submersible camera to complete video inspections of internal tanks and reservoirs
- Conducted multiple rounds of membrane repairs to maintain filter integrity and efficiency
- Improved the level of service of the internal laboratory by expanding the suite of parameters being analyzed, which allowed Operators to realize efficiencies within the treatment processes
- Relined Neutralization Tanks

2.3 Water Distribution Services

The quality of drinking water in the distribution system is ensured through ongoing water quality monitoring, and preventative and reactive maintenance completed by Water Distribution Services. Consisting of approximately 3,753 hydrants, 6,694 valves, 13,501 fittings and 634 kilometers of watermain, the City's distribution system continues to reliably direct potable water to the community.

2.3.1 Preventative Maintenance Highlights

Water Distribution Services conduct extensive preventative maintenance in an effort to reduce reactive maintenance needs and maintain System performance. In 2018, approximately 6.5 km of watermain were cleaned by scouring it with foam swabs as part of the Annual Swabbing Program. Having been conducted through contracted services in past years, this was the first year that the program was conducted entirely in-house. Due to this year's program success, the Branch intends to continue to run the program in-house increasing its extent in upcoming years.

In order to ensure the continued operability of valves within the System, valve exercising is conducted. In 2018, 1,468 valves were exercised which represent a 79% increase from 2017. Finally, mandated annual hydrant inspections are overseen by Water Distribution Services including any necessary replacement or repairs. In 2018, all hydrants were inspected and 44 hydrants received preventative maintenance based on identified needs.

2.3.2 Reactive Maintenance Highlights

Reactive maintenance in the event of infrastructure failure is an inevitability in the distribution system. In 2018, 30 watermain breaks occurred which is a decrease of 19% compared to 2017. There were zero (0) incidents of frozen services in 2018, which was the same trend observed in 2017.

Figure 4 illustrates the historical trend of watermain breaks that occurred in the last ten (10) years.

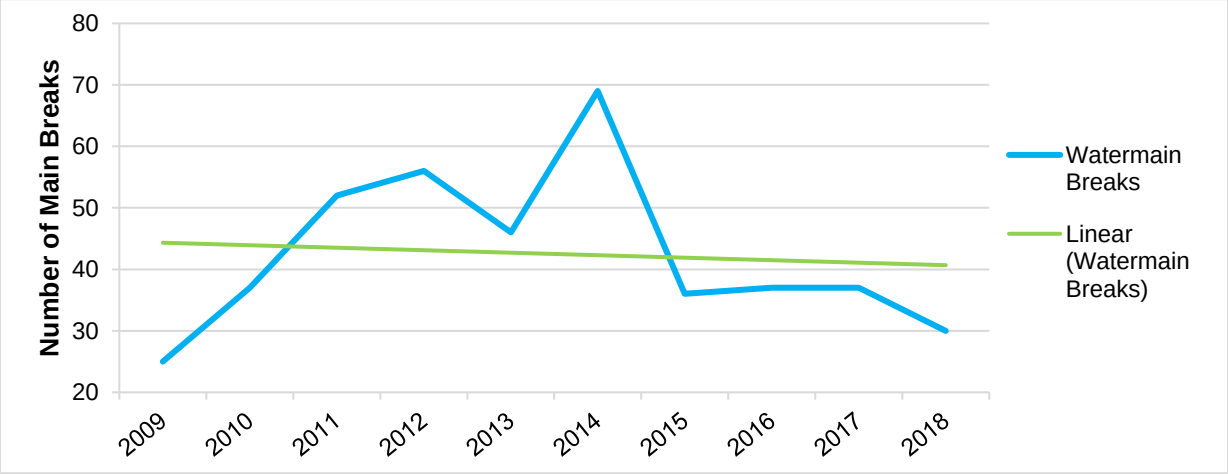


Figure 3. Number of watermain breaks and trend from 2009 to 2018

2.3.3 System Growth, Rehabilitation and Renewal

New infrastructure is installed and commissioned in accordance with the City's Design Guidelines, in addition to the new MECP Watermain Disinfection Procedure.

Infrastructure works completed in the distribution system in 2018 are summarized as follows:

- A large (600mm) diameter concrete transmission watermain was installed on Sandringham / Royal Jubilee to Mapleview Dr. E. connecting to the existing 300mm PVC watermain on Mapleview Dr. E. This project positions the City well for the future watermain work planned on Mapleview Dr. E.
- Eighteen (18) watermain construction projects were completed, which resulted in the commissioning of 6.23 km of new watermain.
- Twenty-nine (29) Industrial, Commercial, Institutional (ICI) servicing projects were commissioned and completed.

2.4 Water Customer Services

Customer service continues to be a priority for the Branch. The Water Customer Services Section ensures our 148,500 residents via 44,230 services maintain access to quality water at the tap by offering a wide range of services, conducting annual System maintenance and providing infrastructure locates.

2.4.1 Available Services

New and existing customers have access to a 24/7 call in service for routine inquiries or emergency requests allowing uninterrupted access to required services. Calls made regarding water quality complaints that required action from field staff averaged ten (10) complaints per month in 2018, a 16% decrease from 2017. Zero (0) "No Water" complaints were received resulting from frozen services. Finally, 1,130 chargeable service calls were completed, which includes long term meter gate installations, pool fills, illegal water use charges and much more.

Water Customer Services is also responsible for installing and maintaining water meters and associated remote reading devices, and for programs that improve their efficiency and reduce costs. In 2018, a total of 343 new water meters were installed and 710 water meters were replaced, representing a 66% increase from the previous year. Continuous monitoring of water consumption is accomplished through Advanced Metering Infrastructure (AMI). Ongoing efforts of staff ensure that greater than 99.5% of all water meters provide up-to-date, accurate meter readings for billing purposes throughout each quarter of the year.

2.4.2 Preventative Maintenance Highlights

Watermain flushing maintains water quality within the distribution system thereby reducing the number of incoming water quality complaints. In 2018, Water Customer Services continued to focus its flushing efforts on areas of the distribution system that were prone to complaints and often serviced by aging infrastructure. As such, 1,571 hydrants were flushed in 2018, representing approximately 41% of the distribution system. Additionally, thirty four (34) flush boxes were deployed in April 2018 and remained in service until November 2018. Each of these flush boxes operates on a daily basis for approximately one (1) hour and assist in maintaining adequate chlorine residuals and aesthetic water quality objectives within the distribution system.

2.4.3 Infrastructure Damage Prevention Program

As an Ontario 1Call member, the Branch has dedicated Utilities Technicians that ensure utility locates are provided for all corporately owned buried infrastructure. As per provincial legislation, locate requests received are completed within the mandatory five (5) business days, unless otherwise negotiated with the locate requestor. The level of service mandated and achieved for this service was 100% in 2018.

2.5 Compliance and Technical Support

The Compliance and Technical Support Section is responsible for regulatory conformance/compliance and reporting with respect to the System, as well as development and implementation of quality/risk management and optimization functions for the Branch. The core responsibilities of the Compliance and

Technical Support Section include the: Backflow Prevention Program, Computerized Maintenance Management System (CMMS), Quality Management System (QMS) and technical support as it relates to water infrastructure.

2.5.1 Backflow Prevention Program

The Backflow Prevention Program has completed its tenth (10th) year of implementation. As of the end of 2018, 98% of properties requiring a backflow device are compliant with the Backflow Prevention By-law (2017-121). The remaining 2% represents the ongoing flux of new properties within the City. In 2019, the Program will more closely focus on ongoing compliance monitoring and communication with Barrie's growing ICI/Multi-residential community.

2.5.2 Computerized Maintenance Management System (CMMS)

The CMMS is primarily used to facilitate the maintenance of the System ensuring that the System remains in a fit state of repair in accordance with the requirements of the Safe Drinking Water Act (SDWA). The CMMS ensures that preventative and reactive work activities completed on the System as part of ongoing operations and maintenance is properly recorded. In 2018, the total percentage of emergency operational work performed on water assets was 1.88%, demonstrating the effectiveness of current preventative maintenance schedules.

2.5.3 Quality Management System (QMS)

The Municipal Drinking Water License Program pursuant to the SDWA and the associated Drinking Water Quality Management Standard requires the Operating Authority to establish a QMS. The QMS is used to establish Standard Operating Procedures and Policies to ensure work associated with, and completed within the System is accomplished in a consistent manner that aligns with and adheres to regulatory requirements.

3 Management Review

The Branch continued to implement procedural and process improvements in 2018. A component of the continual improvement process is Management Review, which identifies deficiencies and establishes action plans to address them. Management Review meetings were conducted on a quarterly basis on the following dates: May 7, August 1, and November 19, 2018 and January 31 2019.

The following summarizes the highlights from the 2018 Management Review meetings:

1. There were two (2) Adverse Water Quality Incidents (AWQIs) reported in 2018. Both were resolved to the satisfaction of the Ministry of Environment, Conservation and Parks (MECP) and Simcoe Muskoka District Health Unit (SMDHU).
2. The total annual production volume of 13,300 ML in 2018 remained consistent with usage trends over the last few years, with only a slight increase in production compared to 2017.
3. Since the addition of the SWTP in 2011, artesian conditions at municipal wells located close to the lakeshore continue to increase.
4. A combined total of 21,519 work activities were performed in 2018 by the Water Operations Branch.
5. An emergency mock scenario was conducted on September 13th, 2018. The scenario involved a localized System tampering event causing a widespread illness outbreak. Involved in the planning and participation of the event were Barrie Fire and Emergency Services and the SMDHU.
6. One (1) Internal Audit was conducted and focused on competencies and personnel coverage. Results yielded one (1) Continual Improvement Process (CIP) Report.
7. The 2018 External Audit was a "year three" (Y3) audit in a three (3) year cycle, and was conducted through an off-site desktop review and a two (2) day on-site review. There was one (1) minor non-conformance identified by the external auditor, which was promptly corrected by the Branch. Reaccreditation was maintained until 2022.

A copy of the Management Review Meeting Minutes are included in Schedule E for reference.

4 Closure

It is the belief that this report provides a summary of the operational and performance success of the Branch for 2018. If you have any questions concerning the contents of this report, please contact the Supervisor of Compliance and Technical Support.

Schedule B

2018 Annual Report, Section 11

Ontario Regulation 170/03

City of Barrie
Water Operations Branch

Drinking Water System
2018 Annual Report
Section 11, O.Reg. 170/03

For the Period of

JANUARY 1ST, 2018 TO DECEMBER 31ST, 2018

System Rating:	Water Treatment Subsystem Class IV Water Distribution and Supply Subsystem Class IV Water Distribution Subsystem Class II
Drinking Water System No.:	220001192
Municipal Drinking Water Licence No.:	014-101, Issue No. 5

Effective Date: 2019-02-25

TABLE OF CONTENTS

LIST OF TABLES

1 Introduction

The City of Barrie Water Operations Branch (the Branch) prepared this report to satisfy the requirements of Section 11 of Ontario Regulation (O.Reg.) 170/03. Section 11 (1) requires that the owner of a drinking water system prepare a report in accordance with subsection (3) and (6) for the preceding calendar year. The annual report must be prepared no later than February 28th of each year.

This report covers the period of January 1st to December 31st, 2018 and the information provided complies with the reporting requirements outlined in Section 11 of O.Reg.170/03.

A summary of the City of Barrie's Municipal Drinking Water System (the System) description is outlined below:

- Drinking-Water System Number: 220001192
- Drinking-Water System Name: City of Barrie Drinking Water System
- Drinking-Water System Owner: Corporation of the City of Barrie
- Drinking-Water System Category: Large Municipal Residential

2 Reporting Requirements under Section 11 - O.Reg.170/03

Section 11 requires that the report include the following information relating to the period covered by the report:

- Include a statement of where a report prepared under Schedule 22 will be available for inspection by any member of the public during normal business hours without charge.
- Contain a brief description of the drinking water system, including a list of water treatment chemicals used by the system;
- Describe any major expenses incurred to install, repair or replace required equipment;
- Summarize any reports made to the Ministry of Environment, Conservation and Parks (MECP) for Adverse Water Quality Incidents (AWQIs);
- Summarize the results of tests required under O.Reg. 170/03, or under an approval, municipal drinking water licence or order, including an Ontario Water Resources Act order, if tests required under this Regulation in respect of a parameter were not required during that period, summarize the most recent results of tests of that parameter; and
- Describe any corrective actions taken.

3 Evidence of Compliance

3.1 Availability of the Annual Report

In accordance with Section 11 of O.Reg. 170/03, a copy of the annual report is available to the public, free of charge from the City of Barrie website and from the Branch by request.

The public was advised of the report's availability and how to obtain a copy, without charge, on the City of Barrie's website, in a local newspaper and on social media outlets on February 28th, 2019.

3.2 Description of the Municipal Drinking Water System

The System consists of a Surface Water Treatment Plant (SWTP) and associated low lift pumping station (LLPS), 12 groundwater wells, 3 in-ground storage facilities, 7 booster stations, and 3 elevated storage towers.

Treatment at the SWTP consists of primary screening, flocculation, membrane filtration, granular activated carbon contactors (for taste and odor control), and disinfection with chlorine gas. Primary disinfection is achieved through chlorine contact time (CT) in the four baffled wall chlorine contact chamber and reservoir. Secondary disinfection is achieved by boosting the chlorine residual of the treated water upon entry into the distribution system from the SWTP's reservoir. Re-chlorination to maintain the chlorine residual in the distribution system is available at Harvie Road Booster Station/Reservoir and Mapleview Tower.

Treatment at each of the well stations consists of iron sequestration by addition of sodium silicate and disinfection with chlorine gas. Primary disinfection is achieved through CT prior to the first consumer, with the exception of Well 5 which achieves primary disinfection using ultraviolet disinfection. Secondary disinfection is maintained throughout the distribution system with booster chlorination applied at 7 locations throughout the distribution system.

The distribution system consists of approximately 3,753 hydrants and approximately 634 kilometers of watermain and transmission main ranging in sizes from 100mm to 1200mm and as of January 2019, delivering drinking water to a population of approximately 148,500 residents.

3.3 Water Treatment Chemicals

The following water treatment chemicals were used during the reporting period:

- Polyaluminum Chloride – Pre-filtration Coagulant – SWTP
- Chlorine – Primary and Secondary Disinfection – SWTP and Wells
- Sodium Silicate – Iron and Manganese Sequestration – Wells

3.4 Significant Expenses Incurred

A brief summary of the major expenses incurred during the reporting period to install, repair or replace required equipment, and value of each, is included in Table 1.

Table 1 – Summary of Expenses Incurred

Activity	Costs Incurred (2018)
Upgraded fuel systems at 13 Groundwater sites to comply with TSSA Fuels Safety Program	$107,000
Replacement of pumps at Leacock, Sarjeant Well 7 and Johnson Well 9	$33,500
Replacement of chlorine systems at various Groundwater Stations	$50,000
Conversion of a constant speed pump drive to a Variable Frequency Drive at SWTP	$25,000
Installation of additional chlorine monitoring on SWTP contact chambers	$22,000
Replacement of all SCADA communication switches at SWTP	$40,000
Replacement of SCADA and historian server	$85,000
Watermain break repairs (30)	$184,000
Hydro excavation contractors for water infrastructure repairs	$45,700
Relining of Neutralization Tanks	$80,000

3.5 Operational Checks, Sampling and Testing

In general, during the reporting period, operational checks were completed and drinking water samples were collected in accordance with O.Reg. 170/03 and the MDWL, with one exception of Well 3A which was not in service; therefore no operational checks or regulated samples were collected. The laboratory results for all analyzed samples regulated by O.Reg. 170/03 and the MDWL are summarized in Table 3 through Table 11, included in Appendix A for reference.

