



CHEPSTOW DRINKING WATER SYSTEM
2018 SUMMARY REPORT
PREPARED IN ACCORDANCE WITH SCHEDULE 22 OF
ONTARIO REGULATION 170/03, AS AMENDED

PREPARED BY VEOLIA WATER CANADA
FOR THE MUNICIPALITY OF BROCKTON
February 25, 2019

DWS NAME : CHEPSTOW DRINKING WATER SYSTEM
DWS # : 220008765
CATEGORY: SMALL MUNICIPAL RESIDENTIAL
REPORTING PERIOD: JANUARY 1, 2018 TO DECEMBER 31, 2018

Summary of Reporting Requirements

Section 11 O. Reg. 170/03 - Annual Report

1. Brief description of the system
2. A summary of reports to MOECC (including corrective actions)
3. A summary of Analysis
4. Major expenses
5. Location of where report can be inspected
6. Please Note: the Municipality is responsible for effective steps to advise users the reports are available and the obligation to supply the report to “Designated Facilities”.

This report will be sent to the Municipality of Brockton by **February 28th of the current year.**

Schedule 22 O. Reg. 170/03 – Summary Report

1. Include any orders the system failed to meet and the duration and corrective actions.
2. Summary of Flows
3. A comparison to the rated capacity.

Infrastructure Review – As part of the Drinking Water Quality Management System (DWQMS) an Infrastructure Review is required on an Annual Basis. The Brockton Utilities Manager and the Veolia Water Project Manager review Infrastructure on a regular basis. In the DWQMS Operational Plan it States: *The procedure will be for the Project Manager / Overall Responsible Operator to compile information received from the Maintenance Lead and Operators throughout the year based on work orders and observations relating to the infrastructure of the water treatment system. This information will be summarized in an Infrastructure section of the annual summary report and presented to the Owner on an annual basis. The Annual Summary is required to be submitted to the Owner by March 30th of each year.*

Water Taking Data has been submitted to the MOECC (WTRS) for annual water taking for the Permit to Take Water

SUMMARY

This report is a summary of the water quality and quantity information submitted in accordance with Schedule 22 of Ontario Regulation 170/03, as amended for the reporting period between **January 1, 2018 and December 31, 2018**.

Description

The Chepstow Water system is comprised of a 150 mm bedrock well drilled to a depth of 57.6 m with approximately 15.8 m of till overburden. The well is equipped with a 1.1 kW submersible pump rated at 2.21 L/s at a TDH of 414 kpa. The pump house is located on top of the well and houses chlorination pumps utilizing sodium hypochlorite, 2 sets of 2 stage filtration (5 micron and 1 micron) filters, followed by 2 Ultraviolet units. The water then enters a chlorine contact loop and is delivered to the distribution system with pressure maintenance provided by 3 – 455L cushion tanks. The system is also equipped with and Standby Diesel Generator that was installed in 2011.

Water Treatment Chemicals

Water Treatment chemical used is NSF Certified Sodium Hypochlorite (12%), diluted to approximately 4% with treated water.

Location of Report

This report is available upon request to the Municipality of Brockton at the Office of Veolia Water (Operating Authority) at 130 Wallace St., Walkerton, Ontario, or the Municipality of Brockton Office at 100 Scott St., Walkerton, Ontario.

TREATMENT CAPACITY ASSESSMENT

Raw Flow Summary			
Month	Raw Water Flow		
	Average	Maximum	Monthly
	Daily	Daily	Total
	m3	m3	m3
Jan '18	10.2	13.7	317.7
Feb '18	10.6	16.5	297.8
Mar '18	10.5	15.1	325.6
Apr '18	11.5	15.6	343.7
May '18	14.1	32.8	435.7
Jun '18	16.5	36.2	496.0
Jul '18	14.3	23.5	441.9
Aug '18	12.7	28.0	393.1
Sep '18	11.4	15.1	342.8
Oct '18	11.4	18.8	354.7
Nov '18	11.0	13.7	330.5
Dec '18	11.8	16.9	365.3
Annual Summary			
Total			4,445
Average	12.2		
Maximum		36.2	
Minimum		7.1	

The above table outlines the average daily, maximum daily and total monthly flows for the raw water conveyed through treatment at the Chepstow WTP. The maximum allowable taking outlined in the Permit to Take Water is **216m³** in 24 hours. In **2018**, the average daily flow was at **5.64%** of the allowable flow and the maximum flow was at **16.75%** of the maximum allowable flow from the PTTW.

