# Havelock Drinking Water System

# **Annual Water Report**

Reporting period of January 1, 2016 – December 31, 2016

Prepared For: The Township of Havelock-Belmont-Methuen

Prepared By: 0

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

This report has been prepared to satisfy the annual reporting requirements of the Provincial Regulations and Guidelines established by the Ministry of the Environment in the Province of Ontario including the section 11 and Schedule 22 reports identified in O.Reg 170/03, Drinking Water Systems Regulation and the Permit to Take Water Reports identified in O.Reg 387/04, Water Taking and Transfer Regulation.

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# **Report Availability**

Population Served:	< 10,000
Website where the annual report can be viewed by the public:	www.hbmtwp.ca
Alternate location were annual report will be available for inspection and is free of charge:	Municipal Office
How are system users notified that the annual report is available and is free of charge?	Public access/notice via Township Website and Utility Bill
Number of Designated Facilities served:	None
Has a copy of this report been provided to all Designated Facilities?	N/A
Number of Interested Parties reported to:	N/A
Has a copy of this report been provided to all Interested Parties?	N/A
The following Drinking-Water Systems receive drinking water from this system:	N/A
Has a copy of this report been provided to connected owners?	N/A

# **Compliance Report Card**

Drinking Water System Number:	210000595
System Owner:	The Corporation of the Township of Havelock-Belmont-
	Methuen
Operating Authority:	Ontario Clean Water Agency
<b>Drinking Water System Category:</b>	Large Municipal Residential
Reporting Period:	January 1, 2016 – December 31, 2016

Event Summary	# of Events	Date	Details
Ministry of Environment Inspections	1	Nov. 9, 2016	Unannounced Detailed Inspection Rating of 98.32%
Ministry of Labour Inspections	0		
DWQMS Audits	1	Apr 21, 2016	12 Month Surveillance Audit
AWQI's	0		
Non-Compliance	0		
Community Complaints	11		Visual, Odour, Taste and Colour
Spills	0		

### **Quality Control Measures**

The Township of Havelock-Belmont-Methuen facilities are part of OCWA's operational Trent Valley Hub. The facilities are supported by hub, regional and corporate resources. Operational Services are delivered by OCWA staff who live and work in the surrounding area.

OCWA operates facilities in compliance with applicable regulations. The facility has comprehensive manuals detailing operations, maintenance, instrumentation, and emergency procedures. All procedures are treated as active documents, with annual reviews.

OCWA has additional "Value Added" and operational support services that the Township of Havelock-Belmont-Methuen benefits from including:

- Access to a network of operational compliance and support experts at the regional and corporate level, as well as affiliated programs that include the following:
  - Quality & Environmental Management System, Occupational Health & Safety System and an internal compliance audit system.
  - Process Data Collection (PDC) and PDM (WISKI) facility operating information repository, which
    consolidates field data, online instrumentation, and electronic receipt of lab test results for
    reporting, tracking and analysis.
  - Work Management System (WMS) tracks and reports maintenance activities, and creates predictive and preventative reports.
  - Outpost 5 wide-area SCADA system allows for process optimization and data logging, process trending, remote alarming and optimization of staff time.
- Client reporting which includes operational data, equipment inventory, financial statements, maintenance work orders, and capital status reports
- Site-Specific Contingency Plans and Standard Operating Procedures
- Use of accredited laboratories
- Access to a network of operational compliance and support experts at the hub, region and corporate level
- Additional support in response to unusual circumstances, and extra support in an emergency.
- Use of sampling schedules for external laboratory sampling

### **System Process Description**

### **Raw Source**

Raw water source for the Havelock Drinking Water System are from three groundwater wells; Well 1, Well 3 and Well 4.

### **Treatment**

The Havelock Drinking Water System is operated with two treatment subsystems; Well #3 which is an independent subsystem and Wells 1&4 which are operated together. Well #3 is under the direct influence of surface water system. Treatment consists of chemically assisted duel media (GAC/sand) gravity filtration plus ultraviolet and sodium hypochlorite disinfection. Well #1 and Well #4 utilize ultraviolet disinfection and sodium hypochlorite for treatment. This water system has continuous, alarmed monitoring for treated water free chlorine residual, filter effluent turbidity and distribution free chlorine residual.