Details of the sampling and testing conducted in 2018 are discussed below in Section 3.5.1 through 3.5.4, inclusive.

3.5.1 Schedule 7 – Operational Checks – O.Reg. 170/03

Operational checks including: treated and distribution free chlorine and raw and treated turbidity was conducted in accordance with Schedule 7 of O.Reg.170/03, with the exception of Well 3A which was not in service.

The operational checks conducted during this reporting period are summarized in Table 3, included in Appendix A for reference.

3.5.2 Schedule 10 – Microbiological Sampling and Testing – O.Reg. 170/03

Raw, treated and distribution water samples were analyzed for microbiological parameters specified in Schedule 10-2, 10-3 and 10-4 of O.Reg. 170/03 and Heterotrophic Plate Count (HPC), and Background bacteria (Background) pursuant to the Ontario Public Health Inspector's Guide (OPHIG), dated 2013.

Laboratory results for most samples analyzed for E.coli, Total Coliforms and Background met the requirements and did not exceed the applicable standards stipulated in O.Reg. 169/03 and the OPHIG, with the exception of the raw water samples collected before treatment on the dates detailed in Table 2. One treated distribution sample exceeded the standard for total coliforms resulting in an Adverse Water Quality Incident as discussed in Section 3.6.

Table 2 – Summary of E.coli, Total Coliform and Background Presence

Date of Sample	E.coli	Total Coliform	Background>200
SWTP – Raw Water			
2018-01-08		X	
2018-01-15	X	X	X
2018-01-22		X	
2018-01-29		X	X
2018-02-05		X	
2018-02-12		X	
2018-02-20		X	
2018-02-26	X	X	
2018-03-05		X	
2018-03-12		X	
2018-03-26		X	
2018-04-09		X	
2018-04-16		X	
2018-04-23	X	X	
2018-04-30		X	
2018-05-14		X	
2018-06-04			X
2018-06-18		X	
2018-07-09		X	
2018-07-16		X	
2018-07-23	X	X	
2018-08-13	X	X	
2018-08-20		X	
2018-08-27	X	X	
2018-09-04		X	
2018-09-10		X	
2018-09-17	X	X	
2018-09-24	X	X	
2018-10-01	X	X	
2018-10-09	X	X	
2018-10-22	X	X	
2018-11-05		X	
2018-11-12	X	X	
2018-11-19	X	X	
2018-11-26	X	X	X
2018-12-03		X	
2018-12-10		X	
2018-12-18		X	
2018-12-27	X	X	

Date of Sample	E.coli	Total Coliform	Background>200
Well 11 – Raw Water			
2018-06-12		X	
Well 15 – Raw Water			
2018-08-08		X	
555 Bayview Drive – Distribution Sample			
2018-01-15		X	

The samples analyzed for microbiological and bacteriological parameters during this reporting period are summarized in Table 4, included in Appendix A for reference.

3.5.3 Schedule 13 – Chemical Testing – O.Reg. 170/03

Treated water samples collected from the Water Distribution and Supply Subsystem were analyzed for organic and inorganic chemical parameters in accordance with O.Reg. 170/03, Schedule 13, Section 13.2 (Schedule 23), Section 13.4 (Schedule 24), Section 13.8, and Section 13.9. Analytical results for all samples analyzed for organic and inorganic chemical parameters met the requirements and did not exceed the applicable standards stipulated in O.Reg. 169/03.

If analysis required under O.Reg. 170/03 with respect to an analytical parameter was not required during the reporting period; the most recent analytical results for that parameter was included in this report, in accordance with O.Reg. 170/03, s.11 (6) (b).

Treated water samples collected from the distribution system were analyzed for Trihalomethanes (THMs) in accordance with O.Reg. 170/03, Schedule 13.6. Treated water samples collected from the well stations were analyzed for nitrates and nitrites in accordance with 13.7 of O.Reg.170/03. Laboratory results for all samples analyzed for THM, nitrate and nitrite parameters met the requirements and did not exceed the applicable standards stipulated in O.Reg. 169/03.

The samples analyzed for organic and inorganic chemical parameters during this reporting period are summarized in Table 5, included in Appendix A for reference.

The samples analyzed for THMs during this reporting period are summarized in Table 6, included in Appendix A for reference.

The samples analyzed for sodium, fluoride, nitrate and nitrite parameters during this reporting period are summarized in Table 7, included in Appendix A for reference.

3.5.4 Schedule 15.1 – Lead – O.Reg. 170/03

Lead samples were collected from the plumbing at industrial and commercial locations and several hydrants within the distribution system during the winter and summer sampling period in accordance with Schedule 15.1. Amendments made under the MDWL requires the collection of five (5) Industrial, Commercial & Institutional (ICI) samples and ten (10) Distribution samples to be collected during the reporting periods of December 15th, 2017 to April 15th, 2018 and June 15th to October 15th, 2018.

Analytical results indicated lead concentrations below the established limit of 10 ug/L for all of the locations sampled with the exception of one sample collected from an ICI facility. As required, a second sample from that location was collected to confirm the limit exceedance. As a result, the property owner, MECP Spills Action Centre and the Simcoe Muskoka District Health Unit were notified. The reported exceedance was a result of private plumbing not the distribution system and therefore did not require further action from the Branch.

The samples analyzed for lead during this reporting period are summarized in Table 8, included in Appendix A for reference.

3.5.5 Municipal Drinking Water Licence

In addition to the sampling and monitoring required by O.Reg. 170/03, specific conditions within the City's MDWL required additional sampling and monitoring at select locations for select Volatile Organic

Compounds (VOC), sodium, and UV disinfection at Well 5. Analytical results for all samples analyzed for select VOCs and sodium were below the applicable standards stipulated in O.Reg. 169/03.

The samples analyzed for select VOCs and sodium during the reporting period are summarized in Table 9 and Table 10, respectively and included in Appendix A for reference. UV monitoring documented during this reporting period was summarized in Table 11, included in Appendix A for reference.

3.6 Reporting and Corrective Actions

3.6.1 Schedule 16 – Reporting of Adverse Test Results and Other Problems

Two (2) Adverse Water Quality Incidents (AWQIs) were reported during the 2018 reporting period in accordance with Schedule 16 of O.Reg. 170/03.

3.6.2 Schedule 17 – Corrective Actions

Corrective actions related to each of the reported AWQI, as noted above, were completed in accordance with O.Reg. 170/03, Schedule 17. The Branch resolved the AWQIs in consultation with the SMDHU and the MECP in a timely manner.

The AWQIs and associated corrective actions that occurred during this reporting period are summarized in Table 12, included in Appendix A for reference.

4 Closure

It is the belief of the Branch that this report satisfies the requirements of Section 11 of O.Reg. 170/03. If you have any questions concerning the contents of this report, please contact the Supervisor of Compliance and Technical Support at the Branch.

Appendix A - Tables

Table 3 – Schedule 7 Operational Checks

Sample Location	Sample Count	Free Chlorine		Turbidity			
		(min)	(max)	(min)	(max)	(min)	(max)
		Treated Water		Raw Water		Treated Water	
Well 5	**8760	0.00	2.00	0.00	3.45	--	--
Well 7	**8760	0.28	1.96	0.05	10.00	--	--
Well 9	**8760	0.46	1.72	0.00	9.99	--	--
Well 11	**8760	0.51	1.55	0.00	5.36	--	--
Well 12	**8760	0.42	1.90	0.01	2.07	--	--
Well 13	**8760	0.27	1.72	0.00	10.00	--	--
Well 14	**8760	0.25	1.59	0.01	10.00	--	--
Well 15	**8760	0.40	2.00	0.00	2.22	--	--
Well 16	**8760	0.39	1.73	0.00	9.99	--	--
Well 17	**8760	0.16	2.00	0.00	9.99	--	--
Well 18	**8760	0.10	2.00	0.01	2.31	--	--
Surface Water Treatment Plant	**8760	0.00	5.00	0.00	72.67	0.01	3.51
Bayfield Tower	**8760	0.40	2.00	--	--	--	--
Ferndale Tower	**8760	0.00	1.79	--	--	--	--
Mapleview Tower	**8760	0.00	1.98	--	--	--	--
Anne Reservoir	**8760	0.27	2.00	--	--	--	--
Harvie Reservoir	**8760	0.28	1.73	--	--	--	--
Sunnidale Reservoir	**8760	0.00	2.00	--	--	--	--

Notes:

** 8760 - Represents continuous monitoring
-- - Analysis not required
NTU - Turbidity measured in Nephelometric Turbidity Units
mg/L - Free Chlorine measured in milligrams per litre

Table 4 – Schedule 10 Microbiological Sampling and Testing

Sample Location	E.Coli		Total Coliform		Background		HPC		Sample Count
	(min)	(max)	(min)	(max)	(min)	(max)	(min)	(max)	
Distribution									
North Sampling Points	0	0	0	0	--	--	<10	90	851
South Sampling Points	0	0	0	3	--	--	<10	130	766
Other (i.e., main breaks, maintenance)	0	0	0	0	0	0	--	--	30
								Sub-Total Distribution Samples	1647
Treated Water									
Well 5	0	0	0	0	0	1	<10	20	50
Well 7	0	0	0	0	0	0	<10	20	52
Well 9	0	0	0	0	0	0	<10	10	52
Well 11	0	0	0	0	0	0	<10	180	48
Well 12	0	0	0	0	0	0	<10	20	52
Well 13	0	0	0	0	0	5	<10	40	30
Well 14	0	0	0	0	0	0	<10	30	48
Well 15	0	0	0	0	0	1	<10	210	42
Well 16	0	0	0	0	0	0	<10	30	51
Well 17	0	0	0	0	0	0	<10	20	52
Well 18	0	0	0	0	0	2	<10	30	52
Surface Water Treatment Plant	0	0	0	0	0	186	<10	90	52
								Sub-Total Treated Samples	581
Raw Water									
Well 5	0	0	0	0	0	2	--	--	52
Well 7	0	0	0	0	0	0	--	--	52
Well 9	0	0	0	0	0	5	--	--	51
Well 11	0	0	0	1	0	1	--	--	43
Well 12	0	0	0	0	0	0	--	--	48
Well 13	0	0	0	0	0	0	--	--	30
Well 14	0	0	0	0	0	0	--	--	52
Well 15	0	0	0	1	0	12	--	--	49
Well 16	0	0	0	0	0	0	--	--	52
Well 17	0	0	0	0	0	0	--	--	52
Well 18	0	0	0	0	0	109	--	--	51
Surface Water Treatment Plant	0	3	0	131	0	>200	--	--	52
								Sub-Total Raw Samples	584

Notes:

CFU/100mL - E. coli, Total Coliform and Background results are expressed as Colony Forming Units (CFU)/100mL

CFU/1mL - Heterotrophic Plate Count (HPC) results are expressed as CFU/1mL

-- - Analysis not required

Table 5 – Schedule 13 Chemical Sampling and Testing – Inorganics and Organics

Sample Location		Well 5	Well 7	Well 9	Well 11	Well 12	Well 13	Well 14	Well 15	Well 16	Well 17	Well 18	SWTP
Date Sampled		2018-04-16	2018-04-16	2018-04-16	2018-04-16	2018-04-16	2018-04-16	2018-04-16	2018-04-16	2018-04-16	2018-04-16	2018-04-16	2018-04-16
	RL	Analytical Result											
Treated Water - Inorganic Parameters													
Antimony	0.1	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Arsenic	0.1	0.5	0.4	0.1	0.2	0.2	0.3	0.3	0.4	0.3	0.7	0.5	0.4
Barium	1	185	237	98	215	356	92	257	267	97	271	229	28
Boron	5	17	13	14	14	26	19	20	13	14	16	19	23
Cadmium	0.014	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Chromium	2	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Mercury	0.02	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Selenium	1	<RL	<RL	1	<RL	3	<RL	2	<RL	<RL	<RL	<RL	<RL
Uranium	0.05	0.43	0.28	0.88	0.71	0.4	0.91	1.33	0.14	1.09	0.27	0.2	0.25
Treated Water - Organic Parameters													
Alachlor	0.3	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Atrazine+metabolites	0.5	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Azinphos-methyl	1	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Benzene	0.5	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Benzo(a)pyrene	0.005	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Bromoxynil	0.3	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Carbaryl	3	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Carbofuran	1	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Carbon Tetrachloride	0.2	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Chlorpyrifos	0.5	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Diazinon	1	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Dicamba	5.00	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
1,2-Dichlorobenzene	0.1	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
1,4-Dichlorobenzene	0.2	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
1,2-dichloroethane	0.1	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
1,1-Dichloroethylene (vinylidene chloride)	0.1	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Dichloromethane	0.3	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
2,4-Dichlorophenol	0.1	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
2,4-Dichlorophenoxy acetic acid (2,4-D)	5	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Diclofop-methyl	0.50	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Dimethoate	1	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Diquat	5	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Diuron	5	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Glyphosate	25	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Malathion	5	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
MCPA	10	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Metolachlor	3	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Metribuzin	3	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Monochlorobenzene	0.2	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Paraquat	1	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Pentachlorophenol	0.1	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Phorate	0.3	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Picloram	5	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Polychlorinated Biphenyls (PCB)	0.05	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Prometryne	0.1	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Simazine	0.5	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Terbufos	0.3	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Tetrachloroethylene (perchloroethylene)	0.2	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
2,3,4,6-Tetrachlorophenol	0.10	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Triallate	10	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Trichloroethylene	0.1	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
2,4,6-Trichlorophenol	0.1	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Trifluralin	0.5	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Vinyl Chloride	0.2	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL

Notes:

ug/L - All units presented in micrograms per litre
<RL - Analytical Result did not exceed the laboratory Reporting Limit (RL)
SWTP - Surface Water Treatment Plant

Table 6 – Schedule 13 Chemical Sampling and Testing – Trihalomethanes

Parameter	Running Annual Average
	2018
Trihalomethanes	42.3

Notes:

ug/L - All units reported in micrograms per litre

Table 7 – Schedule 13 Chemical Sampling and Testing – Sodium, Fluoride, Nitrite and Nitrate

