

Wastewater Treatment Facility

249 Bradford Street

2022 Annual Monitoring Report

Environmental Compliance Approval 0284-B2ML52

March 28, 2023

The City of Barrie
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Review and Sign-Off

WwTF 2022 Annual Report Approved by:	Signature
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Overview and Summary

The City of Barrie's Wastewater Treatment Facility (WwTF) is located at 249 Bradford Street and in 2022 operated under Amended Environmental Compliance Approval No. 0284-B2ML52 ("the ECA") dated August 24th, 2018, issued by the Ministry of the Environment, Conservation and Parks (MECP). Compliance for 2022 will be evaluated against Section 11 reporting requirements of the ECA; a copy of which is in Appendix "A".

On December 19, 2019, the City applied for an amendment to Amended Certificate of Approval (Air) 1316-5MKTGU dated October 23, 2006 (the "Air ECA") to update operations of air pollution control equipment, noise levels and dispersion modelling. Amended ECA # 6401-C2FKWA was issued June 2, 2021 (see copy in Appendix "A"). The City continued to upgrade the operations and maintenance manual as is required by this approval.

Sewage treatment processes included:

- Mechanical bar screens,
- Grit removal,
- Primary settling,
- Selector tank,
- High purity oxygen activated sludge treatment (UNOX process),
- Dual point chemical addition for removal of phosphorus and suspended solids,
- Secondary settling,
- Nitrification by Rotating Biological Contactors (RBC),
- Sand filtration,
- Ultraviolet disinfection,
- Treated effluent is discharged to Kempenfelt Bay through a staged diffuser,
- Biosolids are separated from the liquid sewage and are processed via dual digestion of sludge (aerobic & anaerobic), and
- Methane gas generated from this process is 'scrubbed' and used for co-generation of heat and electricity to offset plant energy demands.

The effluent average daily flow of 48.8 megalitres per day (MLD) of sewage was treated representing approximately 64.2% of the plant's rated capacity of 76 MLD. The maximum daily effluent flow was 68.4 MLD on December 31, 2022, due to precipitation and snowmelt runoff accessing the sanitary collection system.

The WwTF continued to accept small volumes of imported sewage from the Royal Victoria Hospital's temporary COVID-19 field hospital throughout the year. Starting in June, domestic septic and holding tank waste was regularly received from residential, industrial/commercial, and educational facility sources throughout Simcoe County. A total of 5,294.5 m³ of septage waste was deposited at the WwTF's Septage Receiving Facility from four haulage companies; Pump My Tank, Innisfil Disposal, Regional Septic, and Region of Huronia Environmental Services (ROHES).

The WwTF was in full compliance with all effluent concentration and loading limits. In addition, the plant met all ECA objectives on a monthly average basis, with few daily exceptions.

In November of 2020, the City began submitting Municipal Utility Monitoring Program (MUMP) reports on-line using the new digital reporting system. This was continued in 2022.

Over the reporting period, the WwTF functioned exceptionally well, producing high quality treated effluent as indicated by minimal effluent nutrient levels. The effluent phosphorous monthly average concentrations all met the 0.18 mg/L monthly average compliance limit, and the effluent annual average phosphorous concentration of 0.024 mg/L (rounded to 0.02 mg/L) surpassed the record low from the previous year and met the Lake Simcoe Phosphorus Reduction Strategy limit of 0.1 mg/L. The final effluent phosphorous annual loading was 427 kg/year which is 15% of the annual compliance loading limit of 2,774 kg. The average ammonia-N effluent concentration based on all samples was 0.41 mg/L and all ammonia-N limits, objectives and loadings were consistently met.

Some effluent pollutants such as total phosphorus, dissolved phosphorus, cBOD₅ and *E. coli* were often below analytical detection limits.

The WwTF had no sewage overflows or bypasses. One (1) odour complaint at the WwTF was received on September 12th. It was investigated by WwTF staff, Barrie Fire Services, as well as the City of Barrie Environmental Officers, and no source or odour was confirmed. The information was communicated to the MECP and concluded that no further action was required.

