



Blyth Sewage Treatment Plant
2017 Annual Report

Owned by the Township of North Huron and Operated by Veolia Water Canada

Blyth Sewage Treatment Plant 2017 Annual Report

Blyth STP Environmental Compliance Approval #9189-A6UPSM, Feb 23, 2016

The Following is a summary and discussion of the 2017 Blyth Sewage treatment plant operation and summary of compliance limits as set forth in the ECA.

The Annual Average Rated Capacity of the Treatment Unit is 730 m³/d with Peak Capacity of 2730 m³/d.

Based on Raw Sewage Flows, the 2017 annual average flows were 412m³/day which represents 56.5% of the annual 730 m³/day capacity. The maximum Peak Monthly average flow of 1892m³/d occurred in June 2017 represents 69.3% of the peak capacity.

Bypass Events

There were seven bypass events for the Blyth Sewage Treatment plant in 2017, all of the bypasses were measured secondary bypasses except for 2.1 hours during the bypass in June when it was a primary bypass. Three of the bypasses occurred due to heavy precipitation, two bypasses were a result of process upsets and two were a result of planned maintenance. The longest bypass was in November with a 104 hours secondary bypass which was due to the clarifier being rebuilt this was a scheduled maintenance project. The total number of bypass hours for 2017 were: 216.75 Secondary bypass hours with a total measured volume of 9.381/1000m³ and 2.1 hours of primary bypass with an estimated 0.129/1000m³ volume.

Compliance limits

The plant consistently removed 98.4% Biological Oxygen demand, 98.3% total suspended solids, 91.9% phosphorous and 93.3% total kjeldahl nitrogen which is well within the range of removals for a tertiary sewage plant and consistent with previous yearly operations.

Operational problems

There were no major problems encountered during the 2017 operating year. Listed below are clarifications as to why we had bypass events at the sewage plant in 2017

1 Bypasses in June due to heavy precipitation and infiltration- Both Primary and secondary bypass the primary bypass was for 2.1 hours

2 bypasses in April due to process upset- A lightning strike knocked the power out, the emergency generator overheated and shut down, the clarifier scrapper stopped spinning and therefore sludge floated to the top and over the weirs, and a bypass began. On April 8th all equipment was working however due to high flows a bypass continued.

2 planned secondary bypasses for clarifier rebuild in July and November

Maintenance

Routine maintenance was performed throughout the year, according to the computerized maintenance program Jobsplus.

Clarifier rebuilt at the Blyth Sewage treatment plant for \$37,515.85

Blower #2 Rebuilt for Approx. \$5000.00

Return pump purchased for 8,660.00 was not installed in 2017

Quality Control Monitoring

Monitoring includes an online dissolved oxygen sensor which indicates loading and raw sewage quality, aeration basin solids content and proper operations of the aerators. Secondary clarifiers effluent is monitored for dissolved phosphorous to determine adequate ferric chloride dosage and nitrification in aeration basins as well as general clarity and surface debris which indicates proper solids removal. Adequate solids return to the aeration and wasting rates. It was decided we would no longer monitor for ammonia in house due to the toxicity of the reagent.

The flowmeter measures the flow out of the treatment plant and is used to base dosages and treatment plant capacity. Results of monitoring activities can be viewed on the monthly spreadsheets.

Calibration and Maintenance

The flowmeter is calibrated yearly by ICS instrumentation that certificate is stored at the PUC Office. The pH analyzer is calibrated monthly and recorded in the log books.

Efforts to meet effluent objectives

As described in the quality control monitoring section, analytic and visual parameters are used as indicators of process efficiency and should fall within the critical control points. A summary of these values was developed and is in the Blyth sewage treatment facility operations manual for reference and historically have been adequate to maintain compliance.

Biosolids Generated

A total of 728.8 cubic meters was utilized in 2017 and hauled/applied by S&S Trucking.

Complaints

There were no complaints received as results of the operation of the sewage treatment facility.

Tables

Attached in the report is a data summary, compliance summary, sludge metals summary.