Parameter	MDL/RL	Date Sampled	Analytical Results											
		Sample Location	Well 5	Well 7	Well 9	Well 11	Well 12	Well 13	Well 14	Well 15	Well 16	Well 17	Well 18	SWTP
Sodium	0.01 MDL	2014-09-16	10.8	7.7	31.5	--	--	40	--	18.9	8.81	7.44	6.95	--
		2014-09-17	--	--	--	67	--	--	52.2	--	--	--	--	--
		2016-05-17	--	--	--	--	127	--	--	--	--	--	--	--
		2016-05-30	--	--	--	--	131	--	--	--	--	--	--	--
		2016-09-06	--	--	--	--	--	--	--	--	--	--	--	30.8
Fluoride	0.06 MDL	2014-09-16	0.1	0.08	0.07	--	--	0.08	--	0.07	0.11	0.09	0.1	--
		2014-09-17	--	--	--	0.08	--	--	0.08	--	--	--	--	--
		2016-05-17	--	--	--	--	0.08	--	--	--	--	--	--	--
		2016-09-06	--	--	--	--	--	--	--	--	--	--	--	0.08
Nitrite	0.1 RL	2018-02-26	--	--	--	--	--	--	--	--	--	--	--	<RL
		2018-03-06	<RL	<RL	<RL	<RL	<RL	--	<RL	<RL	<RL	<RL	<RL	--
		2018-03-19	--	--	--	--	--	<RL	--	--	--	--	--	--
		2018-05-28	--	--	--	--	--	--	--	--	--	--	--	<RL
		2018-06-05	--	<RL	<RL	--	<RL	<RL	<RL	<RL	<RL	<RL	<RL	--
		2018-06-07	<RL	--	--	--	--	--	--	--	--	--	--	--
		2018-06-12	--	--	--	<RL	--	--	--	--	--	--	--	--
		2018-08-27	--	--	--	--	--	--	--	--	--	--	--	<RL
		2018-09-04	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	--
		2018-11-26	--	--	--	--	--	--	--	--	--	--	--	<RL
		2018-12-03	<RL	<RL	<RL	<RL	--	<RL	<RL	<RL	<RL	<RL	<RL	--
Nitrate	0.1 RL	2018-02-26	--	--	--	--	--	--	--	--	--	--	--	0.5
		2018-03-06	<RL	<RL	2.7	0.6	<RL	--	<RL	<RL	1.1	<RL	<RL	--
		2018-03-19	--	--	--	--	--	2.90	--	--	--	--	--	--
		2018-05-28	--	--	--	--	--	--	--	--	--	--	--	0.2
		2018-06-05	--	<RL	3.6	--	<RL	1.6	0.1	<RL	1.1	<RL	<RL	--
		2018-06-07	<RL	--	--	--	--	--	--	--	--	--	--	--
		2018-06-12	--	--	--	0.2	--	--	--	--	--	--	--	--
		2018-08-27	--	--	--	--	--	--	--	--	--	--	--	0.2
		2018-09-04	<RL	<RL	3.8	0.6	<RL	1.8	<RL	<RL	1.2	<RL	<RL	--
		2018-11-26	--	--	--	--	--	--	--	--	--	--	--	0.1
		2018-12-03	<RL	<RL	2.8	0.6	<RL	--	0.1	<RL	1.1	<RL	<RL	--

Notes:

-- - Analysis not required

<RL - Analytical Result did not exceed the laboratory Reporting Limit (RL)

mg/L - All units reported in milligrams per litre

SWTP - Surface Water Treatment Plant

Table 8 – Schedule 15.1 – Lead

Parameter	Sample Count	Range of Results	
		(min)	(max)
Lead (Plumbing)	22	0.1	18.1
Lead (Distribution System)	21	<RL	2.25

Notes:

ug/L - All units reported in micrograms per litre
RL - Laboratory Reporting Limit

Table 9 – Municipal Drinking Water Licence – Raw Water Sampling and Testing – Volatile Organic Compound

Parameter	Analytical Results							
	(min)	(max)	(min)	(max)	(min)	(max)	(min)	(max)
Sample Location	**Well 11**		**Well 12**		**Well 14**		**Well 15**	
Benzene	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Carbon Tetrachloride	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
1,2-Dichlorobenzene	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
1,4-Dichlorobenzene	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
1,1-Dichloroethylene	<RL	<RL	<RL	<RL	<RL	<RL	<RL	0.1
1,2-Dichloroethane	<RL	<RL	<RL	0.4	<RL	<RL	<RL	<RL
Dichloromethane	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Monochlorobenzene	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Tetrachloroethylene	<RL	0.3	<RL	<RL	<RL	<RL	<RL	<RL
Trichloroethylene	<RL	0.2	<RL	<RL	<RL	0.9	<RL	<RL
Vinyl Chloride	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Cis-1,2-Dichloroethylene	<RL	0.3	<RL	0.1	<RL	1.2	<RL	2

Notes:
ug/L - All units reported in micrograms per litre unless otherwise noted
<RL - Analytical result did not exceed the laboratory Reporting Limit (RL)

Table 10 – Municipal Drinking Water Licence – Raw Water Sampling and Testing - Sodium

Sample Location	Sodium	
	(min)	(max)
*Well 3A	45.1	51
Well 9	42.8	55.3
Well 11	44.1	92.1
Well 12	131	148
**Well 13	25.7	60.2
Well 14	51.9	64.9

Notes:
mg/L - All units reported in milligrams per litre
* - Although 3A was not in service, analytical results required as a condition of the MDWL
** - Only 3 samples were collected at Well 13 due to well maintenance activities

Table 11 – Municipal Drinking Water Licence – Ultra Violet Monitoring

Parameter	Minimum	Well 5	
		(min)	(max)
UV Dosage *Monitored Continuously*	40	0	78.3
UVT *Monitored Weekly*	NA	85	*110.8

Notes:
NA - Not applicable
(mJ/cm^2) - UV Dosage measured in millijoules per centimeter squared
% - UVT measured in percent
* - UVT measurement of greater than 100% related to sampling error. MECP notified.

Table 12 – Schedule 16 and 17 – Adverse Water Quality Incidents (AWQIs) and Corrective Actions

AWQI #	Incident Date	Location	Parameter	Result	Unit of Measure	Corrective Action Taken	Corrective Action Date
138282	2018-01-15	555 Bayview Drive	Total Coliform	3	count/100mL	Resamples were taken at the location of the initial adverse,upstream & downstream of that location and submitted to the lab for analysis within 24 hours of the initial incident. The results came back with no detectable total coliform, e.coli or background bacteria.	2018-01-16
142619	2018-09-09	SWTP - 20 Royal Parkside Drive	Improperly disinfected water directed to users under O.Reg. 170/03 Schedule 16-4	NA	NA	AWQI occured as a result of one of the control panels not properly transfering the alarms and sequencing the plant shutdown to prevent improperly disinfected water from entering the drinking water system. The flow of improperly disinfected water to the drinking water system was stopped as soon as discovered. Calculations to confirm that primary disinfection was not achieved was conducted based on water modeling of direction of water and distance to first consumer. Bacteriological samples were collected as directed by the Medical Officer of Health and results came back negative.	2018-09-14

Notes:

NA - Not applicable

Schedule C

2018 Municipal Summary Report, Schedule 22

Ontario Regulation 170/03

City of Barrie
Water Operations Branch

Drinking Water System
2018 Municipal Summary Report
Schedule 22. O.Reg. 170/03

For the Period of

JANUARY 1ST, 2018 TO DECEMBER 31ST, 2018

System Rating:	Water Treatment Subsystem Class IV Water Distribution and Supply Subsystem Class IV Water Distribution Subsystem Class II
Drinking Water System No.:	220001192
Municipal Drinking Water Licence No.:	014-101, Issue No. 5

Effective Date: 2019-02-25

CONTENTS

1 Introduction

The City of Barrie Water Operations Branch (the Branch) has prepared this summary report to satisfy the requirements of Schedule 22-2 of Ontario Regulation 170/03 (O.Reg.170/03). Schedule 22-2 (1) and (1)(a) require that the owner of a drinking water system ensure that a report is prepared in accordance with subsections (2) and (3) for the preceding calendar year. The summary report must be provided to the members of the municipal council, in the case of drinking water systems owned by a municipality, and must be available no later than March 31st of each year.

This report includes the period from January 1st, 2018 to December 31st, 2018, and the information provided complies with the reporting requirements outlined in Schedule 22-2 (2) and (3) of O.Reg.170/03.

2 Schedule 22-2 Reporting Requirements

Schedule 22-2 requires that the report include the following:

- Schedule 22-2 (2) requires:
    - List the requirements of the Safe Drinking Water Act (SDWA), 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 the time during the period covered by the report; and
    - For each requirement referred to above that was not met, specify the duration of the failure and the measures that were taken to correct the failure.
- Schedule 22-2 (3) requires:
    - 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; and
    - A comparison of the summary referred to above to the rated capacity and flow rates approved in the system's approval, drinking water works permit or municipal drinking water licence.

3 Evidence of Compliance

3.1 Compliance with Schedule 22-2 (2)

The following sections discuss the requirements in Schedule 22-2 (2).

3.1.1 Orders

The Branch was not issued any orders during the 2018 reporting period.

3.1.2 MECP Drinking Water System Inspection

The MECP conducted an annual inspection of portions of the Municipal Drinking Water System (the System) from December 2017 to February 2018, inclusive. Following the System inspection, the MECP issued a report summarizing the findings, including regulatory non-compliances and recommendations and best practice issues.

3.1.2.1 2017 Drinking Water System Inspection Findings

One (1) non-compliance with regulatory requirements and one (1) recommendation were reported in the 2017 MECP Inspection Report issued on March 5th, 2018.

The inspection findings noted that primary disinfection chlorine monitoring was not conducted at a location approved by Municipal Drinking Water Licence and/or Drinking Water Works Permit issued under Part V of the SDWA, or at/near a location where the intended CT has just been achieved. The Branch responded by updating the CT calculations based on the current location of the monitoring equipment.

The one (1) recommendation outlined in the Report was as follows:

1) It is recommended that the Municipality consider reviewing the raw water quality monitoring program on a regular basis to ensure that the deterioration of water quality does not present potential treatment issue in the near future

   The Branch responded by implementing a general chemistry sampling program that will be conducted on a regular cycle.

A copy of the MECP Drinking Water System Inspection Summary is included in Appendix A for reference.

3.1.2.2 Historical Drinking Water System Inspection Findings

The Branch summarized the regulatory non-compliances, MECP recommendations for best practices that were received as a result of inspections, and actions taken by the Branch in response to inspection findings on the MECP Drinking Water System Inspection Summary, which spans the 2011 to 2017 reporting periods, inclusive.

A copy of the MECP Drinking Water System Inspection Summary is included in Appendix A for reference.

3.2 Compliance with Schedule 22-2 (3)

3.2.1 Drinking Water System Production and Flow Rates

In accordance with Schedule 22-2 (3) and in order to assist the Owner in assessing the capability of the system to meet existing and planned uses of the system, the Branch prepared a summary of the quantities of water supplied during the reporting period, including monthly average and maximum daily flows in comparison to the rated capacities. The flows presented below are reported in Megalitres (ML) to reflect the large quantities of water produced by the system.

The Branch supplied 13,300 ML of water in the reporting period. The average monthly flow from all sources within the drinking water system was 1,108 ML, which ranged from 512.7 ML (SWTP) to 27.5 ML (Well 5).

The Branch was approved to supply a total of 148.26 ML (148,264,000 L) of water per day from fifteen (15) sources, with approved capacity of each source ranging from 6.55 ML/day (various sources) to 60 ML/day (SWTP). The maximum volume of water supplied in any day (maximum day flow) from each source ranged from 3.67 ML (Well 13) to 28.67 ML (SWTP) during the reporting period, as illustrated in the Flow Summary graph included in Appendix B. Each source was operated within its respective permitted capacity during the reporting period, with the exception of Well 3A, 4A and 19 which were not operated in 2018.

In 2017 the City initiated an update of the Water Supply, and Water Distribution and Storage Master Plans to identify future water needs and accommodate residential and employment growth intensification and optimal servicing design. The Master Plan updates are expected to be finalized in spring 2019.

A copy of the summary table and figure are included in Appendix B for reference.

4 Closure

It is the belief of the Branch that this report satisfies the requirements of O.Reg. 170/03, Schedule 22. If you have any questions concerning the contents of this report, please contact the Supervisor of Compliance and Technical Support.

Appendix A MECP Drinking Water System Inspection Summary

Ministry of Environment, Conservation & Parks
Drinking Water System Inspection Summary

Item No	Applicable Requirement	MECP Non-Compliance With Regulatory Requirements	Actions Taken	MECP Recommendations and Best Practice Issues	Actions Taken
2017					
1	Schedule E, Drinking Water Licence # 014-101, and Schedule A, Drinking Water Permit # 014-201	Primary disinfection chlorine monitoring was not conducted at a location approved by Municipal Drinking Water Licence and/or Drinking Water Work Permit issued under Part V of the SDWA, or at/near a location where the intended CT has just been achieved. **WOB Summary:** In a mutual oversight by the MECP and the Water Operations Branch that was captured through the renewal process of the Municipal Drinking Water Licence and Drinking Water Works Permit, it was realized that Wells 11,12,15,17 & 18's chlorine analyzers were located as such that primary disinfection chlorine monitoring was not being conducted as prescribed by the Procedure for Disinfection of Safe Drinking Water.	Measures were taken to calculate and identify locations in the drinking water system where the intended CT had just been achieved at each of the well sites. Weekly samples had been conducted for each of those designated locations to trend and establish a minimum chlorine residual concentration necessary to maintain the residual at the end of the dedicated chlorine contact section of piping to the level required to complete primary disinfection. Proposal of minimum chlorine residual concentration required to achieve CT based on the maximum chlorine depletions at each of the sites was approved by the MECP. Operations were adjusted accordingly and continued weekly monitoring occurs to ensure continued compliance and confidence that primary disinfection is occurring at these specific well locations.		

Item No	Applicable Requirement	MECP Non-Compliance With Regulatory Requirements	Actions Taken	MECP Recommendations and Best Practice Issues	Actions Taken
2				It is recommended that the Municipality consider reviewing the raw water quality monitoring program on a regular basis to ensure that the deterioration of water quality does not present potential treatment issue in the near future	General Chemistry samples to be collected from sources on a 9 month frequency starting October 2018. Additional sampling from sources for some parameters will be sampled and analyzed quarterly by the in-house lab. All results will be reviewed as part of Management Review.
2016					
1	R.R.O., 1990 Reg. 903-Wells SDWA: Subsection 1-2(1) O.Reg. 170/03	The owner was not maintaining the well(s) in a manner sufficient to prevent entry into the well of surface water or other foreign materials. **WOB Summary:** Well pump vent screen situated at the base of the vertical turbine pump developed corrosion over time and was noticed to be situated on an angle during inspection, which led to the MECP inspector identifying the part as no longer attached effectively.	Action immediately taken to repair the well pump vent screen at John St – WPS 05. Repair documented and communicated to MECP Inspector on 2017/01/09.		Addition of field to the CMMS cyclical work order to include check well pump vent screen. This activity is conducted 3 times per week.

