Wingham Sewage Treatment Plant

2016 Annual Report

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

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Wingham STP ECA 1040-9HAN94 issued May 30, 2014 and #3557-7UNPUR (Aug 11, 2009-Air)

The Following is a summary and discussion of the 2016 Wngham Sewage treatment plant operation and summary of compliance limits as set forth in the Wingham STP ECA 1040-9HAN94 Issued May 30 2014.

The Rated Capacity of the Treatment Unit is 3,400m3/day

Based on Raw Sewage Flows, the 2016 annual average flows were 2325m3/day which represents 68% of the annual 3400m3/day capacity. The maximum Peak Monthly average flow of 4584m3 a day occurred in March 2016 represents 135% of the capacity. The average monthly flows exceeded the average annual capacity of the plant for February, March and April.

Bypass Events

There were no Bypass events to report in 2016 at the Wingham sewage treatment plant

Compliance limits

The plant consistently removed 98% Biological Oxygen demand, 97.7% total suspended solids, 90% phosphorous and 97.2% 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 2016 operating year.

Maintenance

Routine maintenance was performed throughout the year, such as oil changes in gear drives and cleaning UV lights. UV lights will need consideration for updates/back-up unit as it is getting old and it makes it challenging to find parts.

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 and ammonia 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.

The raw sewage flowmeter measures the flow going to the treatment plant and is used to base dosages and treatment plant capacity. The final effluent flow meter measures flow to the UV lights and does not represent the hydraulic loading of the plant but rather is a sum of the flow through the plant and any lagoon discharge.Results of monitoring activities can e viewed on the monthly spreadsheets.

Calibration and Maintenance

There are two flowmeters that measure raw sewage in and the final effluent discharge volumes. The flowmeters are calibrated yearly by ICS instrumentation that certificates are 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 Wingham sewage treatment facility operations manual for reference and historically have been adequate to maintain compliance.

Biosolids Generated

A total of 9798 cubic meters was removed from cell 1 in 2015.

Complaints

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

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

Report prepared by Veolia Water Canada

Wingham Sewage Treatment Plant — 2016 Data Summary

Flows	January	February	March	April	May	June	July	August	September	October	November	December	Total(m3)	Avg(m3)	Max(m3)	% Cap
Flows	74316	106622	142108	120402	61751	51322	46115	51073	49220	44835	39470	56308	843542	2311	142108	68.0
Average	2397	3808	4584	4013	2040	1711	1488	1648	1641	1446	1316	1816	27907	2326	4584.13	134.8
Max/d	4580	11077	13626	8680	2832	2367	1896	2220	2205	2764	1675	4605			13626	
By-passing																
Type																
Est. Volume																
CBOD																
SS																
TP																
TKN																
E. Coli																
Raw Sewage																
CBOD	79	59	84	67	81	109	174	109	112	136	50	139				
SS	75	81	112	90	75	117	197	135	146	163	67	142				
TP	2.93	2.35	2.46	1.93	1.63	2.57	3.79	3.20	3.48	3.37	1.79	3.05				
TKN	24.25	16.55	14.60	14.60	14.50	24.10	31.35	29.40	32.10	36.60	18.00	29.05				
pH	7.90	7.70	7.85	7.69	7.44	7.67	7.42	7.50	7.65	7.65	7.42	7.78				
Alkalinity	380	254	301	340	328	341	352	351	352	195	333	376				
Final Effluent																
CBOD	2.0	2.0	2.0	2.0	2.0	2.0	2.5	2.0	2.0	2.0	2.0	2.0				
SS	2.0	2.5	5.0	2.0	3.5	2.0	2.5	2.0	3.0	2.0	3.5	2.5				
Ammonia	0.10	0.10	0.13	0.10	0.10	0.10	0.10	0.20	0.10	0.10	0.35	0.15				
TKN	0.50	0.50	0.53	0.50	1.45	0.95	0.50	0.50	0.50	0.50	0.80	0.75				
TP	0.26	0.19	0.20	0.15	0.25	0.44	0.36	0.29	0.35	0.33	0.34	0.27				
NO2	0.03	0.07	0.03	0.03	0.11	0.09	0.03	0.05	0.03	0.03	0.06	0.12				
NO3	12.55	8.26	5.75	8.38	13.50	17.10	18.70	13.30	14.50	12.41	12.36	13.20				
pH	7.67	7.82	7.96	7.97	7.57	7.66	7.44	7.42	7.57	7.71	7.77	7.78				
E. Coli	2	2	2	2	2	11	183	7	2	6	3	17				
H_2S>		0.00				0.00			0.00			0.00				
Alkalinity	257	254	231	243	219	178	179	161	196	195	157	187				

Avg	Max.	%Removal
100	174	98.0
116	197	97.7
2.71	3.79	89.6
23.76	36.60	97.2
7.64	7.90	

2.04	2.50
2.71	5.00
0.14	0.35
0.67	1.45
0.28	0.44
0.06	0.12
12.50	18.70
7.69	7.97
20.00	183
0.00	0.00
204	257