Blyth Sewage Treatment Plant 2017 Data Summary

Flow s	January	February	March	April	May	June	July	August	September	October	November	December	Total	Avg Flow	Maximum	% Cap
Total Flow s	20814	13313	14000	13531	14387	13659	9817	8510	8846	10023	12957	10672	150529	412	20814	56.5
Avg	671	475	452	451	464	455	317	275	295	323	432	344			671	
Max	1417	862	979	751	1488	1892	379	322	407	462	852	583			1892	
														Average	Max.	Removal Efficiency%
Raw Sew ag	January	February	March	April	May	June	July	August	September	October	November	December				
CBOD	43	93	151	78	102	131	148	172	150	139	240	126		130.78	240	98.4
SS	48	86	127	90	150	159	210	119	171	118	137	86		125.01	210	98.3
TP	1.10	1.97	2.59	2.51	2.61	3.42	3.09	4.10	2.93	2.39	3.31	3.22		2.77	4.095	91.9
TKN	10.80	17.10	0.00	26.25	19.73	34.35	27.25	38.95	30.30	21.20	23.35	27.80		23.09	38.95	93.3
pH	7.82	7.92	7.85	7.82	7.78	7.84	7.52	7.67	7.54	7.59	7.72	7.61		7.72	7.92	
														Average	Max.	
Final Effluent	January	February	March	April	May	June	July	August	September	October	November	December				
CBOD	2.0	2.0	2.0	2.5	2.0	2.0	2.0	3.0	2.0	2.3	2.0	2.0		2.15	3.00	
SS	2.0	2.0	2.0	2.0	2.3	3.0	2.0	2.0	2.0	2.0	2.0	2.0		2.11	3.00	
Ammonia	0.15	0.10	0.10	0.10	0.13	0.10	0.20	0.20	0.30	0.13	0.10	0.10		0.14	0.30	
TKN	1.05	0.57	1.00	1.00	2.17	0.95	1.25	4.85	2.15	1.90	0.50	1.20		1.55	4.85	
TP	0.24	0.23	0.21	0.20	0.26	0.20	0.27	0.28	0.23	0.15	0.14	0.29		0.22	0.29	
NO2	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03		0.03	0.04	
NO3	8.81	10.77	10.26	7.95	17.77	19.65	39.95	19.13	28.20	20.97	19.35	18.95		18.48	39.95	
pH	7.30	7.52	7.63	7.31	7.18	7.08	7.01	7.08	7.27	7.27	7.34	7.30		7.27	7.63	
E. Coli	17	5	3	2	27	3	7	52	13	10	5	5		13	52	
Tot Cl Res.	0.16	0.14	0.14	0.15	0.12	0.12	0.14	0.11	0.14	0.13	0.14	0.15		0.14	0.60	

Blyth STP Compliance Summary				2017								
Flow s	January	February	March	April	May	June	July	August	September	October	November	December
Peak Flow	2730	2730	2730	2730	2730	2730	2730	2730	2730	2730	2730	2730
Actual	1417	862	979	751	1488	1892	379	322	407	462	852	583
Comp. Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Av Day Flow	730	730	730	730	730	730	730	730	730	730	730	730
Actual	671	475	452	451	464	455	317	275	295	323	432	344
Comp. Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
CBOD&TSS	15	15	15	15	5	5	5	5	5	5	15	15
CBOD	2.0	2.0	2.0	2.5	2.0	2.0	2.0	3.0	2.0	2.3	2.0	2.0
TSS	2.0	2.0	2.0	2.0	2.3	3.0	2.0	2.0	2.0	2.0	2.0	2.0
Loading Kg	11	11	11	11	3.7	3.7	3.7	3.7	3.7	3.7	3.7	11
CBOD Kg	1.34	0.95	0.90	1.13	0.93	0.91	0.63	0.82	0.59	0.75	0.86	0.69
TSS Kg	1.34	0.95	0.90	0.90	1.08	1.37	0.63	0.55	0.59	0.65	0.86	0.69
Comp. Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Tot P	1	1	1	1	0.3	0.3	0.3	0.3	0.3	0.3	1	1
Actual	0.24	0.23	0.21	0.20	0.26	0.20	0.27	0.28	0.23	0.15	0.14	0.38
TP Load Kg	0.7	0.7	0.7	0.7	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.7
Act. TP Kg	0.16	0.11	0.09	0.09	0.12	0.09	0.08	0.08	0.07	0.05	0.06	0.13
Comp. Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
NH 3&4	17	21	14	6	3	1	1	1	1	3	3	11
Actual	0.10	0.15	0.13	0.12	0.12	0.12	0.14	0.08	0.11	0.10	0.11	0.23
Comp. Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
NH 3	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Actual	0.0010	0.0004	0.0003	0.0004	0.0004	0.0003	0.0003	0.0004	0.0005	0.0008	0.0004	0.0003
Comp. Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Tot Cl Res	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Month Max.	0.20	0.19	0.19	0.20	0.22	0.20	0.6	0.19	0.20	0.20	0.20	0.20
Month Avera	0.16	0.14	0.14	0.15	0.12	0.12	0.14	0.11	0.14	0.13	0.14	0.15
Comp. Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
pH	6 - 9.5	6 - 9.5	6 - 9.5	6 - 9.5	6 - 9.5	6 - 9.5	6 - 9.5	6 - 9.5	6 - 9.5	6 - 9.5	6 - 9.5	6 - 9.5
Actual	7.30	7.52	7.63	7.31	7.18	7.08	7.01	7.08	7.27	7.27	7.34	7.30
Comp. Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
E. Coli	200	200	200	200	200	200	200	200	200	200	200	200
Actual GMD	17	5	0	2	27	3	7	52	13	10	5	5
Comp. Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Quarterly Metals Calculations Report				2017			
Parameter							
Date		Feb 1-17	Jul 4-17	Jul 7-17	Jul 26-17	Oct 3-17	Average
Total Solids		15100	22400	22900	35300	5560	20252
NH 3&4		20.9	401	426	511	5.8	272.94
TKN		920	1390	1110	1790	232	1088.4
NO2		0.3	1.2	0.7	<0.2	0.2	0.6
NO3	<	0.3	0.3	0.3	0.3	3.4	0.92
NO2+NO3		0.3	1.2	0.7	0.3	3.6	1.22
Arsenic	<	0.1	0.2	0.1	0.2	0.1	0.14
Cadmium	<	0.011	0.017	0.014	0.016	0.005	0.0126
Cobalt		0.07	0.17	0.12	0.26	0.05	0.134
Chromium		0.73	1.8	1.5	2.4	0.39	1.364
Copper		6.7	8.4	7.4	12	1.6	7.22
Mercury		0.004	0.005	0.006	0.013	0.001	0.0058
Potassium		78	140	120	130	66	106.8
Molybden	<	0.09	0.15	0.18	0.29	0.05	0.152
Sodium							#DIV/0!
Nickel		0.27	0.64	0.57	0.86	0.12	0.492
Phosphorous		340	840	750	1300	130	672
Lead		0.2	0.5	0.4	0.7	<0.1	0.45
Selenium	<	0.1	0.1	0.1	0.1	0.1	0.1
Zinc		5.5	12	10	16	2.1	9.12
Ecoli DW		497479	9821	14847	6232	1780576	461791
Ecoli /100 ml		750000	22000	34000UAL	22000	990000	446000
pH							
Tank in " to Top							
Volume in m3		941	941	941	941	941	
Volume at 4%		355	527	539	831	131	0
Solids Kg		14212	21083	21553	33224	5233	0