The reporting sections in this report follow the specific reporting requirements of Section 11(4) of the ECA. Copies of relevant ECAs, approvals and Notices of Modifications are contained in Appendix "A"; communications and documents related to approvals are contained in Appendix "B" and work summaries are contained in Appendix "C".

Effluent reporting statistics such as monthly average or yearly average concentrations in this report are calculated as per Schedule F of the ECA (i.e. arithmetic mean of all single sample results obtained during a month or calendar year respectively).

Reporting Section 11(4) (a): Summary/Interpretation of Influent & Imported Sewage Quality and Flows and Historical Trends

WwTF influent sampling was conducted as per the requirements of the ECA and results are presented in Table 1:

Table 1 WwTF 2022 Monthly Average Influent Concentrations and Total Flows

Month (2022)	Total Effluent Flow (m ³)	BOD ₅ (mg/L)	Total Suspended Solids (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Total Phosphorus (mg/L)	Dissolved Reactive Phosphorus (mg/L)	NH ₃ -N (mg/L)
January	1,535,843	171	215	41.01	4.5	1.32	25.22
February	1,382,791	192	245	44.59	5.1	1.30	27.89
March	1,600,215	189	263	46.91	5.1	1.24	29.10
April	1,601,963	169	230	42.61	4.7	1.05	25.93
May	1,558,042	171	236	42.30	4.8	1.03	26.63
June	1,534,844	165	222	33.66	3.2	1.00	22.40
July	1,445,808	164	265	40.22	5.2	0.95	22.25
August	1,470,952	200	245	40.30	4.8	0.97	24.36
September	1,413,369	163	232	35.32	4.5	0.94	20.75
October	1,424,732	200	254	44.08	5.4	1.06	26.15
November	1,352,915	203	264	44.19	5.1	1.11	26.91
December	1,479,431	191	242	43.55	4.8	1.22	28.19
Average	1,483,409	181	243	41.56	4.8	1.10	25.48
Sum	17,800,904						

Table 1 sampling and flow monitoring data was previously sent to MECP in monthly R1 and R2 MUMP reports. Influent concentrations are typical of domestic sewage.

Imported sewage originating from the Royal Victoria Regional Health Centre field hospital was received throughout the year, transported by Pump My Tank. Beginning in June, domestic septic tank and holding waste was accepted from residential, industrial/commercial, and educational facility sources. Samples were taken from the WwTF receiving tank. The monthly volumes, results of sampling and analyses are shown in Table 2.

Table 2 Total Monthly Volumes Results of Sampling and Analysis of Imported Sewage

Date (2022)	Monthly Vol. Received (m ³)	BOD ₅ (mg/L)	TSS (mg/L)	TKN (mg/L)	TP (mg/L)
January	55.4				
Jan. 12	Sample	153	385	91.8	10.9
February	41.8				
Feb. 7	Sample	366	730	103	19.5
March	50.6				
Mar. 9	Sample	104	95	81.4	12.9
Mar. 21	Sample	115	137	94.2	13.6
April	43.2				
Apr. 20	Sample	108	122	93.7	11.2
May	53.5				
May 4	Sample	94.4	111	90.0	12.5
May 09	Sample	102	117	90.8	12.1
June	261.7				
Jun. 14	Sample	77.8	78	83.4	11.3
Jun. 21	Sample	582	982	158	21.1
July	678.4				
Jul. 11	Sample	492	1100	272	44.9
Jul. 18	Sample	1020	2370	155	30.0
August	890.3				
Aug. 2	Sample	1150	10100	273	55.7
Aug. 8	Sample	1080	2050	229	27.1
Aug. 16	Sample	2140	5000	286	60.8
Aug.22	Sample	1010	1450	144	21.9
September	925.3				
Sept. 1	Sample	681	1330	184	27.4
Sept. 13	Sample	2150	7360	784	60.6
October	1092.4				
Oct. 13	Sample	3320	7660	412	66.4
Oct. 19	Sample	3070	7300	345	64.6
November	758.3				
Nov. 16	Sample	2890	10900	446	104
Nov. 18	Sample	1990	7640	370	68.0
Nov. 23	Sample	1600	10900	507	79.5
Nov. 30	Sample	3240	8080	443	67.9
December	343.7				
Dec. 14	Sample	2170	5940	320	46.6
Dec. 15	Sample	2120	4380	263	39.4
Dec. 20	Sample	1600	9820	406	77.1
Total	5194.5				