Item No	Applicable Requirement	MECP Non-Compliance With Regulatory Requirements	Actions Taken	MECP Recommendations and Best Practice Issues	Actions Taken
2				The municipality is strongly advised to assess potential risk to the natural environment and collect information on the discharge effluent from generator cooling water and sand separator purge water that discharges directly to Kempenfelt Bay from Heritage Park Well Pumping Station 14. Test for the following parameters: • average individual and total volumes • assessment of total suspended solids • a comparative of temperatures of each process discharging to Kempenfelt Bay	Branch conducted sampling on the three (3) requested parameters. Additional work required to determine best practice with respect to preventative maintenance cycle for the sand separator at applicable well stations.
3				It is the recommendation that the municipality consider labelling the bottle of deionized water used for verification of the UV unit at John St – WPS 05 with the date of filling, replacing the deionized water every 3 months, and replacing the current wide mouth container with a laboratory wash bottle.	Bottle replaced with the laboratory type wash bottle, labelled with permanent marker identifying the contents and date filled.
4				It is recommended that the municipality consider assessing the secondary containment capacity for the bulk chemical storage to ensure sizing is capable of containing 110% of the volume of the largest container as per the Ministry's Guidelines for environmental protection measures at chemical and waste storage facilities.	Engineers' drawings referenced and volumes calculated to verify secondary containment is in excess of the required 110% capacity. Verification sent via email to the MECP inspector on 2017-02-15

2015					
1	N/A	None	None	The municipality consider effecting a twice-yearly visual check of all below grade chambers where distribution system ARV and PRV components are located where there is a risk of water intrusion or at a minimum, the recommended inspection schedule suggested by the manufacturer. Literature from the manufacturer of the most common ARV and PRV devices installed within the distribution system provides a recommendation of annual inspection to ensure correct operation.	Creation of CMMS cyclical work orders to ensure once yearly inspection. Wet ARV and PRV inspection results will render a follow up inspection scheduled within 6 months and every 6 months thereafter until found dry, and return to annual inspection cycle.
2014					
1	Ontario Water Resources Act: Permit to Take Water #5183-8EZKMA	The owner was not in compliance with the conditions associated with maximum flow rate or the rated capacity conditions in the Permit and License or Approval issued under Part V of the Safe Drinking Water Act. **WOB Summary:** Well 15 ran at a flow rate (112 L/s actual, allowed 106 L/s) beyond PTTW maximums for several months, on one day the well ran beyond the daily allowed m^3 (9742.2 m^3 actual, allowed 9100 m^3).	CAR 40 (closed) - SCADA set-points table was updated to include the maximum flow rate (L/s) allowed by the PTTW, improvements to the eRIS reporting tool were implemented to prompt operators to make comment on any anomalous values.	After a period of seven or more consecutive days when a production source is offline, the owner and the operating authority for the system ensure that no drinking water is supplied to a user of water after that period from that source, until raw and treated water microbiological samples have been taken and the results of the tests have been received by the owner and the operating authority.	Revised SOP to reflect Best Practice

2	SDWA: O.Reg.170/03	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. **WOB Summary:** SCADA reports indicated several occasions where a value below critical set-points was recorded. OIC comments did not provide sufficient explanation as to the cause or reason for the anomalous value. Secondary records (work orders) did not contain sufficient information to provide an adequate explanation.	CAR 44 (closed) - improvements to the eRIS reporting tool were implemented to prompt operators to make comment on any anomalous values.	None	None
2013					
1	SDWA: O.Reg.170/03	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. **WOB Summary:** SCADA reports indicated several occasions where a value below critical set-points was recorded. OIC comments did not provide sufficient explanation as to the cause or reason for the anomalous value. Secondary records (work orders) did not contain sufficient information to provide an adequate explanation.	CAR 26 (closed) - Report and Trending data was found to be extracted from different SCADA controllers producing values that were inconsistent. Report data switched to pull from trending data. Values are now consistently found on both reports and trending.	None	None

2	SDWA: O.Reg.170/03	All continuous monitoring equipment utilized for sampling and testing required by O. Reg. 170/03, or approval or order, was not equipped with alarms or shut-off mechanisms that satisfied the standards described in Schedule 6. **WOB Summary:** Well #12 set-point was 0.09 mg/L above the minimum CT value and not the required 0.10mg/L required. Well #11 and #15 both allowed the well to start when chlorine residual was below the lockout threshold but above the minimum CT threshold on several occasions. SCADA system was displaying flat lines (frozen values) that were not commented on in the SCADA logbook.	CAR 24 (closed) - SCADA programming updated such that alarms and lockouts respond correctly. Operators instructed to comment on all flat lines.	None	None
3	SDWA: O.Reg.170/03	All microbiological water quality monitoring requirements for treated samples were not being met. **WOB Summary:** Well #18 was used as a production source without first collecting required microbiological samples. Weekly samples collected for the week of April 21, 2013 were not delivered to the lab (left in sample fridge). This situation was not discovered until the following week.	CAR 25 (closed) - Well out of service process reviewed and updated. Operators instructed to ensure wells are not started until samples have been collected. Supervisor reviewing chain of custodies to ensure correct samples are collected.	None	None
2012					
1	N/A	None	None	The Owner should take every reasonable effort to meet the target to have 50% of valves in the distribution system exercised each year. Exercising valves is a valuable undertaking for system integrity, and can be crucial during emergency situations.	Efforts taken to improve valve-turning results. Valve turning remains below 10% per year.

2	N/A	None	None	As the Surface Water Treatment Plant is a tenant of the City of Barrie Facilities Department, Facilities Staff have access to the SWTP. As these employees are not Certified Operators there is some concern over access control to treatment and process areas. In addition, as there are antennae installed at the tower locations, persons who are not Certified Operators have access to the sites. It is recommended that efforts be taken to ensure that only appropriate personnel have access to components of the drinking water system. Control over access to drinking water system treatment equipment and components is important to protecting the drinking water system.	Facilities Staff entering the Low Lift Pumping Station are required to sign into the on-site logbook denoting work undertaken. When accessing the Surface Water Treatment Plant Facilities Staff must advise the OIC of the work to be completed.
3	N/A	None	None	During the inspection review period, it was indicated that SCADA upgrades are being undertaken for the groundwater system. It is recommended that the Owner develop reports from trending data that are specific to primary and secondary treatment, and contain information that is critical to ensuring safe drinking water is provided to customers. Consideration should be given to removal of less significant data.	Several reports were created in eRIS for both the SWS and GWS groups. MECP specific inspection reports exist to provide only critical data to the MECP Inspector.

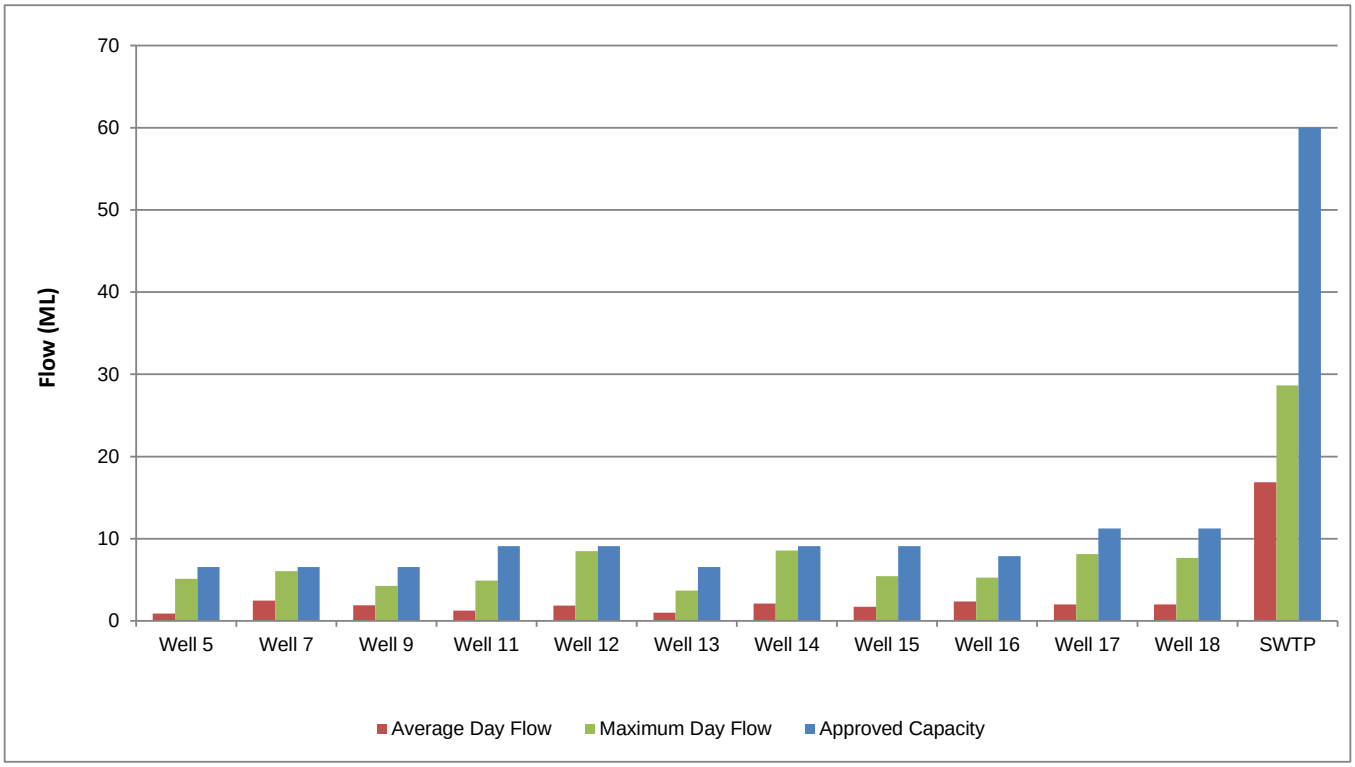
2011					
1	Ontario Water Resources Act: Permit to Take Water #5183-8EZKMA	The Permit to Take Water (PTTW) imposed conditions beyond limiting takings and the owner had not complied with the conditions of the PTTW. **WOB Summary:** Weekly monitoring of water levels at several wells was not completed on several occasions. When levels were collected work orders were recorded as "-" or "NR" on several occasions even though logbooks indicated that the levels were collected.	CAR 13 (closed) - Work orders were updated to clearly indicate the requirement to collect the static water levels. Static value reading being incorporated into SCADA system by end of year 2012.	It is recommended that the Owner of the Barrie Drinking Water System take steps to improve the quality and organization of records and logbooks, to facilitate the assessment of compliance. Such improvements could include, but are not limited to; making logbook entries legible, including more detail in logbook entries, where transcription of data is undertaken ensure the record is complete and label data in such a manner that it reflects the data recorded.	Logbook training provided to Operators.
2	SDWA: O.Reg.170/03	All microbiological water quality monitoring requirements for treated samples were not being met. **WOB Summary:** For several weeks both the GWS and SWS failed to indicate the requirement for the lab (SGS) to analyze for Heterotrophic Plate Counts (HPC). As a result HPC parameter was not tested for.	CAR 14 (closed) - Chain of custody updated such that all sources are pre-checked for HPC testing. Distribution chain of custodies updated with highlighting to remind Operator to include 25% HPC tests.	It is recommended that the operators for both the groundwater and surface water treatment plants receive additional training with regards to CT, and understand the values required to ensure adequate primary disinfection is achieved at each source under his/her responsibility.	Disinfection training provided to Operators.
3	SDWA: DWWP MDWL	All water quality monitoring requirements imposed by the Permit and License or Approval issued under Part V of the SDWA were not being met. **WOB Summary:** Well 5 UV transmittance values were not collected weekly as required. In some instances work orders indicated that the value was measured but no value was recorded.	CAR 15 (closed) - Work order process updated to ensure appropriate work orders are distributed in absence of the Lead Hand. Verification by UPCs will ensure that Lead Hand is notified of errors and omissions.	None	None

4	SDWA: O.Reg.170/03	All changes to the system registration information were not provided within ten (10) days of the change. **WOB Summary:** The City of Barrie Drinking Water System Profile was not updated to indicate that the Surface Water Treatment Plant was an entry point into the drinking water system; nor did the profile indicate that Lake Simcoe was being used as a raw water source.	CAR 16 (closed) - QMS Team Strategy was updated to reflect which role is responsible for completion of the notification document.	None	None

Appendix B Tables and Figures

Drinking Water System Usage

Source	Approved Daily Capacity (ML/day)	Maximum Day Flow (ML/day)	Average Day Flow (ML/day)	Monthly Average Flow (ML/month)	Annual Total Volume (ML)
Well 5	6.55	5.12	0.90	27.49	329.91
Well 7	6.55	6.05	2.48	75.49	905.84
Well 9	6.55	4.27	1.91	57.99	695.85
Well 11	9.10	4.89	1.26	38.19	458.28
Well 12	9.10	8.50	1.85	56.15	673.76
Well 13	6.55	3.67	1.00	30.54	366.44
Well 14	9.10	8.57	2.11	64.25	771.01
Well 15	9.10	5.45	1.71	51.94	623.32
Well 16	7.86	5.25	2.34	71.32	855.84
Well 17	11.23	8.14	2.01	61.02	732.20
Well 18	11.23	7.67	2.01	61.25	734.95
SWTP	60.00	28.67	16.86	512.72	6,152.62
System	148.26	60.20	36.44	1,108	13,300



Schedule D

Ministry of Environment, Conservation and Parks

Standard of Care

TAKING CARE OF YOUR DRINKING WATER

A Quick Guide For Members Of Municipal Councils

If you are a municipal councillor, this quick guide is intended to help you better understand the Safe Drinking Water Act, 2002 (SDWA) and provide information about your statutory standard of care responsibilities. You are encouraged to also read ***Taking Care of Your Drinking Water: A Guide for Members of Municipal Councils***. It provides more details about these responsibilities as well as information about how Ontario's drinking water is protected.

Ontarians expect safe, high quality drinking water. It is a matter vital to public health. As a member of a municipal council, you have an important role to play to ensure that your community has access to safe, high quality drinking water — and you are legally obliged to do so.

THREE THINGS TO REMEMBER AS A MUNICIPAL COUNCILLOR:

It's Your Duty. The Safe Drinking Water Act, 2002 includes a statutory standard of care for individuals who have decision-making authority over municipal drinking water systems or who oversee the operating authority of the system. This can extend to municipal councillors. There are legal consequences for not acting as required by the standard of care, including possible fines or imprisonment.

Be Informed. Ask questions. Get answers. You don't have to be an expert in drinking water operations, but you do need to be informed about them. Your decisions can have an impact on public health. Seek advice from those with expertise and act prudently on that advice.

Be Vigilant. Complacency can pose one of the greatest risks to drinking water systems. It is critical that you never take drinking water safety for granted or assume all is well with the drinking water systems under your care and direction. The health of your community depends on your diligent and prudent oversight of its drinking water.

> *"Water is unique as a local service. It is, of course, essential to human life and to the functioning of communities, (and) the consequences of a failure in the water system (are) most seriously felt by those who depend on it locally. Municipal ownership, and the ensuing responsibilities, should provide a high degree of public accountability in relation to the local water system."*
> — Justice Dennis O'Connor,
> 2002 Report of the Walkerton Inquiry

Legal Disclaimer – This quick guide should not be viewed as legal or other expert advice. For specific questions regarding the legal application of the Safe Drinking Water Act, 2002 and its regulations, please consult a lawyer and/or consult the text of the Act at ***www.e-laws.gov.on.ca***.

Ontario

Key Sections of the SDWA for Municipal Councillors

Section 11: Duties of Owners and Operating Authorities

Section 11 of the SDWA describes the legal responsibilities of owners and operating authorities of regulated drinking water systems. It is important for you to understand the scope of your municipality or operating authority's day-to-day responsibilities.

Owners and operators are responsible for ensuring their drinking water systems:

- provide water that meets all prescribed drinking water quality standards
- operate in accordance with the act and its regulations, and are kept in a fit state of repair
- are appropriately staffed and supervised by qualified persons
- comply with all sampling, testing and monitoring requirements
- meet all reporting requirements

Examples of actions required of owners and operators under Section 11:

- Sampling and testing of drinking water with a frequency appropriate to the type, size and users of the system in accordance with the act and corresponding regulations
- Using an accredited and licensed laboratory for drinking water testing services
- Reporting of adverse test results that exceed any of the standards in the Ontario Drinking Water Quality Standards Regulation, both verbally and in writing, to the local medical officer of health and the Ministry of the Environment and Climate Change (MOECC)
- Obtaining a drinking water licence for a municipal residential drinking water system from the MOECC, which includes a financial plan
- Ensuring the drinking water system is operated by an accredited operating authority
- Hiring certified operators or trained persons appropriate to the class of the system
- Preparing an annual report to inform the public on the state of the municipality's drinking water and the system providing it, and an annual summary report for the owners of the drinking water system

Section 19: Your Duty and Liability – Statutory Standard of Care

Section 19 of the SDWA expressly extends legal responsibility to people with decision-making authority over municipal drinking water systems and those that oversee the accredited operating authority for the system. It requires that they exercise the level of care, diligence and skill with regard to a municipal drinking water system that a reasonably prudent person would be expected to exercise in a similar situation and that they exercise this due diligence honestly, competently and with integrity.