ISSUES OF NON-COMPLIANCE

The following table lists the requirements of the Act, Regulation, Order or System Approval(s) that the system failed to meet during the reporting period and includes a summary of action taken to correct each failure. Note: Inspection Non-Compliances are listed separately below

Requirement Type	Requirement the System Failed to Meet	Duration	Corrective Action	Status
NA				

Precautionary Boil Water/Adverse Notices

Date	Reason	Duration	Resolution
May 5, 2018	Low chlorine residual which did not meet required C.T. value of 0.28 mg/L AWQI # 139253	Approximately 1 minute	Notified MOE and MOH. Repaired chlorine leak on the chlorine board. Restored disinfection and flushed the system.
June 20, 2018	Low chlorine residual which did not meet required C.T. value of 0.28 mg/L AWQI # 139960	Approximately 35 minutes	Notified MOE and MOH. Restored disinfection. Repaired chlorine line leak and took residuals throughout the distribution system
Oct. 23, 2018	Received Fluoride sample result that exceeded the MAC of 1.5 mg/L AWQI # 143681	Nov. 01, 2018	Resampled and notified the health unit. Received resample result of 1.74 mg/L. Delivered the fluoride information package received from the health unit to the system users

Issues from July 6, 2018 Ministry of the Environment and Climate Change Inspection

There were no Non-Compliance issues noted in the Inspection Report.

Operational Issues (For more details see monthly reports)

March 1st- Repaired leaking fitting on the chlorine board.

May 30th- ICS Instrumentation completed annual flow meter verification

July 11th- Rebuilt a section of the Sodium Hypochlorite board that was prone to leaking.

August 27th- H2Ontario began the Ultraviolet Disinfection system upgrades.

October 15th- Ultraviolet Disinfection system commissioned by H2Flow

Drinking Water Quality Management System (DWQMS)

January 26th – The System Audit of the DWQMS was conducted by SAI. No Non-Conformances were noted.

February 15th – Completed Annual Emergency Response Training

March 12th & 13th – An Internal Audit of the DWQMS was conducted- Minor Non-Conformity (resolved)

June 12th– Annual Risk Review was conducted

December 7th – The Annual Management Review was completed by Veolia and the Municipality

Chepstow Infrastructure Review

The following item has been identified as a potential improvement for the Chepstow Drinking Water System:

1. Installation of a Surge Protection System
2. Replacement Turbidity Analyzer

Information Included in Appendices

- Appendix 1 Turbidity, Disinfection and Chemical Usage Data**
Appendix 2 Bacteriological Samples: Distribution & Raw Water
Appendix 3 Additional Samples

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Appendix 1

Turbidity

Filtered Effluent Turbidity Analyzer Results			
Month	Turbidity Analyzer Reading (ntu)		
	Minimum ntu	Maximum ntu	Average ntu
Jan '18	0.05	0.14	0.07
Feb '18	0.04	0.12	0.07
Mar '18	0.04	0.16	0.07
Apr '18	0.05	0.13	0.08
May '18	0.05	0.15	0.07
Jun '18	0.05	0.12	0.06
Jul '18	0.05	0.42	0.09
Aug '18	0.06	0.19	0.09
Sep '18	0.06	0.16	0.09
Oct '18	0.05	0.24	0.07
Nov '18	0.04	0.07	0.06
Dec '18	0.05	0.07	0.06
Annual Summary			
# of Samples			365
Min	0.04		
Max		0.42	
Average			0.07