Volumes of imported sewage increased from 382 m³ in 2021 to 5,194.5 m³ in 2022, due to the acceptance domestic septic tank and holding tank waste from residential, industrial/commercial, and educational facilities beginning in June. The imported sewage was received from four haulage companies Pump My Tank, Regional Septic, Innisfil Disposal, and ROHES. Nearly 95% was contributed by Pump My Tank with a total hauled volume of 4922.6 m³, Regional Septic at 221.5 m³, Innisfil Disposal at 22 m³, and ROHES at 28.4 m³ respectively. The imported sewage sampling data indicate that parameters range from that of dilute sewage to very strong sewage values possibly due to the nature of the waste, storage time and biological action in the receiving tank, sampling procedures, or a combination thereof. All imported sewage received full treatment and did not create any process issues or concerns. At minimum, one (1) sample per month was taken from January through April from the receiving tank. Starting in May sampling increased to at least two (2) samples per month to weekly due to the increased amount of waste from various sources and strength of the received volume on a regular basis. In 2023, the sampling schedule is set for Monday of each week unless Monday falls on a statutory holiday in which case sampling will be performed on the Wednesday of that week.

Individual Sewage Waste Manifests were not included in this report but are available upon request.

Six years of historical trending of WwTF influent concentrations and flow data is shown in Figures 1- 4 below:

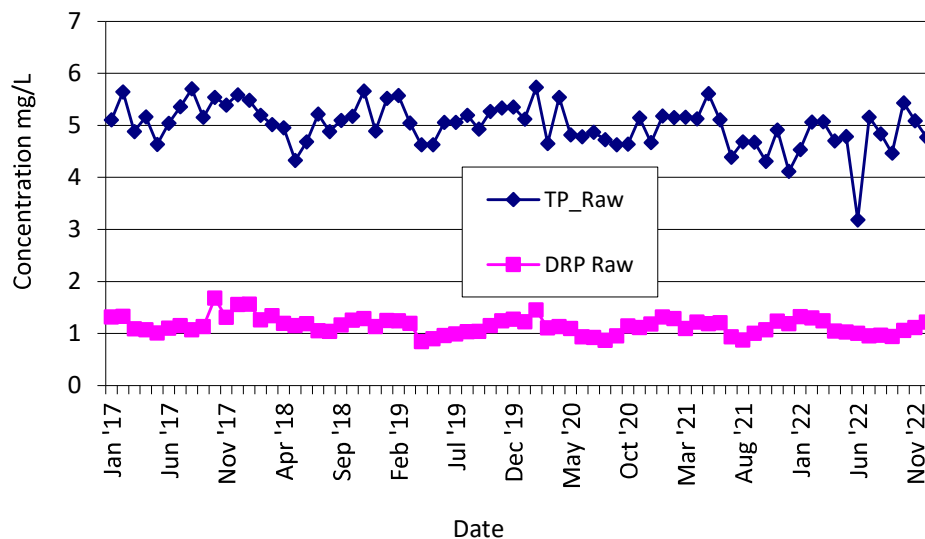


Figure 1 WwTF Average Monthly Influent Total Phosphorus and Dissolved Reactive Phosphorus (mg/L)