Meeting your statutory standard of care responsibilities

Meeting the statutory standard of care is the responsibility of:

- the owner of the municipal drinking water system
- if the system is owned by a municipality, every person who oversees the accredited operating authority or exercises decision-making authority over the system – **potentially including but not limited to members of municipal councils**
- if the municipal drinking water system is owned by a corporation other than a municipality, every officer and director of the corporation

Maintaining an Appropriate Level of Care

Standard of care is a well-known concept within Ontario legislation.

For example, the Business Corporations Act requires that every director and officer of a corporation act honestly and in good faith with a view to the best interests of the corporation and exercise the care, diligence and skill that a reasonably prudent person would in comparable circumstances.

Statutory standards of care address the need to provide diligent oversight. What is considered to be an appropriate level of care will vary from one situation to another. As a municipal councillor, it is important to educate yourself on this statutory requirement and to gain an understanding of the operation of drinking water systems in your community to help you meet the standard of care requirements.

You are not expected to be an expert in the areas of drinking water treatment and distribution. Section 19 allows for a person to rely in good faith on a report of an engineer, lawyer, accountant or other person whose professional qualifications lend credibility to the report.

Enforcing the Statutory Standard of Care

As a municipal councillor, you need to be aware that not meeting your statutory standard of care responsibilities comes with serious consequences. Section 19 provides the province with an enforcement option when needed.

A provincial officer has the authority to lay a provincial offence charge against a person to whom the standard applies. The range of penalties includes maximum fines of up to $4 million for a first offence and provision for imprisonment for up to five years. No minimum penalties are established. Actual penalties would be decided by the courts depending on the severity and consequences of the offence.

It is important to note the difference between the provision of the Municipal Act, 2001, that limits the personal liability of members of municipal councils and officials, and the standard of care imposed under the SDWA. Under sections 448-450 of the Municipal Act, 2001, municipal council members and officials have relief from personal civil liability when they have acted in good faith. However, despite that protection, municipal councillors and officials that are subject to the duty imposed by Section 19 of the SDWA could be penalized if a prosecution is commenced and a court determines they have failed to carry out the duty imposed under that section.

☑ Actions You Can Take – to be better informed about your drinking water oversight responsibilities.

General

- ☐ Read ***Taking Care of Your Drinking Water: A Guide for Members of Municipal Councils,*** which provides more details about your responsibilities as well as information about how Ontario's drinking water is protected and reference material on drinking water.
- ☐ Consider taking the Standard of Care training with the Walkerton Clean Water Centre. Get course details and session offerings at **www.wcwc.ca** or by phoning toll free 1-866-515-0550.
- ☐ Learn about drinking water safety and its link to public health. Speak to water system and public health staff to learn more.
- ☐ Become familiar with your municipal drinking water system. Ask your water manager to give a presentation to council and/or arrange a tour of your drinking water facilities.
- ☐ Review the reports of the Walkerton Inquiry, specifically sections related to municipal government (Chapter 7 in Report I, Chapters 10 and 11 in Report II). The reports are available online at **www.attorneygeneral.jus.gov.on.ca/english/about/pubs/walkerton**.
- ☐ Become further acquainted with drinking water legislation and regulations, available on the Ontario Government e-Laws website at **www.e-laws.gov.on.ca**.

Drinking Water Operational Plan

- ☐ Ask your operating authority to speak to your municipal council about your operational plan.
- ☐ Consider and act on any advice (including identified deficiencies and action items) identified during the annual management review process.
- ☐ Review the Quality Management System policy in your operational plan and its commitments.
- ☐ Ask your operating authority to show how it is meeting these commitments.

Drinking Water Reports and Inspections

- ☐ Obtain and thoroughly review copies of the most recent annual and summary reports.
- ☐ Ask for explanations of any information you don't understand.
- ☐ Consider, act on and correct any deficiencies noted in the reports.
- ☐ Review your annual inspection results and ask questions if there is any indication of declining quality.
- ☐ Clarify any technical terms.
- ☐ Ask how deficiencies are being addressed.
- ☐ Review your system's standing in the ratings reported in the Chief Drinking Water Inspector's Annual Report. If your rating is less than 100 per cent, ask why.
- ☐ Consider, act on and correct any deficiencies highlighted in the inspection.

Infrastructure Planning

- ☐ Find out what maintenance, rehabilitation and renewal plans are in place for your drinking water system.
- ☐ Ask your operating authority to present the findings of its annual infrastructure review.

Communicating with Your Operating Authority

- ☐ Determine when and how your operating authority will communicate to you as an owner.
- ☐ Find out what information is made available to the public and how.

Emergency Planning for Drinking Water

- ☐ Ask your operating authority to review the drinking water emergency plan with council and to explain what responsibilities have been assigned to the owner.
- ☐ Know who will be the spokesperson during a drinking water emergency.
- ☐ Ensure critical staff have taken necessary training on emergency procedures and have participated in testing.

Drinking Water System Operators

- ☐ Ensure there are sufficient resources for appropriate levels of training for municipal staff involved in operating a drinking water system.
- ☐ Confirm that an overall responsible operator (ORO) has been designated and that procedures are in place to ensure all required staff and contractors are certified.
- ☐ Check to see if drinking water operator succession planning is being done and that measures are taken to address any current or anticipated challenges to recruiting skilled employees.
- ☐ Ensure your municipality or operating authority has contingency plans in place for situations where your certified operators may not be available (e.g. labour disputes, illnesses, vacancies, etc.) and, if activated, confirm that these contingency plans have been, where required, approved by the Ministry of the Environment and Climate Change and are working.

Source Protection Planning

- ☐ Review the source protection plan for your area and find out what actions are being taken to protect vulnerable areas around your drinking water sources.
- ☐ Find out if your municipality has appointed risk management officials and inspectors to support source protection planning and whether you are sharing these duties with other municipalities or delegating to a local source protection authority.

For more information, call the Ministry of the Environment and Climate Change at **1-800-565-4923**
Email: **drinking.water@ontario.ca**

PIBS 9810e

Schedule E

Quality Management System
Management Review Meeting Minutes

QMS Meeting

Date: 2018-05-07

Time: 2:00 pm to 3:00 pm

Meeting Type: QMS Q1 Management Review

File: N:\IGM\Enviro\Water Ops - CTS\Admin\A02-Staff Commit and Mtgs\Minutes - QMS Management Team Meetings\2018 Mgmt. Review

Water Operations Branch

Facilitator: Diana Smith (DS) **Recording: Diana Smith (DS)**	**Absent: ☒ Jennifer Barrick** **☒ Chris Harper**	**Attendees:** **☒ Diana Smith (DS)** **☒ Diane Moreau (DM) – arrived late** **☒ Jason Giffen (JG)**	**☒ Jeanette Dumais (JD)** **☐ Jennifer Barrick (JB)** **☒ Kari-Anne Last (KL)** **☐ Chris Harper (CH)**	**☒ Dave Truax (DT) – left early** **☒ Jamey Adams (JA)** **☒ Chris Marchant (CM)**

Agenda

1. Review of Q1 Power point presentation

Agenda Item	Discussion/Decision
1. 2017 Q4 Action Items follow up	Reviewed Action items with Management. There are 5 items still outstanding that require further follow up for next quarter or end of year - 17-097, 18-010, 18-013, 18-017 and 18-018. Action Item 17-097 Update sodium trending data beyond 2012 to see how the results have been increasing and any difference in correlation to well depth – Dec 2008 result is missing for WPS#13, suggestion to check logbook to see if station may have been offline or any other reason for missing data. Action Item 18-008 Follow up with DT as to reason why GWS regulatory work orders not completed for 2017 Q4 – requires further clarification as to reason why the work orders were still open (e.g. created in error, were duplicates, etc.). Action Item 18-010 Look into a new way to present the data for section work order summary for yearly totals - Assigned to KL and will be reviewed in Q4 Management Review. Action Item 18-011 Follow up with DT regarding high number of callouts for Q4 for WPS05 John St and PRV's – DT reported that the sensors were checked on PRV's and that they increased the time to 5 mins before a callout would occur. 18-013 Follow up on CMMS reports and creation date versus occurrence dates and how some occurrences are getting missed on monthly reports versus the year-end report - Assigned to JD and will be reviewed in Q4 Management Review. 18-017 Add in some metrics for CTS for 2018 Management Reviews including completed action log items, CIPs completed, OFIs completed – Assigned to DM and being reviewed with CTS group. Action Item 18-018 Discuss General Chemistry parameters, frequency of sample collection and any treated water sampling to show treatment efforts - CM will follow up with BMT regarding what was decided.
2. Incidents of Adverse Drinking Water Tests	Reviewed table presented. There were 2 lead exceedances that occurred in Q1 and 1 AWQI reported in January 2018. Discussion on lead services within the City of Barrie and don't believe there is much left but replacing service on municipal side and not private side could cause further issues with leaching of lead into the water. Also discussed goose necks and believe might be less than 100 goose necks and may need to invest in doing a replacement for the ones still left in the distribution system. The one AWQI from January had a duplicate ran by the lab that was 0 Total Coliform and 0 e-coli. It is unknown how the duplicate was run at the lab (e.g. 2 different analysts, 2 different batches of media, 2 different incubators) and without the information it is not possible to determine the cause for difference in results. Resample was clear.

**** Refer to QMS Action Log for specific details regarding action items assigned during QMS Meetings**

Agenda Item	Discussion/Decision
3. Deviations from Critical Control Point Limits and Response Actions – Deviations from SCADA Set Points	Presented table created by SWS for Deviations from SCADA set points for 1st Quarter. There is still ongoing work being done to create a paper version for reporting for both GWS and SWS to ensure consistency between the 2 sections and what is being reported for Critical Control Points.
4. Deviations from Critical Control Point Limits and Response Actions – Flushing	Reviewed all graphs with the group for all activities per zone, volumes flushed over 100m^3 and deviations for chlorine and turbidity per zone for Q1 data. Did comparisons of 2017 Q1 to 2018 Q1. Comparison of total number of flushing activities completed in 2018 Q1 (184) vs 2017 Q1 (279) and why the total is so much lower than the same time last year. Action Item 18-041 was created to follow up with CH regarding the decrease in number of flushing activities completed in 2018 Q1 versus 2017 Q1. Assigned to KL with a completion date of July 24, 2018.
5. Operational Performance – System Production	Reviewed the graph with the group.
6. Operational Performance – SWS vs GWS Production	Reviewed the graph with the group. Trending for GWS is slightly downward. SWS seems fairly stable. Discussion on how close GWS and SWS are for production for Nov 2017-Mar 2018. Suggestion to see if there is a valve open and possibly causing some mixing of water. DT will have staff investigate. Action Item 18-042 was created for DT to check valves to ensure they are not open between SWS and GWS. Assigned to KL with a completion date of July 24, 2018.
7. Operational Performance – Sectional Work Order Summaries	The group reviewed the number of work orders completed successfully by each Section and the number of outstanding work orders. GWS – 28 regulatory work orders outstanding. DT commented that WPS 9, 11 & 13 had well maintenance completed. DT to follow up with lead hand. SWS – all 43 work orders that were created were completed – no follow up required. WDS – no outstanding work orders for regulatory but 1 for urgent and 1 for emergency work orders that are still outstanding. JG to follow up with lead hand. WCS – 3 regulatory work orders outstanding, would like to review what they are and why they are not closed. Also follow up on total number of outstanding work orders (2849). Action Item 18-043 was created to follow up with DT and look into GWS regulatory work orders not completed for 2018 Q1. Assigned to KL with a completion date of July 24, 2018. Action Item 18-044 was created to follow up with JG and look into WDS emergency and urgent work orders not completed for 2018 Q1. Assigned to KL with a completion date of July 24, 2018. Action Item 18-045 was created to follow up with CH and look into WCS regulatory work orders not completed for 2018 Q1 and total number of outstanding work orders. Assigned to KL with a completion date of July 24, 2018.
8. Operational Performance – Call Outs	Presented the data that was provided by UPC for the GWS ad SWS Sections. No comments, discussion or decisions were generated.
9. Operational Performance – Backflow	Reviewed the graph as provided by the backflow group. There are still 129 outstanding.
10. Operational Performance – Locates	Reviewed the graph with the group. Report was updated and re-ran the numbers from Jan 2015 to date and updated the graph. Note that starting February 2017 – locates for Water were valid for 60 days instead of 30 days. The number of locates for a specific month from the report were cross referenced with an invoice received from One-Call and the Lead hand was satisfied with the numbers being produced from the One-Call report. Will continue using the report for future Management Review.
11. Operational Performance – Watermain Breaks	Presented data on total watermain breaks between January and March, inclusive and did comparison to monthly average from 2013 through 2017. Additional graphs were presented highlighting watermain breaks on pipe size, pipe material, pipe age, break type and break cause. No comments, discussion or decisions were generated.

**** Refer to QMS Action Log for specific details regarding action items assigned during QMS Meetings**

Agenda Item	Discussion/Decision
12. Raw Water Supply and Drinking Water Quality Trends – Sodium	Reviewed the graph with the group. No comments, discussion or decisions were generated.
13. Drinking Water Quality Trends – THMs and HAAs	Reviewed data with the group. HAAs – samples have been collected at the SWTP as well as in the distribution system based on Ministry direction that HAAs would be higher closer to point of injection. Results from quarterly sampling currently do not prove that HAAs are higher closer to point of injection. Will continue to collect HAA samples at the SWTP when they are collecting distribution samples and trend to see if any difference in SWTP and distribution sample results.
14. Raw Water Supply and Drinking Water Quality Trends – SWTP in-house lab data	Presented in house lab data graphs for Q4 as well as data for each parameter for 3 years. No comments, discussion or decisions were generated.
15. Summary of Consumer Feedback – Water Quality Complaints	Reviewed graphs with the group. Work orders and/or service requests continue to remain outstanding for after hour water quality complaint calls. CM to follow up with Supervisors as to process and why there are still so many outstanding. Action Item 18-046 was created to follow up with CM regarding work orders/service requests not being submitted and entered into CMMS. Assigned to DS with a completion date of July 24, 2018.
16. Changes Affecting QMS	Reviewed recent and upcoming changes with the group. No comments provided from the group.
17. Operational Plan, Currency and Updates	Presented elements reviewed by BMT to date. These included: Element 1 – Quality Management System Element 2 – Quality Management System Policy Element 3 – Commitment & Endorsement Element 4 – Quality Management System Representative Element 5 – Document and Records Control Element 6 – Drinking Water System
18. New Business	Sampling Audit being completed each quarter – 1 UVT sample from January 2018 was collected out of date range (e.g. taken 4 days after last sample collected and needs to be 5-10 days from the last sample collected). There were also some VOC samples taken out of date range in 2017. Both non-compliances are going to be put onto same CIP for review. Regulatory reports for GWS – some comments related to exceeding PTTW for flow rate (L/min) on the reports state that it is due to pump start up. CM and DM to follow up with DT regarding issue.