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### **Treatment Chemicals used during the reporting year:**

Chemical Name	Use	Supplier
SternPac	Primary Coagulation	Kemira
Magnafloc	Coagulant aid	BASF Canada
Granular Activated Carbon	Filter Media	Nichem
Sodium Hypochlorite – 12%	Disinfection	Brenntag

## **Summary of Non-Compliance**

### **Adverse Water Quality Incidents**

			Cause		
Date	AWQI#	Parameter	Result	Exceedance of	Corrective Action Taken
N/A					

### **Non-Compliance**

Legislation	requirement(s) system failed to meet	duration of the failure (i.e. date(s))	Corrective Action	Status
N/A				

### Non-Compliance Identified in a Ministry Inspection:

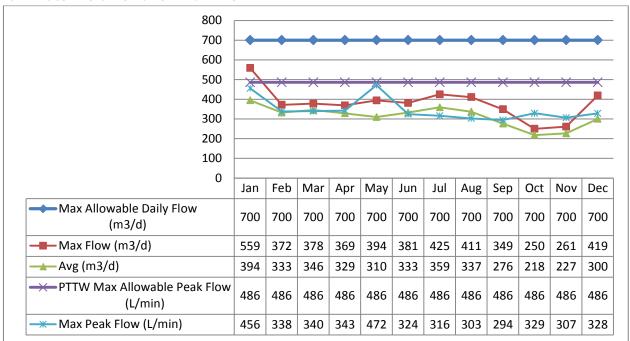
Ministry of Environment Inspection Rating: 98.32%

Legislation	requirement(s) system failed to meet	duration of the failure (i.e. date(s))	Corrective Action	Status
MDWL	Schedule C, Section 1.6.2	June 29, 2016 – November 2, 2016	The Issue was addressed and corrected on November 2, 2016 when the DWS had the SCADA System for Well#3 modified to be able to trend the UV Intensities from all 10 UV Units	Complete
O.Reg 128/04	A person must be certified as an operator to isolate watermains and reconnect isolated watermains.	September 2016	A written procedure was developed to demonstrate how the owner/operating authority will ensure that activities which require certified operators will be addressed going forward.	Complete

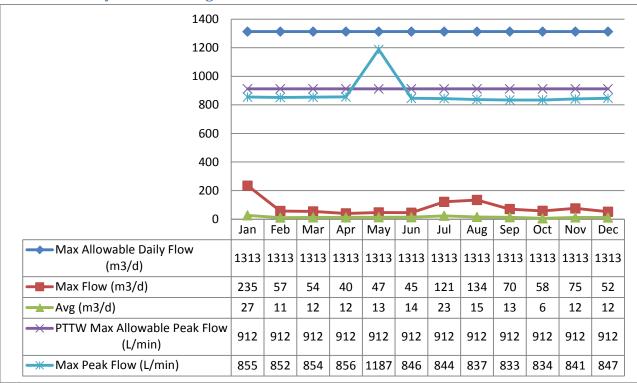
### **Raw Water Flows**

The Raw Water flows are regulated under the Permit to Take Water.

### Raw Water Volume Taken- Raw Well 1:



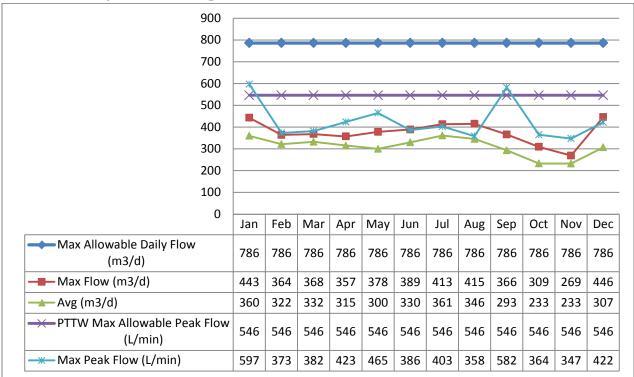
### Raw Water Daily Rate of Taking Raw Well 3:



The Peak Flow rate was exceeded in May 2016 during scheduled Flow meter Calibrations.

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### Raw Water Daily Rate of Taking Raw Well 4:



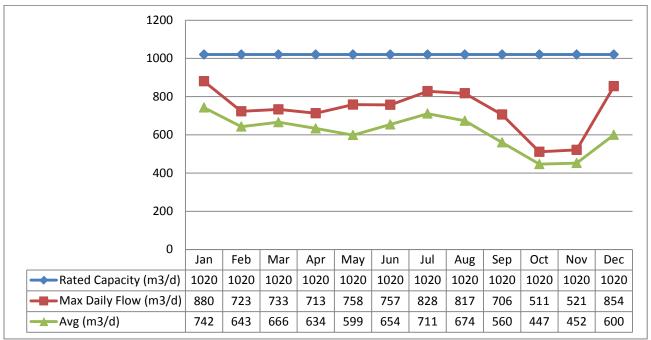
The Max Peak Flow rate was exceeded in January due to Well Pump replacement and also in September due to the replacement of Well Probe.