Table 1 BYPASS AND OVERFLOW EVENTS

FACILITY NAME:		Blyth STP				YEAR:		2017		Sample Results							Ref #
Date (dd/mm/yy)	Location	Type (See Legend for descriptio n)	Start Time	Duration (hours)	Volume (1,000m3)	M/ E	Disinfecti on (Y/ N)	Treatment (Y/ N)	Reason Code*	BOD5 (mg/ L)	SS (mg/ L)	TP (mg/ L)	TKN	E.Coli (/ 100ml)			
Jan 12/ 17	Blyth stp	SB	2:30am	31.5	1.972	M	Y	Y	1	3	3	2.2	0.34	68	900347		
Jan 23/ 17	Blyth stp	SB	13:45	6.5	0.447	M	Y	Y	1	4	13	0.3	1.6	132	900380		
April 7/ 17	Blyth stp	SB	12:20am	12	0.418	M	Y	Y	6	16	15	0.41	4.3	10	7886-AL78TC		
April 8/ 17	Blyth stp	SB	9:30	15.5	0.281	M	Y	Y	6	9	26	0.78	4.9	76	900680		
June 23/ 17	Blyth stp	PB	4:20am	2.1	0.129	E	N	N	1&3	20	6.5	1.4	0.3	6100	901154		
June 23/ 17	Blyth STP	SB	2:00am	42.25	3.973	M	Y	Y	1&3	13	29	0.5	0.41	<1000	901154		
July 26/ 17	Blyth STP	SB	10:10am	5	0.094	M	Y	Y	9	<2	<2	0.7	0.22	44	6238-APMJX3		
Nov 20-24, 17	Blyth STP	SB	07:00am	104	2.197	M	Y	Y	9	2	<2	0.16	1.3	1	3576-ATAHBZ		
										3	<2	0.14	2	<2	3576-ATAHBZ		
										2	<2	0.11	3.5	<2UAL	3576-ATAHBZ		
											</						



Report Completed by: Kyllie McDonagh Administrative Assistant

For More information please contact:

John Graham, Project Manager

Veolia Water Canada, Inc.

100 Cove Road, P.O. Box 185 Goderich, Ontario N7A 3Z2

Tel 519-524-6583 ext 310 - Fax 519-524-9358

john.graham@veolia.com

www.veoliawaterna.com