Minutes Reviewed By
☒ Diane Moreau (DM)
☒ Jeanette Dumais (JD)
☐ Jennifer Barrick (JB)
☒ Kari-Anne Last (KL)
☒ Diana Smith (DS)
☒ Dave Truax (DT)
☒ Jamey Adams (JA)
☐ Chris Harper (CH)
☒ Chris Marchant (CM)
☒ Jason Giffen (JG)

Next Meeting: 2018-08-01

**** Refer to QMS Action Log for specific details regarding action items assigned during QMS Meetings**

QMS Meeting

Date: 2018-08-01

Time:1:00 pm to 2:00 pm

Meeting Type: Q2 Management Review

File:N:\IGM\Enviro\Water Ops - CTS\Admin\A02-Staff Commit and Mtgs\Minutes - QMS Management Team Meetings\2018 Mgmt. Review

Water Operations Branch

Facilitator: Jeanette Dumais Recording: Jeanette Dumais	Absent: ☒ Diana Smith (DS) ☒ Chris Harper (CH)	Attendees: ☒ Chris Marchant (CM) ☒ Jamey Adams (JA) ☒ Dave Truax (DT) ☒ Jennifer Barrick (JB) ☒ Jason Giffen (JG)) ☒ Brenden Miller (BM) ☒ Diane Moreau (DM) ☒ Jeanette Dumais (JD) ☒ Shane Steele (SS)

Agenda

1. Review all Presentation Material as documented below in agenda items 1 – 20

Agenda Item	Discussion/Decision
1. Q2 Follow Up - Q1 Action Log Items	**Action Log Item #18-013 – Follow up on CMMS report creation date versus occurrence dates and how man breaks occurrences are getting missed on monthly reports versus the year-end report** • JD reviewed comment provided for presentation with the group - no further comment **Action Log Item #17-097 – Update sodium trending data beyond 2012 to see how the results have been increasing and note any difference in correlation to well depth** • JD noted that this was completed and will be shown later on in the presentation **Action Log Item #18-041 – Follow up with CH regarding the decrease in number of flushing activities completed in 2018 Q1 versus Q1 2018** • JD reviewed the justification provided for the presentation with the group – no further comment **Action Log Item #18-042 – Follow up with DT and look into why water production between SWS and GWS is equalizing** • JD reviewed the justification provided for the presentation with the group – no further comment **Action Log Item #18-043 Follow up with DT regarding why GWS work orders not completed** • JD reviewed the justification provided with the group • DM noted that the process is under review with UPCs to look at frequency and printing in advance • DM and DT noted upcoming changes to sampling locations (minimized to 30 sites ONLY) will help this effort **Action Log Item #18-044 – Follow up with JG regarding why WDS has outstanding emergency and urgent work not completed** • JD reviewed the justification provided for the presentation with the group • DM noted that further refinement of the reporting process for this will follow which will include further filtering of data to remove work order tasks such as: project associated tasks, deficiency checks NEW Action Item#18-073 Refine the number of outstanding emergency and urgent work orders reported on the F20-07 for Management Review from the WDS section to filter out project associated tasks as determined by DM, JG and SG, assigned to DM with a target completion date of October 23, 2018

**** Refer to QMS Action Log for specific details regarding action items assigned during QMS Meetings**

Agenda Item	Discussion/Decision
	Action Log Item #18-045 – Follow up with CH regarding regulatory work orders that are not completed for Q1 as well as total number of outstanding work orders • JD reviewed the justification provided for the presentation with the group – no further comment
2. Incidents of Adverse Drinking Water Tests	• No AWQI's to report for this quarter
3. Deviations from SCADA Set Points	SWS – group reviewed supplied deviations without further comment GWS – the process of collecting this information for the GWS side is underway. New forms are now in the approval process and reporting for Q3 of 2018 is expected.
4. Deviations from Critical Control Point Limits – Flushing Activities	**Graph – total # of flushing Activities** • BJ noted that the decrease from Q2 of 2017 to Q2 of 2018 is due in large part to lack of staffing resources and new recruits unable to get corporate driver training for an extended period of time, making them unable to drive our corporate vehicles **Graph – flushing activities with volumes over 100m³** • No comment from group **Graphs – flushing activities per zone quarter to quarter comparison** • JD and JB noted that the graphs did not illustrate well, there was not a lot of information to glean from this comparison • BM suggested to try comparing similar work types such as: zone valve flushing to zone valve flushing for whichever zone was focused on year to year • BM also suggested to consider compiling this data only twice per year to get a more holistic view of the task • SS suggested transforming the pie graph representation to heat mapping as a more graphic representation of our system **New Action Log Item #18-066 – determine and test new ways to represent flushing data which may better represent the whole distribution system using the suggestions provided by BM and SS in Q2 Management Review, assigned to TBD with a target completion date of XXXX**
5. Operational Performance – System Wide Production	**Graph – System Wide Production, 5 year Monthly Average** • JD noted that the red bar which depicts the 2013 to 2017 average is not displaying on screen however is present in the edit presentation view and in print form **Graphs – SWS versus GWS Production 2015 to Current and 2017 to 2018** • JA and DT noted that is still surprising that production is continuing to diminish in GWS and slightly increase in SWS therefore looking towards equalizing soon • BM noted that flushing efforts could have an impact on these values dependent on the zone flushing efforts are being conducted on • BM also noted that main breaks have been way down and that could also impact losses (appearing as greater production) in the North end of the City • Group noted that the past couple of years has not seen much if any growth in the North end of the City either as a potential source of reduced production
6. Operational Performance – Sectional Work Order Summary	**Table presented for each of the 4 operational sections** • BM spoke to the 2554 outstanding work orders in the WCS section, letting the group know that he was working with UPC Sam Cuggy to address. They worked to evaluate the necessary work orders and cancel some based on the following tasks: Troubleshoot WAMCO installs and Test Backflow Device • CM noted that there is a study or test of an application or function offered in the AMI database called Ping Job – this, if found to be valuable will result in the cancellation of most of the work orders as the Ping Job can perform the function remotely for us retrieving the data required • JD noted that number of cancelled work orders from each operational section was not noted on the presentation as the information was not provided during the time of presentation. It was noted that an outdated form was used which previously did not contain cancelled work orders on it • DM spoke to cancelled work orders from a report she herself filtered for discussion at the presentation that were sent out to the Supervisors for review prior to the meeting

**** Refer to QMS Action Log for specific details regarding action items assigned during QMS Meetings**

Agenda Item	Discussion/Decision
	• DM noted that historically work orders were being cancelled without much oversight and as such a form was created to ensure a tracking mechanism and reasoning was in place to justify the cancelling of projected work and to ensure there was approval obtained from a Supervisor • DM noted that since the inception of the form its effectiveness has somewhat become just a sign off essentially, and the opportunity for a verification piece needs to be better determined • BM noted that filling out of the form for him is cumbersome due to the large volume he has to deal with. These are typically due to water shut offs being cancelled after customers have made payment of their water bill • JA noted that there is still an importance that should be relied upon in regards to the Supervisor being "kept in the loop" • DM also noted that as of late in several cases the wrong work order number has been recorded on forms which has resulted in the incorrect work orders being cancelled **New Action Log Item #18-067– Review the work order cancellation process and form currently in place and establish efficiencies needed based on each functional groups' needs – assigned to DM with a target completion date of XXXX**
7. Operational Performance – Summary of Call Outs	• JD reviewed the table with the group - no further comment • JA suggested that the representative graph of Call Outs – Yearly comparison be changed in style to better decipher • JD noted that the change could be easily made from stacking columns to side by side which is the standard of most of the Management Review Graphs • JA also noted the increase in call outs experienced this quarter with the explanation that SCADA and server upgrades are the principal cause
8. Operational Performance - Backflow	• JD reviewed the Backflow graph with the group – no further comment
9. Operational Performance – Locates	• JD reviewed the locates graph with the group • BM noted that the results appear skewed due to the change in February 2017 from 30 days to 60 days as the period the locate remains valid for • BM suggested to re-format the locates graph to only include the period of February 2017 to Present and re-evaluate the reporting that was problematic during the change **New Action Item #18-068 – Reformat the Locates graph used for both Management Review and Monthly Operations Report to reflect reporting changes and process changes that occurred in February 2017. Purge previous data from the graph from before February 2017 and represent data from that date forward (all locates valid for 60 days), assigned to JD with a target completion date of Q3 Management Review, October 23, 2018**
10. Operational Performance – Watermain Breaks	• Group reviewed all associated watermain break graphs • CM noted that he would appreciate from JG some further comment on contractor hits. CM believed this information might lead to: establishing whether or not it's a contractor or locate issue and see if any trends become apparent. – no action log item created
11. Raw Water Supply and Drinking Water Trends – Sodium, THMs and HAAs	• No further comment for THMs and of HAAs • JD reiterated from previous action log item # 17-097 that well depth has been added to the graph in hopes of gleaning some correlation but there does not appear to be a relation here • JB noted that perhaps monthly flows from the subject wells may render more representative correlations • DM suggested that well construction noting the geology could also be useful information for this graph **New Action Log Item #18-069 – Add flows and stratigraphy information from wells to the Management Review Sodium graph, assigned to XX, with a target completion date of Q3 Management Review October 23, 2018**
12. Raw Water Supply and Drinking Water Trends – SWS In-House Lab Results	• No further comments for the in-house lab data
13. Summary of Consumer Feedback – Water Quality Complaints by Type	• JD noted that the comment box associated with this graph is missing from the presentation but is visible in edit view and printed form and shared with the group that only 20% of calls required follow up, 80% of customer complaints were resolved over the phone by the OSAs
14. Summary of Consumer Feedback – CMMS vs @Liveconx	• BJ noted that these results were surprising to him and asked how the data is collected for this, noting that there is a time lag from when a blank service request is received from operations staff to when it is assigned a number in the Cityworks • JD suggested that we (OPCs) have a review period with BM as we do with JG for review of the mainbreak reports before the presentation of Management Review

**** Refer to QMS Action Log for specific details regarding action items assigned during QMS Meetings**

Agenda Item	Discussion/Decision
15. Internal Audit Results	• JD reviewed the summary with the group – no further comment
16. Sampling Audit	• JD reviewed the summary of the audit with the group • DM asked JA if he is receiving communication from the contracted lab services provider regarding temperatures of samples greater than 10°C • JA responded that he is not and therefore some follow up is required **New Action Log Item #18-074– Compile examples of chain of custodies with temperatures above 10°C for Jamey to discuss with the contracted lab services provider, assigned to JD with a target completion date of September 01, 2018**
17. Changes Affecting QMS	• JD reviewed summary with the group – no further comment
18. Operational Plan Currency and Updates	• Presented elements reviewed by BMT to date. These included: Element 1 – Quality Management System Element 2 – Quality Management System Policy Element 3 – Commitment & Endorsement Element 4 – Quality Management System Representative Element 5 – Document and Records Control Element 6 – Drinking Water System Element 9 – Organizational Structure, Roles, Responsibilities and Authorities Element 11 – Personnel Coverage Element 12 – Communications Element 17 – Measurement and Recording Equipment Calibration and Maintenance Element 19 – Internal Audits
19. New Business	• No new business was identified

**** Refer to QMS Action Log for specific details regarding action items assigned during QMS Meetings**

QMS Meeting

Meeting Type: Q2 Q2 Management Review
Date: 2018-08-01

Minutes Reviewed By
☒ Chris Marchant (CM)
☒ Diane Moreau (DM)
☒ Jamey Adams (JA)
☒ Jeanette Dumais (JD)
☒ Jennifer Barrick (JB)
☒ Dave Truax (DT)
☒ Brenden Miller (BM)
☒ Shane Steele (SS)
☒ Jason Giffen (JG)
☒ Diana Smith (DS)

Next Meeting: November 19, 2018

**** Refer to QMS Action Log for specific details regarding action items assigned during QMS Meetings**

QMS Meeting

Date: 2018-11-19

Time: 10:00 am to 12:00 pm

Meeting Type: QMS Q3 Management Review

File: N:\IGM\Enviro\Water Ops - CTS\Admin\A02-Staff Commit and Mtgs\Minutes - QMS Management Team Meetings\2018 Mgmt. Review

Water Operations Branch

Facilitator: Diana Smith (DS) **Recording: Diana Smith (DS)**	**Absent: ☒ Jeanette Dumais (JD)**	**Attendees:** **☒ Chris Marchant (CM)** **☒ Diane Moreau (DM)** **☒ Jason Giffen (JG)**	**☒ Jamey Adams (JA)** **☒ Jennifer Barrick (JB)** **☒ Danielle Marcoux (DSM)** **☒ Chris Harper (CH)**	**☒ Diana Smith (DS)** **☒ David Truax (DT)** **☒ Amanda Inglis Petahtegoose (AIP)**

Agenda

1. Review of Q3 2018 Power point presentation as documented in agenda items 1-22 below.

Agenda Item	Discussion/Decision
1. 2018 Q2 Action Items follow up	**Action Log Item #18-010 Look into a new way to present the data for sectional work order summary for yearly totals** • Action item still ongoing and will be reviewed at Q4 Management Review once all yearly numbers are collected **Action Log Item #18-017 Add in some metrics for CTS for 2018 Management Reviews including completed action log items, CIPs completed, OFIs completed** • Action item still ongoing and will be reviewed at Q4 Management Review **Action Log Item #18-018 Discuss General Chemistry parameters, frequency of sample collection and any treated water sampling to show treatment efforts. Include discussion about GWS and SWS boundary sampling** • Action item has been completed. General chemistry sampling will be on a 9 month cycle to try and capture different seasons. There will also be some in house analysis done for 6 parameters (alkalinity, hardness, UVA, turbidity, temperature and pH) on a 3 month cycle. The decision by BMT was to collect general chemistry sampling only from sources and not at the GWS and SWS boundary. **Action Log Item #18-066 Determine and test new ways to represent flushing data which may better represent the whole distribution system using the suggestions provided by BM and SS in Q2 Management Review** • Action item still ongoing and will be reviewed at Q4 Management Review **Action Log Item #18-067 Review the work order cancellation process and form currently in place and establish efficiencies needed based on WCS needs** • Action item still ongoing and will be reviewed in Q4 **Action Log Item #18-068 Reformat the locates graph used for both Management Review and Monthly Operations report to reflect reporting changes and process changes that occurred in February 2017. Purge previous data from the graph from before February 2017 and represent data from that date forward (all locates valid for 60 days)** • Action item has been completed and will be represented later in the presentation **Action Log Item #18-069 Add flows and stratigraphy information from wells to the Management Review Sodium graph** • Action item still ongoing and will be reviewed in Q4