### **Treated Water Flows**

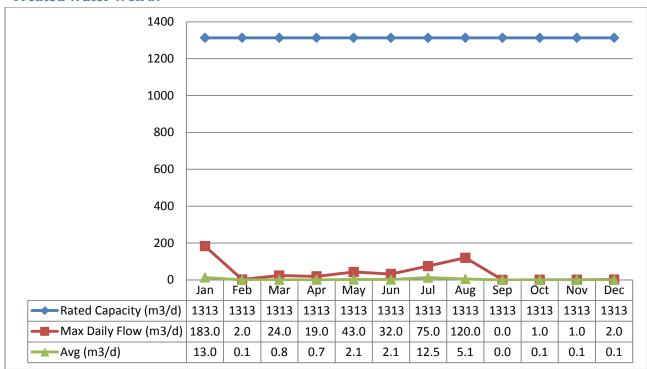
The Treated Water flows are regulated under the Municipal Drinking Water License. The Havelock Drinking Water System has a rated capacity of 1020m3/day for Well 1&4 and 1313m³/day for Well 3. Additional flow data can be found under the Water Taking and Transfer Data section.

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### **Treated Water Well 1 & 4:**



### **Treated Water Well 3:**



### **Regulatory Sample Results Summary**

- RW1 = Raw Water Well 1
- RW3 = Raw Water Well 3
- RW4 = Raw Water Well 4

- TW3 = Treated Water Well 3
- TWc = Treated Water Well 1&4 Combined
- DW = Distribution Water

### **Microbiological Testing**

Location	Number of Samples	E. Coli Results (min) - (max)	Total Coliform Results (min) – (max)	Number of HPC Samples	HPC Results (min) - (max)
Raw, Well 1	52	0 – 0	0 – 118	~	~
Raw, Well 3	52	0 - 100	0 – 6000	~	~
Raw, Well 4	54	0 – 2	0 – 115	~	~
Treated, Well 3	52	0 – 0	0 - 0	52	0 – 2
Treated – Well 1 & 4 Combined	52	0 - 0	0 - 0	52	0 – 3
Distribution - DW	159	0 - 0	0 - 0	152	1 – 1380

### **Operational Testing**

### On-Line

Parameter	Range of Results (min # - max #)
Filter #1 Effluent Turbidity, Well 3	0.00 - 4.99 NTU*
Filter #2 Effluent Turbidity, Well 3	0.00 – 0.76 NTU*
Treated Water Free Chlorine, Well 3	0.02 - 2.98 mg/L
Turbidity, Well 1	0.00 - 4.99 NTU*
Turbidity, Well 4	0.00 – 4.11 NTU*
Treated Water Free Chlorine, TWc	1.11 – 3.75 mg/L
Distribution Free Chlorine	0.64 - 2.50 mg/L
Treated Water Fluoride	Fluoride is not added at this facility

<sup>\*</sup> Instrument spikes and dips recorded by on-line instrumentation were a result of air bubbles and various maintenance and calibration activities. Power interruptions may also cause an instrument reading to drop to zero. All events are reviewed for compliance with O. Reg. 170/03 and if warranted, are reported to the Ministry of Environment as Adverse Water Quality Incidents.

### In-House

Parameter	# of grab samples taken	Range of Results (min # - max #)
Raw Water Turbidity, Well 1	12	0.09 – 0.25 NTU
Raw Water Turbidity, Well 4	12	0.09 – 0.19 NTU
Treated Water Free Chlorine, Well 1&4	53	1.55 – 2.40 mg/L
Treated Water Free Chlorine, Well 3	53	0.80 – 2.40 mg/L
Distribution Free Chlorine	167	0.64 - 2.50 mg/L

### **Laboratory**

Parameter	# of grab samples taken	Range of Results (min # - max #)		
Treated Water Fluoride	Fluoride is not used at this facility			
Raw Water Iron, Well 3	12	4,330.0 – 18,500.0 ug/L		
Raw Water Manganese, Well 3	12	450.0 – 2,690.0 ug/L		
Treated Water Iron, Well 3	12	7.00 – 30.0 ug/L		
Treated Water Manganese, Well 3	12	10.0 – 280.0 ug/L		

### Additional Legislated Samples

Legal Document	Date of Issuance	Parameter	# of grab samples taken	Range of Results (min # - max #)
Municipal Licence	June 29, 2016	Suspended Solids	12	<2.0 – 2.0 mg/L

### **Inorganic Parameters**

- MAC = Maximum Allowable Concentration as per O. Reg 169/03
- BDL = Below the laboratory detection level
- Note: Fluoride and Sodium are only required to be tested every 60 months.