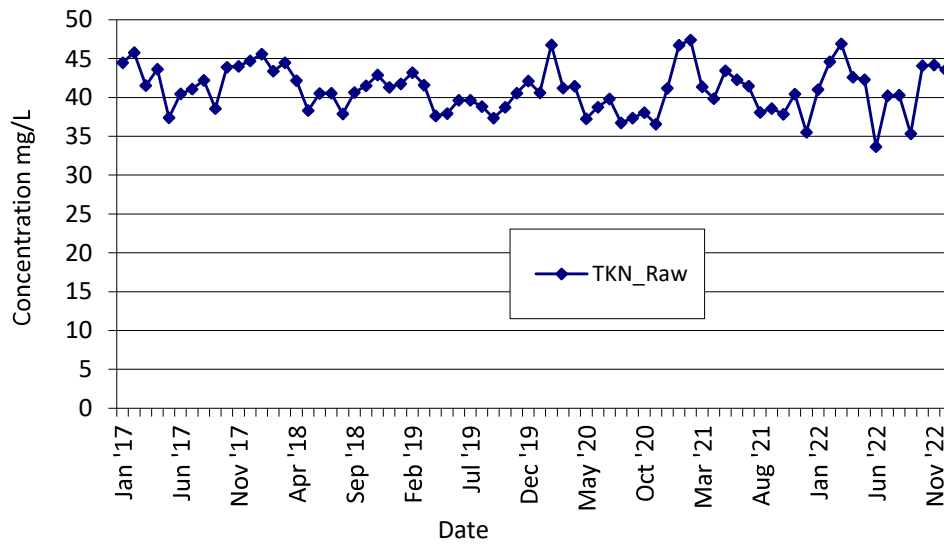


Figure 2 WwTF Average Monthly Influent Total Kjeldahl Nitrogen (mg/L)

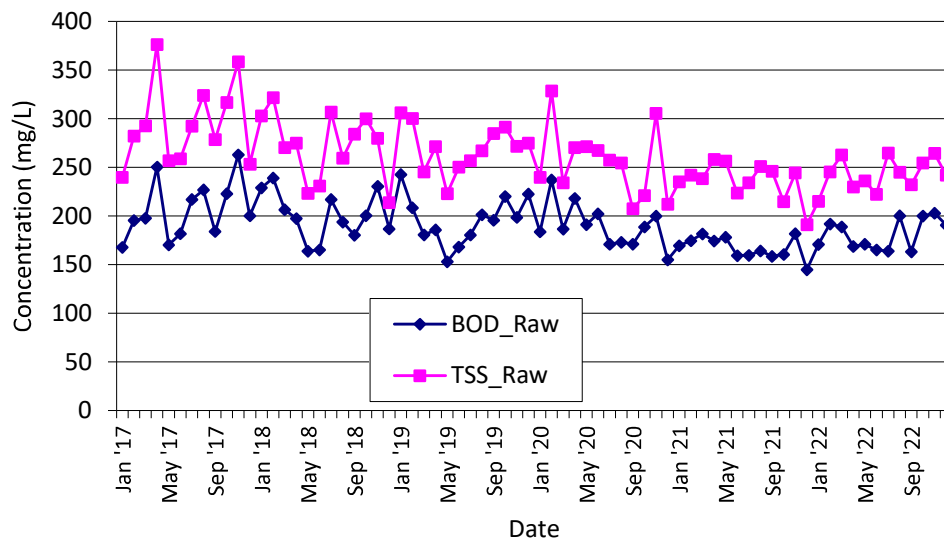


Figure 3 WwTF Average Monthly Influent Five-Day Biochemical Oxygen Demand and Total Suspended Solids (mg/L)

