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Wingham Sewage Treatment Plant

2021 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 2021 Wingham 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 2021 annual average flows were 1928m3/day which represents 56.71% of the 3400m3/day capacity. The maximum Peak flow of 3247m3 occurred in March which represents 95.5% of the capacity.

Bypass Events

There were no bypass or overflow events that occurred during 2021 from the Wingham sewage treatment plant.

Compliance limits

The plant consistently removed 98.2% Biological Oxygen demand, 97.8% total suspended solids, 90.2% phosphorus and 96.5% total kjeldahl nitrogen which is well within the range of removals for a tertiary sewage plant and consistent with previous yearly operations.

Operational problems

In 2021, there were 2 non-compliances on lab results for e.coli in the months of November and December. Shayne Finlay the MECP was notified of the non-compliances.

Maintenance

Routine maintenance was performed throughout the year, such as oil changes in gear drives and cleaning UV light.

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 phosphorus to determine adequate ferric chloride dosage 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 flow meter 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 be viewed on the monthly spreadsheets.

Calibration and Maintenance

There are two flowmeters, raw sewage in and the final effluent discharge volumes. The flowmeters are calibrated yearly; this year raw sewage was calibrated by Iconix Waterworks, as well as the final effluent, the 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 were removed from cell 1 in 2015. Approximately 615m3 of sludge went into the lagoon in 2021, we would estimate approximately the same amount for 2022. Our estimate for 2022 is based on no foreseen increase or decrease in flows, we did not dispose of any sludge in 2021. Estimating the solids volume in a lagoon situation is nearly impossible when there are no terms of reference for the % solids concentration. Many factors go into the volume such as how well the sludge compacts, water depth in the lagoon, temperature, wind action, solids quality, etc. Veolia will be looking at options to do a sludge survey of the lagoons to try to determine when the Sludge will need to be hauled.

Complaints

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

Tables

Attached in the report are: data summary, compliance summary, sludge metals summary, bypass and overflow summary.

Wingham Sewage Treatment Plant							2021									
Flows	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**	**Total(m3)**	**Avg(m3)**	**Max(m3)**	**% Cap**
Flows	58048	44271	100670	70871	52336	52889	55790	52990	59771	62714	87511	82326	780187	2137	100670	62.9
Average	1873	1581	3247	2362	1726	1763	1800	1709	1992	2023	2917	2651				
Max/d	2586	2379	8027	3285	2413	2844	4374	3010	4972	2833	9424	5885165			5885165	
Raw Sewage														Avg	Max.	%Removal
CBOD	88	161	92	103	127	133	119	152	143	85	82	85		114	161	98.2
SS	129	136	97	83	132	185	126	173	257	103	60	93		131	257	97.8
TP	1.02	2.73	1.81	2.22	4.03	3.64	1.98	2.50	4.39	1.60	1.19	2.48		2.47	4.39	90.2
TKN	12.00	21.80	17.67	19.65	31.80	34.65	16.85	21.87	35.50	15.15	11.65	15.50		21.17	35.50	96.5
pH	7.62	4.00	3.00	7.65	7.61	7.59	7.27	7.49	7.47	7.64	7.62	7.64		6.88	7.65	
Alkalinity	335	215	327	349	367	369	327	346	385	208	361	326				
Final Effluent																
CBOD	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.5	4.0		2.04	4.00	
SS	2.5	3.0	2.3	2.0	2.0	4.0	2.5	2.3	2.0	3.0	3.0	6.0		2.89	6.00	
Ammonia	0.15	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.55	0.40		0.18	0.55	
TKN	0.65	1.10	1.23	0.50	0.50	0.28	0.75	0.77	0.50	0.55	1.10	0.95		0.74	1.23	
TP	0.12	0.12	0.13	0.21	0.21	0.35	0.30	0.38	0.15	0.26	0.32	0.36		0.24	0.38	
NO2	0.04	0.03	0.05	0.03	0.03	0.04	0.05	0.03	0.08	0.03	0.06	0.04		0.04	0.08	
NO3	14.50	17.35	10.23	13.50	13.10	14.18	17.05	17.77	14.35	11.74	7.03	7.92		13.22	17.77	
pH	7.70	7.81	7.71	7.79	7.61	7.53	7.42	7.46	7.77	7.73	7.65	7.94		7.68	7.94	
E. Coli	24	10	13	9	2	0	3	16	17	57	273	710		94.61	710	
H2S>	0.02					0.00			0.00			0.00		0.01	0.02	
Alkalinity	240	215	237	226	160	135	185	194	272	208	250	231		213	272	