Parameter	Parameter Sample Date Resu		MAC	Exceedance		
		Value		MAC	½ MAC	
Antimony: Sb (ug/L) - TWc	2016/03/07	0.06	6.0	No	No	
Antimony: Sb (ug/L) - TW3	2016/03/07	0.03	6.0	No	No	
Arsenic: As (ug/L) - TWc	2016/03/07	<mdl 0.2<="" td=""><td>25.0</td><td>No</td><td>No</td></mdl>	25.0	No	No	
Arsenic: As (ug/L) - TW3	2016/03/07	<mdl 0.2<="" td=""><td>25.0</td><td>No</td><td>No</td></mdl>	25.0	No	No	
Barium: Ba (ug/L) - TWc	2016/03/07	133.0	1000.0	No	No	
Barium: Ba (ug/L) - TW3	2016/03/07	50.5	1000.0	No	No	
Boron: B (ug/L) - TWc	2016/03/07	46.0	5000.0	No	No	
Boron: B (ug/L) - TW3	2016/03/07	6.0	5000.0	No	No	
Cadmium: Cd (ug/L) - TWc	2016/03/07	0.008	5.0	No	No	
Cadmium: Cd (ug/L) - TW3	2016/03/07	0.008	5.0	No	No	
Chromium: Cr (ug/L) - TWc	2016/03/07	0.69	50.0	No	No	
Chromium: Cr (ug/L) - TW3	2016/03/07	0.51	50.0	No	No	
Mercury: Hg (ug/L) - TWc	2016/03/07	<mdl 0.01<="" td=""><td>1.0</td><td>No</td><td>No</td></mdl>	1.0	No	No	
Mercury: Hg (ug/L) - TW3	2016/03/07	<mdl 0.01<="" td=""><td>1.0</td><td>No</td><td>No</td></mdl>	1.0	No	No	
Selenium: Se (ug/L) - TWc	2016/03/07	0.78	10.0	No	No	
Selenium: Se (ug/L) - TW3	2016/03/07	0.06	10.0	No	No	
Uranium: U (ug/L) - TWc	2016/03/07	0.198	20.0	No	No	
Uranium: U (ug/L) - TW3	2016/03/07	0.009	20.0	No	No	
Nitrite (mg/L) - TWc	2016/01/04	<mdl 0.003<="" td=""><td>1.0</td><td>No</td><td>No</td></mdl>	1.0	No	No	
Nitrite (mg/L) - TWc	2016/04/04	<mdl 0.003<="" td=""><td>1.0</td><td>No</td><td>No</td></mdl>	1.0	No	No	
Nitrite (mg/L) - TWc	2016/07/11	<mdl 0.003<="" td=""><td>1.0</td><td>No</td><td>No</td></mdl>	1.0	No	No	
Nitrite (mg/L) - TWc			1.0	No	No	
Nitrite (mg/L) - TW3	2016/01/04	<mdl 0.003<="" td=""><td>1.0</td><td>No</td><td>No</td></mdl>	1.0	No	No	
Nitrite (mg/L) - TW3	2016/04/04	<mdl 0.003<="" td=""><td>1.0</td><td>No</td><td>No</td></mdl>	1.0	No	No	
Nitrite (mg/L) - TW3	2016/07/11	<mdl 0.003<="" td=""><td>1.0</td><td>No</td><td>No</td></mdl>	1.0	No	No	
Nitrite (mg/L) - TW3			1.0	No	No	
Nitrate (mg/L) - TWc	2016/01/04	2.24	10.0	No	No	
Nitrate (mg/L) - TWc	2016/04/04	2.18	10.0	No	No	
Nitrate (mg/L) - TWc	2016/07/11	2.22	10.0	No	No	
Nitrate (mg/L) - TWc			10.0	No	No	
Nitrate (mg/L) - TW3	2016/01/04	0.107	10.0	No	No	
Nitrate (mg/L) - TW3	2016/04/04	0.202	10.0	No	No	
Nitrate (mg/L) - TW3	2016/07/11	0.215	10.0	No	No	
Nitrate (mg/L) - TW3			10.0	No	No	