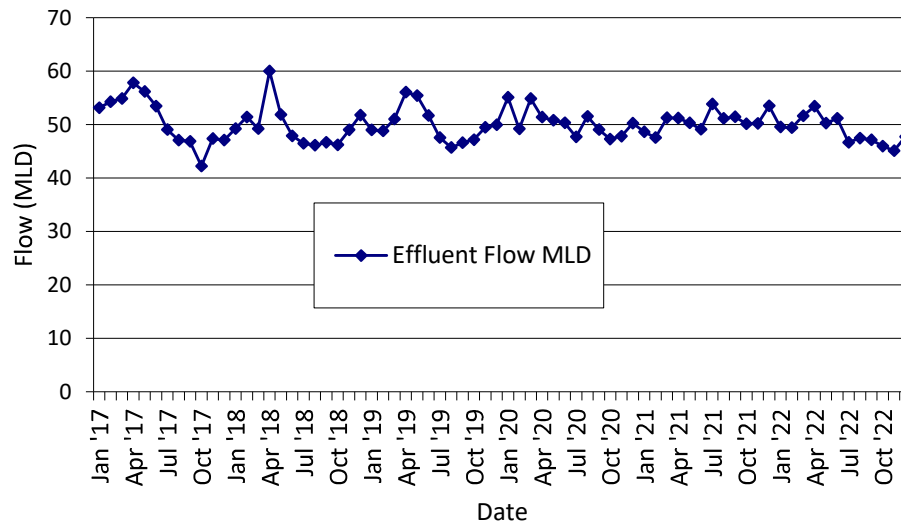


Figure 4 WwTF Average Monthly Effluent Flow (MLD)

Table 3 compares average daily effluent flow per month with maximum daily effluent flow for that month. A maximum daily effluent flow of 68.4 MLD occurred on December 31, due to above freezing temperatures and heavy snowfall and rain. This resulted in rain and melt water runoff accessing the sanitary collection system.

Table 3 WwTF 2022 Monthly Average and Monthly Maximum Daily Effluent Flows (MLD)

Month (2022)	Average Daily Flow (MLD)	Maximum Daily Flow (MLD)
January	49.543	53.572
February	49.385	58.519
March	51.620	59.929
April	53.399	56.168
May	50.259	54.155
June	51.161	64.147
July	46.639	49.869
August	47.450	54.059
September	47.112	53.399
October	45.959	49.159
November	45.097	52.306
December	47.724	68.363
Average	48.779	

Reporting Section 11(4) (b): Summary and Interpretation of All Final Effluent Monitoring Data and Comparison to Design Objectives and Limits

In computing averages on final effluent parameters, results are often below the analytical detection limits of laboratory methods. Detection limits for target parameters are as follows: total phosphorus (TP), 0.02 mg/L; dissolved reactive phosphorus (DRP), 0.01 mg/L; carbonaceous biochemical oxygen demand (cBOD₅), 2.0 mg/L and ammonia-N, 0.03 mg/L. E. coli counts of <1 CFU/100 mL are recorded as 1.0 CFU/100 mL to allow calculation of the geometric mean. E. coli is monitored in two locations; the North UV effluent channel and the South UV effluent channel. The higher monthly average E. coli result is used for comparison with regulatory requirements.

The City of Barrie assumes that non-detect results are at the limit of detection for averaging purposes. Hence, the average effluent concentrations stated for cBOD₅, TP, dissolved reactive P and E. coli are usually an over-estimation of the actual effluent concentration. Effluent ammonia-N concentrations are usually above detection limits.

The fact that effluent target parameters are frequently below detection reflects the City of Barrie's commitment to continuous improvement and an effluent quality that far surpasses standards of a secondary treatment facility. The WwTF design objectives were based on achieving 0.15 mg/L effluent total phosphorus and 3 - 8 mg/L ammonia-N depending on season. WwTF effluent meets and exceeds these objectives on average by an order of magnitude for ammonia and by almost an order of magnitude for total phosphorus.

Tables 4, 5 and 6 summarize all effluent monitoring results, flow rates and loadings and evaluate compliance with all effluent limits, objectives and loadings stipulated in the ECA. As noted above, where concentrations of pollutants are below detection limits the concentration is assumed to be at the limit of detection.

Table 4 shows that no monthly average effluent concentration **limits** were exceeded.