Wingham STP Compliance Summary 2016

	January	February	March	April	May	June	July	August	September	October	November	December		
Max/day m3	4580	11077	13626	8680	2832	2367	1488	1648	1641	1446	1316	1816	**13626**	m3
Av Day Flow	**3400**	**3400**	**3400**	**3400**	**3400**	**3400**	**3400**	**3400**	**3400**	**3400**	**3400**	**3400**	**3400**	m3
Actual	2397	3808	4584	4013	2040	1711	1488	1648	1641	1446	1316	1814	**2325**	m3
Comp. Y/N	Y	**N**	**N**	**N**	Y	Y	Y	Y	Y	Y	Y	Y		
CBOD&TSS	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**Total Kg**	
CBOD	2.0	2.0	2.0	2.0	2.0	2.0	2.5	2.0	2.0	2.0	2.0	2.0	24.50	
TSS	2.0	2.5	5.0	2.0	3.5	2.0	2.5	2.0	3.0	2.0	3.5	2.5		
Loading Kg	**51**	**51**	**51**	**51**	**51**	**51**	**51**	**51**	**51**	**51**	**51**	**51**		
CBOD Kg	4.79	7.62	9.17	8.03	4.08	3.42	3.72	3.30	3.28	2.89	2.63	3.63	56.55	
TSS Kg	4.79	9.52	22.92	8.03	7.14	3.42	3.72	3.30	4.92	2.89	4.60	4.53	79.79	
Comp. Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		
Tot P	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**		
Actual	0.26	0.19	0.20	0.15	0.25	0.44	0.36	0.29	0.35	0.33	0.34	0.27		
TP Load Kg	**1.7**	**1.7**	**1.7**	**1.7**	**1.7**	**1.7**	**1.7**	**1.7**	**1.7**	**1.7**	**1.7**	**1.7**		
Act. TP Kg	0.62	0.70	0.93	0.58	0.51	0.74	0.53	0.48	0.57	0.47	0.44	0.48	7.07	
Comp. Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		
H2S	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**		
Actual(<)		0.02				0.02			0.02			0.02		
Comp. Y/N		Y				Y			Y			Y		
pH	**6.5 - 9.0**	**6.5 - 9.0**	**6.5 - 9.0**	**6.5 - 9.0**	**6.5 - 9.0**	**6.5 - 9.0**	**6.5 - 9.0**	**6.5 - 9.0**	**6.5 - 9.0**	**6.5 - 9.0**	**6.5 - 9.0**	**6.5 - 9.0**		
Actual	7.67	7.82	7.96	7.97	7.57	7.66	7.44	7.42	7.57	7.71	7.77	7.78		
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	2	2	2	2	2	11	183	7	2	6	3	17		
Comp. Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		
NH 3&4	**3**	**3**	**3**	**3**	**0.8**	**0.8**	**0.8**	**0.8**	**0.8**	**0.8**	**3**	**3**	**Total Kg**	
Actual	0.10	0.10	0.13	0.10	0.10	0.10	0.10	0.20	0.10	0.10	0.35	0.15		
NH 3&4 Load/d	0.24	0.38	0.61	0.40	0.20	0.17	0.15	0.33	0.16	0.14	0.46	0.27	3.53	
Limit kg/d	10.7	10.7	10.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	10.7	10.7		
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	0.001	0.001	0.002	0.001	0.001	0.002	0.001	0.002	0.001	0.001	0.003	0.001		
Comp. Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		

2016		Wingham STP Sludge Metals Summary							
Parameter									
Date		Jan 20-16	Apr 13-16	Jul 20-16	Oct 12-16			Average	
Total Solids		6730	14900	7880	8090			9400	
NH 3&4		2.7	6	8.1	3.9			5.175	0.049
TKN		374	1180	381	355				
NO2		0.2	0.2	0.2	0.3			0.225	0.002
NO3	<	0.3	0.3	2.9	0.5			1.000	0.009
NO2+NO3	<	0.3	0.3	2.9	0.8			1.075	0.010
Arsenic	<	0.1	0.1	0.1	0.1			0.100	0.001
Cadmium	<	0.005	0.01	0.005	0.005			0.006	0.000
Cobalt		0.02	0.04	0.02	0.02			0.025	0.000
Chromium		0.22	0.48	0.36	0.39			0.363	0.003
Copper		5.4	9	6.8	7.7			7.225	0.068
Mercury		0.277	0.015	0.026	0.013			0.083	0.001
Potassium		27	58	23	29			34.250	0.000
Molybdenum		0.08	0.14	0.05	0.07			0.085	0.001
Nickel		0.42	0.26	0.17	0.15			0.250	0.002
Phosphorous		130	290	170	170			190.000	1.786
Lead		0.2	0.3	0.2	0.2			0.225	0.002
Selenium	<	0.1	0.1	0.1	0.1			0.100	0.001
Zinc		4.2	4.9	3.7	4.1			4.225	0.040
EC cfu DW		1589896	315436	697970	1248455			962939.250	
EC cfu WW		1070000	470000	550000	1010000			775000.000	