### **Organic Parameters**

- MAC = Maximum Allowable Concentration as per O.Reg 169/03
- BDL = Below the laboratory detection level

TREATED WATER	Sample Date	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Alachlor (ug/L) - TWc	07/03/2016	<mdl 0.02<="" td=""><td>5</td><td>No</td><td>No</td></mdl>	5	No	No
Alachlor (ug/L) - TW3	07/03/2016	<mdl 0.02<="" td=""><td>5</td><td>No</td><td>No</td></mdl>	5	No	No
Atrazine + N-dealkylated metabolites (ug/L) - TWc	07/03/2016	<mdl 0.01<="" td=""><td>5</td><td>No</td><td>No</td></mdl>	5	No	No
Atrazine + N-dealkylated metabolites (ug/L) - TW3	07/03/2016	<mdl 0.01<="" td=""><td>5</td><td>No</td><td>No</td></mdl>	5	No	No
Azinphos-methyl (ug/L) - TWc	07/03/2016	<mdl 0.05<="" td=""><td>20</td><td>No</td><td>No</td></mdl>	20	No	No
Azinphos-methyl (ug/L) - TW3	07/03/2016	<mdl 0.05<="" td=""><td>20</td><td>No</td><td>No</td></mdl>	20	No	No
Benzene (ug/L) - TWc	12/07/2016	<mdl 0.5<="" td=""><td>5</td><td>No</td><td>No</td></mdl>	5	No	No
Benzene (ug/L) - TW3	12/07/2016	<mdl 0.5<="" td=""><td>5</td><td>No</td><td>No</td></mdl>	5	No	No
Benzo(a)pyrene (ug/L) - TWc	07/03/2016	<mdl 0.004<="" td=""><td>0.01</td><td>No</td><td>No</td></mdl>	0.01	No	No
Benzo(a)pyrene (ug/L) - TW3	07/03/2016	<mdl 0.004<="" td=""><td>0.01</td><td>No</td><td>No</td></mdl>	0.01	No	No
Bromoxynil (ug/L) - TWc	07/03/2016	<mdl 0.33<="" td=""><td>5</td><td>No</td><td>No</td></mdl>	5	No	No
Bromoxynil (ug/L) - TW3	07/03/2016	<mdl 0.33<="" td=""><td>5</td><td>No</td><td>No</td></mdl>	5	No	No
Carbaryl (ug/L) - TWc	07/03/2016	<mdl 0.05<="" td=""><td>90</td><td>No</td><td>No</td></mdl>	90	No	No
Carbaryl (ug/L) - TW3	07/03/2016	<mdl 0.05<="" td=""><td>90</td><td>No</td><td>No</td></mdl>	90	No	No
Carbofuran (ug/L) - TWc	07/03/2016	<mdl 0.01<="" td=""><td>90</td><td>No</td><td>No</td></mdl>	90	No	No
Carbofuran (ug/L) - TW3	07/03/2016	<mdl 0.01<="" td=""><td>90</td><td>No</td><td>No</td></mdl>	90	No	No
Carbon Tetrachloride (ug/L) - TWc	07/03/2016	<mdl 0.16<="" td=""><td>5</td><td>No</td><td>No</td></mdl>	5	No	No
Carbon Tetrachloride (ug/L) - TW3	07/03/2016	<mdl 0.16<="" td=""><td>5</td><td>No</td><td>No</td></mdl>	5	No	No
Chlorpyrifos (ug/L) - TWc	07/03/2016	<mdl 0.02<="" td=""><td>90</td><td>No</td><td>No</td></mdl>	90	No	No
Chlorpyrifos (ug/L) - TW3	07/03/2016	<mdl 0.02<="" td=""><td>90</td><td>No</td><td>No</td></mdl>	90	No	No
Diazinon (ug/L) - TWc	07/03/2016	<mdl 0.02<="" td=""><td>20</td><td>No</td><td>No</td></mdl>	20	No	No
Diazinon (ug/L) - TW3	07/03/2016	<mdl 0.02<="" td=""><td>20</td><td>No</td><td>No</td></mdl>	20	No	No
Dicamba (ug/L) - TWc	07/03/2016	<mdl 0.2<="" td=""><td>120</td><td>No</td><td>No</td></mdl>	120	No	No
Dicamba (ug/L) - TW3	07/03/2016	<mdl 0.2<="" td=""><td>120</td><td>No</td><td>No</td></mdl>	120	No	No
1,2-Dichlorobenzene (ug/L) - TWc	07/03/2016	<mdl 0.41<="" td=""><td>200</td><td>No</td><td>No</td></mdl>	200	No	No
1,2-Dichlorobenzene (ug/L) - TW3	07/03/2016	<mdl 0.41<="" td=""><td>200</td><td>No</td><td>No</td></mdl>	200	No	No
1,4-Dichlorobenzene (ug/L) - TWc	07/03/2016	<mdl 0.36<="" td=""><td>5</td><td>No</td><td>No</td></mdl>	5	No	No
1,4-Dichlorobenzene (ug/L) - TW3	07/03/2016	<mdl 0.36<="" td=""><td>5</td><td>No</td><td>No</td></mdl>	5	No	No
1,2-Dichloroethane (ug/L) - TWc	07/03/2016	<mdl 0.35<="" td=""><td>5</td><td>No</td><td>No</td></mdl>	5	No	No
1,2-Dichloroethane (ug/L) - TW3	07/03/2016	<mdl 0.35<="" td=""><td>5</td><td>No</td><td>No</td></mdl>	5	No	No
1,1-Dichloroethylene (ug/L) - TWc	07/03/2016	<mdl 0.33<="" td=""><td>14</td><td>No</td><td>No</td></mdl>	14	No	No
1,1-Dichloroethylene (ug/L) - TW3	07/03/2016	<mdl 0.33<="" td=""><td>14</td><td>No</td><td>No</td></mdl>	14	No	No
Dichloromethane (Methylene Chloride) (ug/L) - TWc	07/03/2016	<mdl 0.35<="" td=""><td>50</td><td>No</td><td>No</td></mdl>	50	No	No
Dichloromethane (Methylene Chloride) (ug/L) - TW3	07/03/2016	<mdl 0.35<="" td=""><td>50</td><td>No</td><td>No</td></mdl>	50	No	No
2,4-Dichlorophenol (ug/L) - TWc	07/03/2016	<mdl 0.15<="" td=""><td>900</td><td>No</td><td>No</td></mdl>	900	No	No
2,4-Dichlorophenol (ug/L) - TW3	07/03/2016	<mdl 0.15<="" td=""><td>900</td><td>No</td><td>No</td></mdl>	900	No	No