Wingham STP Compliance Summary						2021							
	January	February	March	April	May	June	July	August	September	October	November	December	
Max/day m3	1873	1581	3247	2362	1726	1763	1800	1709	1992	2023	2917	2656	
Av Day Flow	**3400**	**3400**	**3400**	**3400**	**3400**	**3400**	**3400**	**3400**	**3400**	**3400**	**3400**	**3400**	
Actual	1873	1581	3247	2362	1726	1763	1800	1709	1992	2023	2917	2651	
Comp. Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
													Total Kg
CBOD&TSS	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	
CBOD	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.5	4.0	24.50
TSS	2.5	3.0	2.3	2.0	2.0	4.0	2.5	2.3	2.0	3.0	3.0	6.0	
Loading Kg	**51**	**51**	**51**	**51**	**51**	**51**	**51**	**51**	**51**	**51**	**51**	**51**	
CBOD Kg	3.75	3.16	6.49	4.72	3.45	3.53	3.60	3.42	0.00	4.05	7.29	10.61	54.07
TSS Kg	4.68	4.74	7.58	4.72	3.45	7.05	4.50	3.99	3.98	6.07	8.75	15.91	75.43
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	0.12	0.12	0.13	0.21	0.21	0.35	0.30	0.38	0.15	0.26	0.32	0.36	
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	0.22	0.19	0.43	0.48	0.36	0.62	0.54	0.64	0.29	0.52	0.93	0.94	6.17
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	7.70	7.81	7.71	7.79	7.61	7.53	7.42	7.46	7.77	7.73	7.65	7.94	

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	24	10	13	9	2	0	3	16	17	57	273	710	
Comp. Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	
													Total Kg
NH 3&4	**3**	**3**	**3**	**0.8**	**0.8**	**0.8**	**0.8**	**0.8**	**0.8**	**0.8**	**3**	**3**	
Actual	0.15	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.55	0.40	
NH 3&4 Load/d	0.28	0.16	0.32	0.24	0.17	0.18	0.18	0.17	0.20	0.40	1.60	1.06	4.97
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	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.003	0.006	0.006	0
Comp. Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	

The 273/100ml E.Coli result and the 710/100ml E.Coli result were reported to our MECP Inspector as an ECA Exceedance and is explained in further detail above in the report under Operational Problems.

2021		Wingham STP Sludge Metals Summary				
Parameter						
Date		Jan 19-21	Apr 13-21	July 6-21	Oct 26-21	Average
Total Solids		6070	12200	4400	4510	6795
TKN		332	658	232	214	
NH 3&4		5.2	13.3	3.1	1	5.65
NO2		0.5	0.5	0.6	0.8	0.6
NO3	<	0.3	0.3	2.8	2.8	1.55
NO2+NO3		0.5	0.5	3.4	3.6	2
Arsenic	<	0.1	0.1	0.1	0.1	0.1
Cadmium	<	0.005	0.006	0.005	0.005	0.00525
Cobalt	<	0.01	0.02	0.01	0.01	0.0125
Chromium		0.19	0.36	0.17	0.26	0.245
Copper	<	2.5	5.6	2.2	2.6	3.225
Mercury	<	0.002	0.005	0.003	0.002	0.003
Potassium		23	40	14	16	23.25
Molybdenum	<	0.05	0.07	0.05	0.05	0.055
Nickel	<	0.09	0.18	0.07	0.08	0.105
Phosphorous		91	170	72	79	103
Lead	<	0.1	0.2	0.1	0.1	0.125
Selenium	<	0.1	0.1	0.1	0.1	0.1
Zinc	<	2	4	2	2	2.5
EC cfu DW		1861614	1262295	1590909	2217295	1733028.25
EC cfu WW		1130000	1540000	700000	1000000	1092500

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Table 1 BYPASS AND OVERFLOW EVENTS WINGHAM STP

FACILITY NAME:	Wingham Sewage						YEAR:	2021					
										Sample Results			
Date (dd/mm/yy)	Location	Type (see legend)	Start Time	Duration (hours)	Volume (1000m3)	M/E	Disinfection (Y/N)	Treatment (Y/N)	Reason Code*	BOD5 (mg/L)	SS (mg/L)	TP (mg/L)	E.Coli (/100ml)
Legend													
							*Reason Codes:						
PB = Primary Bypass			M = Measured		Y = Yes		1 = Heavy Precipitation			6 = Process Upsets			
SB = Secondary Bypass			E = Estimated		N = No		2 = Spring Runoff			7 = Power Outages			
STPO = Sewage Treatment Plant Overflow							3 = Infiltration			8 = Unknown			
CSO = Combined Sewer Overflow							4 = Mechanical/Equipment Failure			9 = Other, please comment below.			
SSO = Sanitary Sewer Overflow							5 = Pipe Failures(break/leak/plugged)						
STWO = Satellite Treatment Works Overflow													
Comments: There were no Bypass events or Over flows During 2021													

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