Filtered Effluent Turbidity Handheld Results			
Month	Turbidity Handheld Reading (ntu)		
	Minimum ntu	Maximum ntu	Average ntu
Jan '18	0.07	0.16	0.11
Feb '18	0.07	0.16	0.10
Mar '18	0.07	0.17	0.12
Apr '18	0.07	0.16	0.12
May '18	0.07	0.17	0.11
Jun '18	0.07	0.14	0.10
Jul '18	0.06	0.19	0.11
Aug '18	0.05	0.17	0.10
Sep '18	0.07	0.15	0.11
Oct '18	0.07	0.25	0.10
Nov '18	0.07	0.11	0.09
Dec '18	0.09	0.13	0.10
Annual Summary			
# of Samples			249
Min	0.05		
Max		0.25	
Average			0.11

Raw Turbidity Results			
Month	Raw Turbidity (ntu)		
	Minimum ntu	Maximum ntu	Average ntu
Jan '18	0.20	0.53	0.39
Feb '18	0.38	0.68	0.50
Mar '18	0.41	0.47	0.45
Apr '18	0.32	0.67	0.47
May '18	0.35	0.49	0.44
Jun '18	0.22	0.42	0.31
Jul '18	0.23	0.37	0.29
Aug '18	0.25	0.61	0.36
Sep '18	0.26	0.34	0.31
Oct '18	0.28	0.47	0.37
Nov '18	0.34	0.55	0.43
Dec '18	0.26	0.62	0.43
Annual Summary			
# of Samples			53
Min	0.20		
Max		0.68	
Average			0.40

Disinfection Summary

Treated Water Chlorine Analyzer Residuals				Chepstow Distribution Chlorine Residuals				Chepstow WTP Chemical Usage		
Month	Chlorine Analyzer Reading (mg/l)			Month	No. of Dist. Samp. Collected	No. of Samples < 0.05	Average Free Residual	Month	Sodium Hypochlorite	
	Minimum Residual	Maximum Residual	Average Residual						Usage Kg.	Dosage mg/L
Jan '18	1.33	1.62	1.43	Jan '18	18	0	1.36	Jan '18	1.03	3.22
Feb '18	1.09	1.72	1.38	Feb '18	17	0	1.31	Feb '18	0.90	3.03
Mar '18	1.16	1.47	1.34	Mar '18	17	0	1.31	Mar '18	0.98	3.03
Apr '18	0.94	1.32	1.13	Apr '18	17	0	1.07	Apr '18	1.02	2.97
May '18	0.68	1.48	1.28	May '18	19	0	1.19	May '18	1.42	3.20
Jun '18	1.10	1.61	1.35	Jun '18	21	0	1.25	Jun '18	1.57	3.13
Jul '18	1.02	1.68	1.35	Jul '18	24	0	1.23	Jul '18	1.40	3.18
Aug '18	0.93	1.36	1.17	Aug '18	21	0	1.06	Aug '18	1.21	3.08
Sep '18	1.08	1.29	1.19	Sep '18	18	0	1.06	Sep '18	1.11	3.22
Oct '18	1.03	1.33	1.19	Oct '18	23	0	1.06	Oct '18	1.19	3.33
Nov '18	1.10	1.37	1.26	Nov '18	23	0	1.13	Nov '18	1.12	3.38
Dec '18	1.07	1.48	1.25	Dec '18	18	0	1.14	Dec '18	1.27	3.47
Annual Summary				Annual Summary				Annual Summary		
# of Samples			365	Total	236	0		Total	14.21	
Min	0.68			Min			0.78	Average		3.19
Max		1.72		Max			1.59			
Average			1.28	Average			1.18			