2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TWc	07/03/2016	<mdl 0.19<="" td=""><td>100</td><td>No</td><td>No</td></mdl>	100	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW3	07/03/2016	<mdl 0.19<="" td=""><td>100</td><td>No</td><td>No</td></mdl>	100	No	No
Diclofop-methyl (ug/L) - TWc	07/03/2016	<mdl 0.4<="" td=""><td>9</td><td>No</td><td>No</td></mdl>	9	No	No
Diclofop-methyl (ug/L) - TW3	07/03/2016	<mdl 0.4<="" td=""><td>9</td><td>No</td><td>No</td></mdl>	9	No	No
Dimethoate (ug/L) - TWc	07/03/2016	<mdl 0.03<="" td=""><td>20</td><td>No</td><td>No</td></mdl>	20	No	No
Dimethoate (ug/L) - TW3	07/03/2016	<mdl 0.03<="" td=""><td>20</td><td>No</td><td>No</td></mdl>	20	No	No
Diquat (ug/L) - TWc	07/03/2016	<mdl 1.0<="" td=""><td>70</td><td>No</td><td>No</td></mdl>	70	No	No
Diquat (ug/L) - TW3	07/03/2016	<mdl 1.0<="" td=""><td>70</td><td>No</td><td>No</td></mdl>	70	No	No
Diuron (ug/L) - TWc	07/03/2016	<mdl 0.03<="" td=""><td>150</td><td>No</td><td>No</td></mdl>	150	No	No
Diuron (ug/L) - TW3	07/03/2016	<mdl 0.03<="" td=""><td>150</td><td>No</td><td>No</td></mdl>	150	No	No
Glyphosate (ug/L) - TWc	07/03/2016	<mdl 1.0<="" td=""><td>280</td><td>No</td><td>No</td></mdl>	280	No	No
Glyphosate (ug/L) - TW3	07/03/2016	<mdl 1.0<="" td=""><td>280</td><td>No</td><td>No</td></mdl>	280	No	No
Malathion (ug/L) - TWc	07/03/2016	<mdl 0.02<="" td=""><td>190</td><td>No</td><td>No</td></mdl>	190	No	No
Malathion (ug/L) - TW3	07/03/2016	<mdl 0.02<="" td=""><td>190</td><td>No</td><td>No</td></mdl>	190	No	No
Metolachlor (ug/L) - TWc	07/03/2016	<mdl 0.01<="" td=""><td>50</td><td>No</td><td>No</td></mdl>	50	No	No
Metolachlor (ug/L) - TW3	07/03/2016	<mdl 0.01<="" td=""><td>50</td><td>No</td><td>No</td></mdl>	50	No	No
Metribuzin (ug/L) - TWc	07/03/2016	<mdl 0.02<="" td=""><td>80</td><td>No</td><td>No</td></mdl>	80	No	No
Metribuzin (ug/L) - TW3	07/03/2016	<mdl 0.02<="" td=""><td>80</td><td>No</td><td>No</td></mdl>	80	No	No
MCPA (mg/L) - TW3	07/03/2016	<mdl 0.00012<="" td=""><td>-</td><td>-</td><td>-</td></mdl>	-	-	-
MCPA (mg/L) - TWc	07/03/2016	<mdl 0.00012<="" td=""><td>-</td><td>-</td><td>-</td></mdl>	-	-	-
Monochlorobenzene (Chlorobenzene) (ug/L) - TWc	07/03/2016	<mdl 0.3<="" td=""><td>80</td><td>No</td><td>No</td></mdl>	80	No	No
Monochlorobenzene (Chlorobenzene) (ug/L) - TW3	07/03/2016	<mdl 0.3<="" td=""><td>80</td><td>No</td><td>No</td></mdl>	80	No	No
Paraquat (ug/L) - TWc	07/03/2016	<mdl 1.0<="" td=""><td>10</td><td>No</td><td>No</td></mdl>	10	No	No
Paraquat (ug/L) - TW3	07/03/2016	<mdl 1.0<="" td=""><td>10</td><td>No</td><td>No</td></mdl>	10	No	No
PCB (ug/L) - TWc	07/03/2016	<mdl 0.04<="" td=""><td>3</td><td>No</td><td>No</td></mdl>	3	No	No
PCB (ug/L) - TW3	07/03/2016	<mdl 0.04<="" td=""><td>3</td><td>No</td><td>No</td></mdl>	3	No	No
Pentachlorophenol (ug/L) - TWc	07/03/2016	<mdl 0.15<="" td=""><td>60</td><td>No</td><td>No</td></mdl>	60	No	No
Pentachlorophenol (ug/L) - TW3	07/03/2016	<mdl 0.15<="" td=""><td>60</td><td>No</td><td>No</td></mdl>	60	No	No
Phorate (ug/L) - TWc	07/03/2016	<mdl 0.01<="" td=""><td>2</td><td>No</td><td>No</td></mdl>	2	No	No
Picloram (ug/L) - TWc	07/03/2016	<mdl 1.0<="" td=""><td>190</td><td>No</td><td>No</td></mdl>	190	No	No
Prometryne (ug/L) - TWc	07/03/2016	<mdl 0.03<="" td=""><td>1</td><td>No</td><td>No</td></mdl>	1	No	No
Prometryne (ug/L) - TW3	07/03/2016	<mdl 0.03<="" td=""><td>1</td><td>No</td><td>No</td></mdl>	1	No	No
Simazine (ug/L) - TWc	07/03/2016	<mdl 0.01<="" td=""><td>10</td><td>No</td><td>No</td></mdl>	10	No	No
Simazine (ug/L) - TW3	07/03/2016	<mdl 0.01<="" td=""><td>10</td><td>No</td><td>No</td></mdl>	10	No	No
Terbufos (ug/L) - TWc	07/03/2016	<mdl 0.01<="" td=""><td>1</td><td>No</td><td>No</td></mdl>	1	No	No
Terbufos (ug/L) - TW3	07/03/2016	<mdl 0.01<="" td=""><td>1</td><td>No</td><td>No</td></mdl>	1	No	No
Tetrachloroethylene (ug/L) - TWc	07/03/2016	<mdl 0.35<="" td=""><td>30</td><td>No</td><td>No</td></mdl>	30	No	No
Tetrachloroethylene (ug/L) - TW3	07/03/2016	<mdl 0.35<="" td=""><td>30</td><td>No</td><td>No</td></mdl>	30	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TWc	07/03/2016	<mdl 0.2<="" td=""><td>100</td><td>No</td><td>No</td></mdl>	100	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW3	07/03/2016	<mdl 0.2<="" td=""><td>100</td><td>No</td><td>No</td></mdl>	100	No	No
Triallate (ug/L) - TWc	07/03/2016	<mdl 0.01<="" td=""><td>230</td><td>No</td><td>No</td></mdl>	230	No	No
Triallate (ug/L) - TW3	07/03/2016	<mdl 0.01<="" td=""><td>230</td><td>No</td><td>No</td></mdl>	230	No	No