Table 4 WwTF 2022 Monthly Effluent Concentrations vs Effluent Limits

Month (2022)	Avg. cBOD ₅ (mg/L)	Avg. TSS (mg/L)	Avg. NH ₃ - N (mg/L)	Avg. NH ₃ - N (mg/L)	Avg. Total P (mg/L)	Log Avg. E. coli CFU per 100 ml	Avg. pH	Min. pH	Max. pH
January	2.0	2.3		0.50	0.02	1.00	6.74	6.40	6.98
February	2.0	2.4		0.71	0.02	1.00	6.72	6.56	6.88
March	2.0	5.1		0.82	0.05	1.00	6.67	6.50	6.77
April	2.0	2.6		0.19	0.02	1.08	6.67	6.55	6.75
May	2.0	2.0		0.50	0.02	1.00	6.62	6.45	6.80
June	2.0	2.1	0.14		0.03	1.00	6.61	6.51	6.75
July	2.0	1.1	0.07		0.02	1.00	6.55	6.46	6.62
August	2.0	2.3	0.08		0.02	1.00	6.54	6.42	6.76
September	2.0	1.9	0.12		0.02	1.00	6.69	6.63	6.79
October	2.0	1.5	0.15		0.02	1.08	6.75	6.63	6.91
November	2.0	1.8		1.14	0.02	1.00	6.68	6.47	6.85
December	2.0	1.9		0.47	0.02	1.00	6.49	6.19	6.70
ECA Sch. "C" Limit	15	15	4	10	0.18	200		6.0	9.5
Number of ECA Limit exceedances	0	0	0	0	0	0		0	0

Table 5 and Table 6 evaluate compliance with effluent concentration **objectives** for the WwTF. In Table 6 non-compliant values are highlighted in orange. In terms of meeting monthly effluent objectives on a daily basis, two (2) results (March 28th of 16 mg/L and June 13th of 11 mg/L) exceeded the TSS objective of 10 mg/L, two (2) results (0.15 mg/L on March 7th, and 0.31 mg/L on March 28th) exceeded the TP objective of 0.12 mg/L, and thirty-three (33) results (see Table 6), the lowest being 6.19, did not meet the minimum pH objective of 6.5. The elevated concentrations of TSS and TP are a result of higher-than-normal flow due to rain and snowmelt runoff entering the sanitary collection system, causing solids to accumulate in secondary clarifiers and carry over into the tertiary filters. This, in turn, increases solids in final effluent.

Low effluent pH is attributed to the high degree of biological treatment at the WwTF and insufficient natural buffering capacity of the sewage. Since the final pH sampling point is hundreds of meters upstream from the effluent diffuser the actual pH of the final discharge may be higher than that measured. This would be due to carbon dioxide de-gasification which takes place naturally in the effluent. The monthly average effluent pH did not fail to meet the objective of 6.5 for any month.

Table 5 WwTF 2022 Compliance Summary with Effluent Objectives

	Avg. cBOD ₅ (mg/L)	Avg. TSS (mg/L)	Avg. NH ₃ - N (mg/L)	Avg. NH ₃ - N (mg/L)	Avg. Total P (mg/L)	Log Avg. E. coli CFU per 100 ml	Min. pH	Max. pH
ECA Sch. "B" Objective	10	10	3	8	0.12	100	6.5	8.5
Number of ECA Objective exceedances*	0	2	0	0	2	0	33	0

*Compliance with Concentration objectives is based on any single sample.