**** Refer to QMS Action Log for specific details regarding action items assigned during QMS Meetings**

Agenda Item	Discussion/Decision
	Action Log Item #18-073 Refine the number of outstanding emergency and urgent work orders reported on the F20-07 for Management Review from the WDS section to filter out project associated tasks as determined by DM, JG and SC • Action item still ongoing and will be reviewed in Q4. DM thought that this had been completed. DS to follow up and see if completed. **Action Log Item #18-074 Compile examples of chain of custodies with temperature above 10°C for JA to discuss with the contracted lab services provider** • Action item has been completed. Action item will not be further pursued as only 1 sample bottle is tested for temperature from the cooler by the external lab so not representative of the samples in the cooler and deemed insufficient to investigate further. It was determined that there have been no issues with samples currently being submitted above the 10°C as some water may be above the limit from the mains in the ground when samples were collected. Further discussion would ensue should issues arise with samples with high temperatures.
2. Incidents of Adverse Drinking Water Tests	Reviewed table presented. There was 1 AWQI that occurred in September 2018 for SWS.
3. Deviations from SCADA Critical Control Limits	The new procedure for reporting Critical Control Limits from SCADA was implemented on August 20, 2018. SWS – group reviewed supplied deviation related to the AWQI that occurred in September 2018. GWS – Reported that the document change was missed in August and not using the form. DT to have GWS Lead Hand review the data for Q3 to ensure nothing was missed **New Action Log Item #18-094 - GWS Lead Hand to review the data for SCADA Critical Control Limits for Q3 to ensure that nothing went unreported on new forms, assigned to DS with a target completion date of 2018-12-06.**
4. Deviations from Critical Control Point Limits – Flushing Activities	**Graph – Total # of flushing Activities.** • Showed comparison of 2018 Q3 to 2017 Q3. No comments received from the group. **Graph Flushing Activities with volumes over 100 m^3** • No comments received from the group **Graphs – Flushing activities per zone 2017 Q3 to 2018 Q3 comparison** • No comments received from the group Comment provided that working on changing the graphs (as per Action Log Item #18-066) to be more representative of flushing data.
5. Operational Performance – System Wide Production	**Graph – System Wide Production, 5 year Monthly Average** • Presented 2 different graphs that represent the same data. BMT agreed that they like the new graph which compares the 5 year monthly average to the current month and shows percentage increase or decrease over the average. • Some discussion about including temperature and precipitation to make comparisons for the current year to previous years and some justifications for increase or decrease in production right on the slides. • July 2018 had a 9.42% increase over 5 year average, thought to be from the dry summer that we had in 2018 compared to previous years **New Action Log Item #18-095 – Convert graphs using averages to new version of graphs for comparing current month to 5 year average for ease of comparison for Management Review Presentation, assigned to DS with a target completion date of 2019-02-07.** **New Action Log Item #18-096 – Review System Wide production graphs to determine if possible to add temperature and precipitation to graphs for comparisons, assigned to DS/DSM with a target completion date of 2019-02-07.**

**** Refer to QMS Action Log for specific details regarding action items assigned during QMS Meetings**

Agenda Item	Discussion/Decision
	Graphs – SWS versus GWS Production 2015 to Current and 2017 to 2018 • Trending for the 2 graphs are showing different trends, 1 with GWS production declining and 1 where GWS is increasing. • Suggestion to look at alternative ways to show comparisons between GWS and SWS production **New Action Log Item #18-097 – Look at alternative ways to show comparisons between GWS and SWS production for Management Review, assigned to DS/DSM with a target completion date of 2019-02-07.**
6. Operational Performance – Sectional Work Order Summary	Reviewed tables presented for each of the 4 operational sections. GWS – Regulatory still outstanding would account for printing work orders 1 week in advance (eg. Printing work orders for sampling sites – 20 and then only going to 15 and cancelling the other 5 work orders) SWS – AWQI had no work orders for all the work that was done to assess and rectify the situation related to the AWQI. This work would have accounted for Emergency Maintenance. It was unclear as to what asset this work would have been tied to as work was completed for multiple assets. The information has all been documented in the logbook and CIP but no work order with information submitted to CMMS. DM reported that AIP is currently looking into the after-hours process with GWS and how call outs are documented as they are currently not tied to assets. Once this work has been completed, something similar will be done to look at SWS and their process. WDS – It is unclear if the project work orders are still being included in the numbers. Will review with UPC to confirm if projects were removed from Q3 data or if will be completed for Q4. WCS – 1 Regulatory work order outstanding may be for lead sampling as 1 sample was completed later than all the other samples. Will review to see if this is the case. **New Action Log Item #18-098 – Review with UPC if project work orders were removed from Q3 work order data, assigned to DS with a target completion date of 2018-12-06.** **New Action Log Item #18-099 – Review 1 outstanding regulatory work order for WCS to see if it is the 1 lead sample that was completed at a later date than the rest of the samples, assigned to DS with a target completion date of 2018-12-06.**
7. Operational Performance – Summary of Call Outs	Reviewed the table and graph with the group. • WPS05 John St – Call outs associated with Chlorine analyzer, they added a solenoid to help prevent water from getting into analyzer. • WPS13 Johnson – Call outs possibly associated with station taken out of service but the out of service button on SCADA not being pressed causing nuisance alarms while the station was offline. • WPS14 Heritage – Data to be reviewed by DT. • PRV – communication issue at 1 vault, new websystem causing inlet/outlet pressure to be flipped in the software. Has been corrected. **New Action Log Item #18-100 – Review call out data for WPS14, assigned to DS with a target completion date of 2018-12-06.**
8. Operational Performance - Backflow	Reviewed the graph with the group. No comments received from the group.
9. Operational Performance - Locates	Reviewed the reformatted graph with the group. Data is more representative of the process for valid locates. No comments received from the group.
10. Operational Performance – Watermain Breaks	Reviewed the graphs with the group.

**** Refer to QMS Action Log for specific details regarding action items assigned during QMS Meetings**

Agenda Item	Discussion/Decision
	Graph – 5 year monthly average – watermain breaks • BMT agreed that would like to see the 5 year monthly average graph updated similar to the graph for System Production. Action Item #18-095 has already been created to address this issue, assigned to (DS) **Graph - Watermain Breaks by material, age, size, type and cause** • Black poly was near Oakley Park School and is already on the renewal list • DM commented that watermain breaks that occur in project areas can be a problem, need to determine how to track them when they are naturally occurring versus contractor hit. Action Item #18-090 has already been created to address this issue, assigned to DM.
11. Raw Water Supply and Drinking Water Trends - Sodium	Reviewed graph with the group. DS noted that she is working with DSM on updating this graph to possibly include flows and stratigraphy to see if we can develop any relationships to Sodium. Action Log Item #18-069 has already been created to address this work.
12. Raw Water Supply and Drinking Water Trends – THMs & HAAs	Reviewed data with the group. No comments received from the group.
13. Raw Water Supply and Drinking Water Trends - Lead	Reviewed data with the group. DM reported that they are currently reviewing the lead sampling program with regards to timing of work orders. Would like to look at sampling during cold and warm weather to capture the extreme temperatures (e.g. January and July)
14. Raw Water Supply and Drinking Water Quality Trends – Sampling Audit	Reviewed the summary with the group • BMT would like to sample 3A, 4A & 19 for Schedule 23/24 on Raw water • VOC sampling was performed within 21 days, check to see if the sampling was done just before maintenance knowing that the well was going to be down for a while to ensure that we do not have a non-compliance with Ministry defined monthly sampling **New Action Log Item #18-101 – Ensure that Schedule 23/24 samples are collected for 3A, 4A & 19 on raw water within allotted time frame, assigned to JD with a target completion date of 2018-12-06.** **New Action Log Item #18-102 – Review VOC sampling that is close to Ministry guidelines to see if they were collected just before a maintenance activity that would take the well out of service for any length of time, assigned to JD with a target completion date of 2018-12-06.**
15. Raw Water Supply and Drinking Water Quality Trends – VOCs Golder Report 2017	Reviewed the summary of the Golder Report. Comment provided about North Plume, core of the plume and “VOC concentration is persistent and likely associated with a continued source” this comment has not been seen before.
16. Raw Water Supply and Drinking Water Quality Trends – SWTP In-House Lab Results	Presented in house lab data for Q3 as well as data for each parameter from 2015 to current. • JA provided comment that there was an issue with HACH and getting chemicals for some of the parameter tests in July so there are some dates with no data. Specifically Nitrogen sampling was not completed from June 28-July 30th and then using an alternative method from July 31 to Aug 16, Hardness was not performed on July 16 or 17. • JA comment if able to remove the outliers with some of the data for future graphs • JA provided comment that Lab tech could provide some of this data for future Management Review and would be able to provide more insight for outliers of missing data. Lab Tech to provide some data graphs for SWS data to be included in Q4 Management Review. **New Action Log Item #18-103 – Coordinate with Lab tech on data to be provided for Management Review related to SWS section, assigned to DS with a target completion date of 2019-02-07.**

**** Refer to QMS Action Log for specific details regarding action items assigned during QMS Meetings**

Agenda Item	Discussion/Decision
17. Summary of Consumer Feedback	**Graph – Water Quality Complaints by Type** • DM commented on level of service related to response to when responding to a water quality complaint. We may want to pursue this and determine what we want to set our level of service commitment at. • DS comment to look at work orders to see what we currently have as a response time **Graph - CMMS vs @Liveconx** • DS reported that still not getting 100% of calls logged by operators. OFI requires follow up to ensure that WCS and WDS operators can login to @liveconx to review reports and that they are being cross referenced to time sheets (Action Log Item #18-092 already created to address this item) **New Action Log Item #18-104 – Review water quality complaint service requests and work orders to analyze call time to response time to see if we can see any patterns in response time, assigned to DS with a target completion date of 2019-02-07.**
18. Risk Assessment Review	Summary Presented to group No comments provided from the group
19. Emergency Mock Scenario Review	Summary Presented to group • DS provided comment that this event took place at same time as SMDHU and Corporate EOC playing the same scenario. • CM provided some comment from EOC play that included feedback related to further training required for EOC members to ensure they are prepared to act in their roles as part of the EOC, subject matter experts were well prepared and informed, Great coordination between WOB, SMDHU and EOC to create event and all the injections with data.
20. Changes Affecting QMS	Reviewed summary with the group • JB reported that desktop audit for external audit was completed and only 1 OFI received. Full report to be provided at Q4 Management Review • DM discussed Health Canada Studies and BMT decided that would like to continue testing for parameters associated with Health Canada documents to have some baselines for comparison on the proposed MAC's
21. Operational Plan, Currency and Updates	Presented elements reviewed by BMT to date. These included: Element 1 – Quality Management System Element 2 – Quality Management System Policy Element 3 – Commitment and Endorsement Element 4 – Quality Management System Representative Element 5 – Document and Records Control Element 6 – Drinking Water System Element 7 – Risk Assessment Element 8 – Risk Assessment Outcomes Element 9 – Organizational Structure, Roles, Responsibilities and Authorities Element 10 – Competencies Element 11 – Personnel Coverage Element 12 – Communications Element 13 – Essential Supplies and Services Element 16 – Sampling, Testing and Monitoring Element 17 – Measurement and Recording Equipment Calibration and Maintenance Element 18 – Emergency Management Element 19 – Internal Audits Element 20 – Management Review Outstanding Elements to be reviewed by end of Q4 include: Element 14 – Review and Provision of Infrastructure Element 15 – Infrastructure Maintenance, Rehabilitation and Renewal Element 21 – Continual Improvement

**** Refer to QMS Action Log for specific details regarding action items assigned during QMS Meetings**

Agenda Item	Discussion/Decision
22. New Business	Staff suggestion to share some of the Management Review information with all staff • Present Management Review presentation at Branch Meeting on November 30 • See what feedback and comments are provided by staff and then determine how to proceed with providing data **New Action Log Item #18-105 – Determine how to present Management Review data to all staff (e.g. Branch Meetings, QMS Board, etc.), assigned to DS with a target completion date of 2019-02-07.**

Minutes Reviewed By
☒ Chris Marchant (CM)
☒ Diane Moreau (DM)
☒ Jason Giffen (JG)
☒ Jamey Adams (JA)
☒ Jennifer Barrick (JB)
☒ Danielle Marcoux (DSM)
☒ Diana Smith (DS)
☒ Chris Harper (CH)
☒ David Truax (DT)
☒ Amanda Inglis-Petahtegoose (AIP)

Next Meeting: 2019-01-31

**** Refer to QMS Action Log for specific details regarding action items assigned during QMS Meetings**

QMS Meeting

Date: 2019-01-31

Time: 9:00 am to 12:30 pm

Meeting Type: QMS Q4 Management Review

File: n:\igm\enviro\water ops - cts\admin\a02-staff commit and mtgs\minutes - qms management team meetings\2018 mgmt. review\q4.docx

Water Operations Branch

Facilitator: Diana Smith (DS)	**Absent:**	**Attendees:**	**☒ Jeanette Dumais (JD)**	**☒ Jamey Adams (JA)**
Recording: Diana Smith (DS)	**Dave Truax (DT)**	**☒ Amanda Inglis-Petahtegoose (AIP)**	**☒ Diana Smith (DS)**	**☒ Jason Giffen (JG)**
		☒ Diane Moreau (DM)	**☒ Danielle Marcoux**	**☒ Chris Harper (CH)**
		☒ Chris Marchant (CM)	**☐ Dave Truax (DT)**	

Agenda

1. Review previous meeting minutes 2018-11-19
2. Review of Q4 2018 Power Point presentation as documented in agenda items below.

Agenda Item	Discussion/Decision
1. Review previous meeting minutes 2018-11-19	Meeting Minutes from 2018-11-19 approved with all minor revisions being accepted.
2. 2018 Q3 Action Items follow up	**Action Log Item #18-010 Look into a new way to present the data for sectional work order summary for yearly totals** • Action Item has been completed. New graphs presented during presentation. **Action Log Item #18-017 Add in some metrics for CTS for 2018 Management Reviews including completed action log items, CIPs completed, OFIs completed** • Action Item has been completed. New graphs presented during presentation. **Action Log Item #18-066 Determine and test new ways to represent flushing data which may better represent the whole distribution system using the suggestions provided by BM and SS in Q2 Management Review** • Action Item still ongoing. Some new graphs presented during the presentation but still looking into heat mapping for flushing data for future Management Review. **Action Log Item #18-067 Review the work order cancellation process and form currently in place and establish efficiencies needed based on WCS needs** • Action Item still ongoing and will be reviewed in future Management Review. **Action Log Item #18-069 Add flows and stratigraphy information from wells to the Management Review Sodium graph** • Action Item has been completed. New graphs presented during presentation. **Action Log Item #18-073 Refine the number of outstanding emergency and urgent work orders reported on the F20-07 for Management Review from the WDS section to filter out project associated tasks as determined by DM, JG and SC** • Action Item has been completed. Form has been updated and project work orders are omitted from the numbers. **Action Log Item #18-094 GWS Lead Hand to review the data for SCADA Critical Control limits for Q3 to ensure that nothing went unreported on new form** • Action Item has been completed. DT reported that there was nothing that went unreported on new form for Q3.