Trichloroethylene (ug/L) - TWc	07/03/2016	<mdl 0.44<="" td=""><td>50</td><td>No</td><td>No</td></mdl>	50	No	No
Trichloroethylene (ug/L) - TW3	07/03/2016	<mdl 0.44<="" td=""><td>50</td><td>No</td><td>No</td></mdl>	50	No	No
2,4,6-Trichlorophenol (ug/L) - TWc	07/03/2016	<mdl 0.25<="" td=""><td>5</td><td>No</td><td>No</td></mdl>	5	No	No
2,4,6-Trichlorophenol (ug/L) - TW3	07/03/2016	<mdl 0.25<="" td=""><td>5</td><td>No</td><td>No</td></mdl>	5	No	No
Trifluralin (ug/L) - TWc	07/03/2016	<mdl 0.02<="" td=""><td>45</td><td>No</td><td>No</td></mdl>	45	No	No
Trifluralin (ug/L) - TW3	07/03/2016	<mdl 0.02<="" td=""><td>45</td><td>No</td><td>No</td></mdl>	45	No	No
Vinyl Chloride (ug/L) - TWc	07/03/2016	<mdl 0.17<="" td=""><td>2</td><td>No</td><td>No</td></mdl>	2	No	No
Vinyl Chloride (ug/L) - TW3	07/03/2016	<mdl 0.17<="" td=""><td>2</td><td>No</td><td>No</td></mdl>	2	No	No
DISTRIBUTION WATER					
Trihalomethane: Total (ug/L) Annual Average - DW	01/01/2016	38.67	100	No	No