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Appendix 2

Distribution Water - Bacteriological Results

<u>DW - E Coli.</u>				<u>DW - Total Coliform</u>				<u>DW - HPC</u>			
Month	Minimum cfu/100 ml	Maximum cfu/100ml	# of Samples	Month	Minimum cfu/100 ml	Maximum cfu/100ml	# of Samples	Month	Minimum cfu/1 ml	Maximum cfu/1 ml	# of Samples
Jan '18	0	0	5	Jan '18	0	0	5	Jan '18	0	0	5
Feb '18	0	0	4	Feb '18	0	0	4	Feb '18	0	0	4
Mar '18	0	0	4	Mar '18	0	0	4	Mar '18	0	0	4
Apr '18	0	0	4	Apr '18	0	0	4	Apr '18	0	0	4
May '18	0	0	5	May '18	0	0	5	May '18	0	1	5
Jun '18	0	0	4	Jun '18	0	0	4	Jun '18	0	1	4
Jul '18	0	0	5	Jul '18	0	0	5	Jul '18	0	4	5
Aug '18	0	0	4	Aug '18	0	0	4	Aug '18	0	1	4
Sep '18	0	0	4	Sep '18	0	0	4	Sep '18	0	1	4
Oct '18	0	0	5	Oct '18	0	0	5	Oct '18	0	2	5
Nov '18	0	0	4	Nov '18	0	0	4	Nov '18	0	1	4
Dec '18	0	0	4	Dec '18	0	0	4	Dec '18	0	1	4
Annual Summary				Annual Summary				Annual Summary			
Min.	0			Min.	0			Min.	0		
Max.		0		Max.		0		Max.		4	
Avg.		0		Avg.		0		Avg.		0	
Total			52	Total			52	Total			52

Raw Water - Bacteriological Results

<u>RW - E Coli.</u>				<u>RW - Total Coliform</u>			
Month	Minimum cfu/100 ml	Maximum cfu/100ml	# of Samples	Month	Minimum cfu/100 ml	Maximum cfu/100ml	# of Samples
Jan '18	0	0	1	Jan '18	0	0	1
Feb '18	0	0	1	Feb '18	0	0	1
Mar '18	0	0	1	Mar '18	0	0	1
Apr '18	0	0	1	Apr '18	0	0	1
May '18	0	0	1	May '18	0	0	1
Jun '18	0	0	1	Jun '18	0	0	1
Jul '18	0	0	1	Jul '18	0	0	1
Aug '18	0	0	1	Aug '18	0	0	1
Sep '18	0	0	1	Sep '18	0	0	1
Oct '18	0	0	1	Oct '18	0	0	1
Nov '18	0	0	1	Nov '18	0	0	1
Dec '18	0	0	1	Dec '18	0	0	1
Annual Summary				Annual Summary			
Min.	0			Min.	0		
Max.		0		Max.		0	
Avg.				Avg.			
Total			12	Total			12

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Appendix 3

Chepstow Additional Sampling Results 2018

<u>TW - Nitrate</u>			<u>TW - Nitrite</u>			<u>DW - Trihalomethanes</u>			<u>DW - Lead</u>		
MAC: 10 mg/l			MAC: 10 mg/l			MAC: 100 ug/l			MAC: 10 ug/l		
1/2 MAC: 5 mg/l			1/2 MAC: 5 mg/l			1/2 MAC: 50 ug/l			1/2 MAC: 5 ug/l		
Date	Nitrates (mg/l)	Excedences	Date	Nitrates (mg/l)	Excedences	Date	THM's (ug/l)	Excedences	Date	Lead (ug/l)	Excedences
Jan 09, '18	<0.100	0	Jan 09, '18	<0.100	0	Jan 09, '18	4.2	0	Oct 16, '18	<1.00	0
Apr 10, '18	<0.020	0	Apr 10, '18	<0.010	0	Apr 10, '18	<4.0	0			
Jul 10, '18	<0.020	0	Jul 10, '18	<0.010	0	Jul 10, '18	5.2	0			
Oct 16, '18	<0.020	0	Oct 16, '18	<0.010	0	Oct 16, '18	5.5	0			
									Min		
									Max		
									Avg		
Min	<0.020		Min	<0.010		Min	4.0		Total		0
Max	<0.100		Max	<0.100		Max	5.5				
Avg	<0.040		Avg	<0.033		Avg	4.7				
Total		0	Total		0	Total		0			