**** Refer to QMS Action Log for specific details regarding action items assigned during QMS Meetings**

Agenda Item	Discussion/Decision
	Action Log Item #18-095 Convert graphs using averages to new version of graphs for comparing current month to 5 year average for ease of comparison for Management Review Presentation • Action Item has been completed. New graphs presented during presentation. **Action Log Item #18-096 Review system wide production graphs to determine if possible to add temperature and precipitation to graphs** • Action Item has been completed. New graphs presented during presentation. There was no trend discernable for either temperature or precipitation. **Action Log Item #18-097 Look at alternative ways to show comparisons between GWS and SWS production for Management Review** • Action Item has been completed. New graphs presented during presentation. **Action Log Item #18-098 Review with UPC if project work orders were removed from Q3 work orders** • Action Item has been completed. The project work orders were removed from Q3 work order counts. **Action Log Item #18-099 Review 1 outstanding regulatory work order for WCS to see if it is the 1 lead sample that was completed at a later date than the rest of the samples** • Action item still ongoing. There are more outstanding work orders related to sampling to be reviewed and closed. Will provide update at future Management Review. **Action Log Item #18-100 Review call out data for WPS14** • Action Item has been completed. DT reported that callouts were related to Chlorine and turbidity issues on start-up and it is thought that the issue has been corrected. **Action Log Item #18-101 Ensure that Schedule 23/24 samples are collected for 3A, 4A & 19 on raw water within the allotted time frame** • Action Item still ongoing. Sampling will be completed during 2019 as need to be scheduled with IWS to complete the work. **Action Log Item #18-102 Review frequency set for VOC sampling work orders to investigate cause of occurrences of sampling close to Ministry guidelines** • Action Item has been completed. Solution to avoid sampling close to Ministry guidelines is mobility with next round including sampling and targeted to go live by end of February. **Action Log Item #18-103 Coordinate with Lab Tech on data to be provided for Management Review related to SWS section** • Action Item has been completed. New graphs presented during presentation. **Action Log Item #18-104 Review water quality complaint service requests and work orders to analyze call time to response time to see if we can see any patterns in response time** • Action Item still ongoing. Review to be completed for future Management Review. **Action Log Item #18-105 Determine how to present Management Review data for all staff (e.g. Branch Meetings, QMS Board, etc.)** • Action Item has been completed. A condensed version of Management Review was presented at December Branch Meeting. BMT agreed to continue with presenting a condensed version of Management Review presentation for future Branch Meetings.
3. Incidents of Adverse Drinking Water Tests	Reviewed tables presented. There was 1 lead exceedance in March and the resample was also an exceedance.

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	There were 2 AWQI's, 1 in January for a distribution sample and 1 in September for SWS.
4. Deviations from SCADA Critical Control Limits	The new procedure for reporting Critical Control Limits from SCADA was implemented on August 20, 2018. Provided summary for 2018 since implementation of new procedure. SWS – group reviewed 1 deviation related to the AWQI that occurred in September 2018. GWS – No deviations reported since implementation of new procedure.
5. Deviations from Critical Control Point Limits – Flushing Activities	**Graph – Total # of flushing activities** • Showed comparison of 2017 Q4 to 2018 Q4 as well as yearly totals for 2017 to 2018. No comments received from the group. **Graph – Preventative vs. Corrective Flushing Work Orders** • New graph presented to show comparison of flushing work. BMT decision to continue with graph for future Q4 Management Review presentation. **Graph – Flushing Activities with volumes over 100 m^3** • Showed comparison of 2017 Q4 to 2018 Q4 as well as yearly totals for 2017 to 2018. • CM inquiring about why increase in activities with flushing volumes >100m^3 for 2018 in 3S. DSM commented that zone 3S is one of the zones set on a lower frequency and had not been completed in the last 8 years, which should not be the case going forward. DM commented that flushing work orders are being set up on cycles within CMMS so that we can better assess if the frequency cycle is correct or if it needs to be increased or decreased. **Graphs – Flushing activities per zone 2017 Q4 to 2018 Q4 and totals for 2017 to 2018** • Showed comparison of 2017 Q4 to 2018 Q4 as well as yearly totals for 2017 to 2018 for each of the 5 pressure zones. • Working to get some heat mapping done to show areas with deviations. Will present some new graphing options with heat mapping for future management review presentations. **New Action Item #19-021 – Check the cycles for system flushing for all zones and add the information to the flushing graphs for Management Review as well as do comparisons of the cycles (e.g. If on a 3 year cycle, compare 2015 to 2018) as opposed to year to year comparisons and include the number of flushing activities that occurred in the comparisons, assigned to DS with a completion target date for 2020-02-01.**
6. Operational Performance – System Wide Production	**Graph – System Wide production, 5 year monthly average** • Presented new graphs with average mean temperatures and total monthly precipitation for comparison to monthly water production. BMT decision to continue with including the graphs for future Management Reviews. Check into plotting both temperature and precipitation on the same graph with the system wide production, and could remove the 5 year average trend line for temperature and precipitation. • Presented new graph comparing total production to population served. BMT decision to continue with including the graph for Q4 Management Review. **New Action Item #19-022 – Update Monthly water production graph to include both current temperature and precipitation but not the trend lines for 5 year averages of temperature and precipitation for Management Review, assigned to DSM with a completion target date for 2019-05-01.** **Graphs – SWS versus GWS Production** • Presented new graphs for comparison of GWS and SWS production. Discussion around purpose of the graphs. Would like to continue to see the trending monthly as it helps to look for any hydraulic issues that may come from the boundary between GWS and SWS. • Look into ways to graph the difference between GWS and SWS using # connections or population within the different source areas.

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Agenda Item	Discussion/Decision
	New Action Item #19-023 – Create a graph that could show population or # connections for SWS and GWS in comparison to production, assigned to DS with a completion target date for 2019-05-01.
7. Operational Performance – Average Monthly Efficiency of the SWTP	Presented new graph showing SWTP efficiency from 2015-2018. • DSM provided explanation that dips in graph for 2018 and 2016 were related to emptying CCT and refilling. • Calculations were done based on the volume of water in and volume of water out. • BMT would like to continue with graph for Q4 of Management Review.
8. Operational Performance – Sectional Work Order Summary	Reviewed tables presented for each of the 4 operational sections. GWS – There are 13 regulatory work orders outstanding, look into what they are for. SWS – No comments received from the group. WDS – Could not find the 1 urgent work order that is showing outstanding in City Works. Found 1 that is older than Q4. The 2 outstanding regulatory work orders were part of a project being completed by Kaitlyn. Work orders were created in December 2018 but work got delayed and being completed in Jan/Feb 2019. WCS – Unknown what the 7 emergency work orders are for. They could be in the pile with OSA's to complete. OSA's have a large number of work orders to complete for 2018. • UPC's are sending reports to the Supervisors with outstanding work orders to allow the Supervisors to review and provide comments. OPC's can add comments from Supervisors onto the slides in the presentation to explain outstanding work orders in advance of the Management Review meeting. • Discussion on alternative ways to look at work order summaries for future management review, mobility will help solve some of these issues as the data will be entered immediately but work orders will not be closed immediately. Mobility is still going to take some time to implement for all WOB sections. Reviewed new graphs presented related to 2018 summaries of work completed for each section as well as total of work orders completed by category. • The sectional work order summary graph can be revisited once mobility completed so that there is a clear understanding of work completed and entered vs work completed and closed. • Work order summary by category graph to be presented in future Q4 Management Review meetings. **New Action Item #19-024 – Review GWS outstanding regulatory work orders from Q4, assigned to DS with a target completion date of 2019-05-01.** **New Action Item #19-025 – Locate the 1 urgent work order outstanding for WDS from Q4 management review, assigned to DS with a target completion date of 2019-05-01.** **New Action Item #19-026 – Review the 7 emergency work orders for WCS from Q4 management review, assigned to DS with a target completion date of 2019-05-01.**
9. Operational Performance – Summary of Call Outs	Reviewed the table and graph with the group. • WPS13 – Johnson. Still a large number for call outs for the station even though offline. • CM to review other concerns directly with DT. • JA would like the Y axis for the graphs for SWS and GWS to be the same **New Action Log Item #19-027 – Review call out data for WPS13 from Q4 management Review, assigned to DS with a target completion date of 2019-05-01.** **New Action Log Item #19-028 – Update SWS graph for call outs to have the same Y axis as GWS, assigned to DS with a target completion date of 2019-05-01.**
10. Operational Performance – Backflow	Reviewed the graph with the group. No comments received from the group.
11. Operational Performance – Locates	Reviewed the graph with the group. No comments received from the group.

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Agenda Item	Discussion/Decision
12. Operational Performance – Watermain Breaks	Reviewed the graphs with the group. **Graph – 5 year monthly averages – watermain breaks** • BMT would like to see temperature added to the graph. **Graph – Watermain breaks by material, age, size, type and cause** • No comments received from the group for the graph for Q4 • JG commented that there are 33 watermain breaks from City works report for 2018 summary compared to 27 reported during management review. Confirm with UPC's the total number reported for 2018 and compared to what we have from Monthly reports. **New Action Item #19-029 – Add temperature to watermain break graph when comparing to 5 year average, assigned to DS with a target completion date of 2019-05-01.** **New Action Item #19-030 – Review Watermain break summary report for 2018 and compare to monthly reports for watermain breaks, assigned to DS with a target completion date of 2019-05-01.**
13. Operational Performance – CTS	Reviewed the new graphs with the group. BMT would like to continue with the graph for future Q4 management review.
14. Raw Water Supply and Drinking Water Trends - Sodium	Reviewed the current graph with the group along with some new graphs and case study information on WPS12. • New graphs for Sodium trend with Well pump stations separated was reviewed by BMT and determined to keep separated. Suggestion to add the legend for aesthetic objective and MOE limit onto the graphs • DSM presented case study completed for WPS12, no correlation between pumping rate and sodium concentration increases. **New Action Item #19-031 – Add legend with aesthetic objective and MOE limit onto new sodium graphs, assigned to DSM with a target completion date of 2019-05-01.**
15. Raw Water Supply and Drinking Water Trends – THMs and HAAs	Reviewed the data with the group. • Study on GWS Source samples for HAAs completed but was unclear as to where the samples were collected. Chain of Custody said DW (Distribution Water) but there is no distribution tap in the well pump stations. Need to verify if samples were collected on Raw water or Treated water. **New Action Item #19-032 – Confirm where HAA samples were collected for the GWS Sources for September 10, 2018 samples, assigned to DS with a target completion date of 2019-05-01.**
16. Raw Water Supply and Drinking Water Trends - Lead	Reviewed data with the group. No comments received from the group.

Agenda Item	Discussion/Decision
17. Raw Water Supply and Drinking Water Trends – Sampling Review	Reviewed the summary with the group. • Health Canada Studies results are stored on N drive. Confirm if they are stored correctly according to TOMRMS so that staff can retrieve results if required. • PFOA and PFOS – waiting for answer from Fire Department as to whether the chemicals are in the products used by them. Once received can determine whether to conduct tests on our drinking water or not. • Determine cost to conduct enterococci bacteria analysis on drinking water. Once cost is determined then decision from BMT on whether to sample and test. • UV transmittance – discuss with DT the issues related to significant figures for the results as recorded on the work orders to have him relay importance to his staff. **New Action Item #19-033 – Confirm where Health Canada Study results are being stored on N drive and confirm if in correct location according to TOMRMS, assigned to JD with a target completion date of 2019-05-01.** **New Action Item #19-034 – Determine cost associated with analysis of enterococci bacteria and report back to BMT to determine if going to conduct any sampling, assigned to JD with a target completion date of 2019-05-01.** **New Action Item #19-035 – Discuss with DT the issues related to significant figures for the results of UVT analysis as recorded on the work orders to have him relay importance to his staff, assigned to JD with a target completion date of 2019-05-01.**
18. Raw Water Supply and Drinking Water Quality Trends – SWTP In-House Lab Results	Presented in house lab data for Q4 as well as some new graphs for Alkalinity, Hardness, Colour, Nitrogen, Temperature, UVA, THMs and DOC Versus UV254 • Alkalinity for Q4 – check 1 results below the operational target as set by SWS in December 2018. • Suggestion to have some comments for any outliers on the graphs prior to management review for discussion • Check LSRCA for lake turnovers and include in future graphs for average temperature • UV254 unit replaced the TOC analyzer in the lab and it looks for removal **New Action Item #19-036 – Check 1 result below the operational target as set by SWS from December 2018 for Alkalinity, assigned to DS with a target completion date of 2019-05-01.** **New Action Item #19-037 – Check LSRCA for lake turnovers to see if able to include in future graphs for average temperatures, assigned to DS with a target completion date of 2020-02-01.**
19. Summary of Consumer Feedback	Reviewed graphs with the group. **Graphs – Water Quality Complaints by Type** • No comments received from the group **Heat map of flushing from water quality complaints** • Keep for future management review. • Look at pre swabbing and post swabbing data (keep timing the same for before and after, e.g. 8 months) **Graphs – Water Quality Complaints compared to 5 year average** • BMT determined to continue use of bar graph to replace the pie graph. **Graphs – CMMS vs. @Liveconx** • No comments received from the group.

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Agenda Item	Discussion/Decision
20. Review of Asset Maintenance, Verification & Calibration	Reviewed data with the group. • AIP described the process to create the spreadsheets and queries being used from CMMS to track Asset Maintenance, Verification and Calibration. Process is in progress and work needs to be done to refine the information. • Need to clean up the asset information in CMMS to ensure accurate reporting **New Action Item #19-038 – Clean up asset information in CMMS related to work on Asset Maintenance, Verification and Calibration, assigned to AIP with a target completion date of 2020-02-01.**
21. External Audit	Summary presented to the group. No comments received from the group.
22. Changes Affecting QMS	Summary presented to the group. No comments received from the group.
23. Resources Needed to Maintain QMS	Summary presented to the group. No comments received from the group.
24. Infrastructure Review	Water Operations management staff (both Supervisors and Branch Manager) have met on numerous occasions throughout the year with staff from other areas of the Corporation (specifically; Planning and Asset Management, Infrastructure Planning and Development Services) to discuss the future needs within the system as well as areas of focus for (Capital) infrastructure renewal programs. Additionally, Engineering (in coordination with WOB) began an update to the Water and Wastewater Mater Plans in 2018 (with assistance from a contracted consulting firm) to ensure adequate infrastructure and supply is available to support anticipated growth within the city, both within the annexed lands as well as the expected intensification development. This updated Master Plan is to be completed in March 2019 and will provide the "road map" for future water and wastewater infrastructure requirements to be included within the Capital budget planning process.
25. Operational Plan, Currency and Updates	Presented elements reviewed by BMT to date. These included: Element 1 – Quality Management System Element 2 – Quality Management System Policy Element 3 – Commitment and Endorsement Element 4 – Quality Management System Representative Element 5 – Document and Records Control Element 6 – Drinking Water System Element 7 – Risk Assessment Element 8 – Risk Assessment Outcomes Element 9 – Organizational Structure, Roles, Responsibilities and Authorities Element 10 – Competencies Element 11 – Personnel Coverage Element 12 – Communications Element 13 – Essential Supplies and Services Element 14 – Review and Provision of Infrastructure Element 15 – Infrastructure Maintenance, Rehabilitation and Renewal Element 16 – Sampling, Testing and Monitoring Element 17 – Measurement and Recording Equipment Calibration and Maintenance Element 18 – Emergency Management Element 19 – Internal Audits Element 20 – Management Review Element 21 – Continual Improvement All Elements were reviewed between January 1, 2018 and December 31, 2018.
26. Staff Suggestions	Summary presented to the group. No comments received from the group.
27. New Business	No new business

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Minutes Reviewed By
☒ Amanda Inglis-Petahtegoose (AIP)
☒ Diane Moreau (DM)
☒ Diana Smith (DS)
☒ Jeanette Dumais (JD)
☒ Danielle Marcoux (DSM)
☒ Chris Marchant (CM)
☒ Jamey Adams (JA)
☒ Dave Truax (DT)
☒ Chris Harper (CH)
☒ Jason Giffen (JG)

Next Meeting: 2019-04-23

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