### **Lead Sampling**

The Lead Sampling Program is required under O.Reg 170/03. This system qualified for the plumbing exemption.

Location	Date	Lead (mg/L)	рН	Alkalinity (mg/L) as CACO3
Hydrant #47	23-Mar-16	n/a	8.01	284
Hydrant #68	23-Mar-16	n/a	7.99	281
Hydrant #47	04-Oct-16	n/a	7.80	289
Hydrant #68	04-Oct-16	n/a	7.81	276

### **Maintenance Summary**

OCWA uses a risk-based preventative maintenance framework that ensures assets are maintained to manufacturer's and/or industry standards. Maintenance is completed using various tools and operational supports.

OCWA uses a Workplace Maintenance System (WMS). WMS is a maintenance tracking system that can generate work orders as well as give summaries of completed and scheduled work. During the year, the operating authority at the facility generates scheduled work orders on a weekly, monthly and annual basis. The service work is recorded in the work order history. This ensures routine and preventive maintenance is carried out. Emergency and capital repair maintenance is completed and added to the system.

Preventative Maintenance Work Orders Completed	284
Operational Maintenance Work Orders Completed	7
Capital Maintenance Work Orders Completed	1
Weekly Maintenance Work Orders Completed	852

Capital projects are listed and provided to the The Township of Havelock-Belmont-Methuen in the form of a "Capital Forecast". This list is developed by facility staff and provides recommendations for facility components requiring upgrading or improvement.

### **OEMS**

A 12-month Surveillance Audit was conducted by QMI-SAI Canada Limited on April 21, 2016. The Township of Havelock-Belmont-Methuen's Quality Management System conforms to the Standard.

# Maintenance Highlights: major expenses incurred to install, repair or replace required equipment

### Well 1 & 4:

- Well #4 Inspection and Camera, Install 3" Check Valve
- Replace Well 1&4 Well Probes and Rescale Isolator
- Trojan UV Parts & Maintenance

### **Well 3:**

- Replace High Pressure Switch
- Add Alarm to Dialer and HMI for Chemical Pump Failure
- Enabling Chemical Pumps to PLC
- Hallet UV Parts
- Accuview UVT Analyzer Repair

### **Water Taking and Transfer Data**

Data for the reporting period of January 1, 2016 - December 31, 2016 was submitted electronically to the Ministry of the Environment on Jan 25, 2017 under Permit to Take Water PTTW 3448-9LMT5K