Table 6 WwTF Individual Daily Non-Compliances with Effluent Objectives

Date	SS Final (mg/L)	cBOD Final (mg/L)	pH Final	TP Final (mg/L)	NH3 Final (mg/L)
1/16/2022			6.42	0.02	
1/22/2022			6.40	0.02	
1/29/2022			6.46	0.02	
1/30/2022			6.45	0.02	
3/7/2022	8.00	2.00	6.73	0.15	1.55
3/28/2022	16.00	2.00	6.74	0.31	0.92
5/4/2022	3.00	2.00	6.49	0.02	0.12
5/5/2022	2.00	2.00	6.45	0.02	0.12
5/11/2022	3.00	2.00	6.49	0.02	0.09
6/13/2022	11.00	2.00	6.58	0.03	0.18
7/12/2022			6.50	0.02	0.06
7/19/2022			6.49	0.03	0.06
7/22/2022			6.46	0.02	
8/3/2022	2.00	2.00	6.42	0.02	0.04
8/4/2022	2.00	2.00	6.49	0.02	0.09
8/10/2022	3.00	2.00	6.48	0.02	0.04
8/12/2022			6.49	0.02	
8/22/2022	8.00	2.00	6.43	0.04	0.12
8/29/2022	2.00	2.00	6.49	0.02	0.09
11/23/2022			6.47		
11/24/2022	2.00	2.00	6.47	0.02	0.24
11/27/2022			6.48	0.03	
12/7/2022	1.00	2.00	6.49	0.02	0.04
12/11/2022			6.48	0.02	
12/13/2022			6.48	0.03	0.05
12/14/2022	2.00	2.00	6.49	0.02	0.05
12/16/2022			6.42	0.02	
12/17/2022			6.39	0.02	
12/18/2022			6.45	0.02	
12/20/2022			6.48	0.02	0.04
12/21/2022	2.00	2.00	6.42	0.02	0.05
12/22/2022	4.00	2.00	6.40	0.02	0.07
12/23/2022			6.44	0.02	
12/28/2022	3.00	2.00	6.42	0.02	4.50
12/29/2022	2.00	2.00	6.35	0.02	0.56
12/30/2022			6.29	0.02	
12/31/2022			6.19	0.02	

Table 7 summarizes pollutant loadings and ECA loading limits. In Table 7, the Monthly Average Daily Effluent Loadings = Monthly Average Effluent Concentrations (from Table 4) x the corresponding Average Daily Flow for that month (from Table 3). ECA Schedule C Loading Limits are shown, and the number of exceedances summarized at the bottom of the table. Hence there were **no exceedances** of monthly loading limits. None of the monthly average flows exceeded the plant rated capacity of 76 MLD.

Table 7 WwTF 2022 Monthly Average Daily Effluent Loadings

Month (2022)	Avg. Daily Flow (MLD)	cBOD ₅ (kg/d)	TSS (kg/d)	NH ₃ - N (kg/d)	NH ₃ -N (kg/d)	Total Phosphorus (kg/d)
January	49.543	99	114		25	1.0
February	49.385	101	118		35	1.2
March	51.620	103	262		42	2.4
April	53.399	107	138		10	1.1
May	50.259	101	101		25	1.1
June	51.161	99	110	7		1.4
July	46.639	93	51	3		0.9
August	47.450	95	108	4		1.0
September	47.112	94	91	6		1.1
October	45.959	92	67	7		0.9
November	45.097	90	82		52	1.0
December	47.724	95	91		22	1.0
ECA Schedule "C" Limit	76*	1140	1140	304	760	13.7
Number exceeding Schedule "C" Limit	0	0	0	0	0	0

*Rated Capacity

Table 8 summarizes compliance with the Lake Simcoe Phosphorus Reduction Strategy (LSPRS) Compliance Limits set forth in Schedule C of the ECA. The average annual effluent concentration of total phosphorus is the arithmetic mean of all single sample results. The total flow is the sum of monthly total flow volumes. The annual loading is the product of these two quantities. The result is that the WwTF met effluent phosphorus concentration and loading compliance limits set by the ECA and the LSPRS.

Table 8 WwTF 2022 Final Effluent Quality Comparison with Lake Simcoe Phosphorus Reduction Strategy Total Phosphorus Loading Limits

Effluent Parameter	Annual Average TP Concentration (mg/L)	Annual Total TP Loading (kg/yr.)
WwTF (2022)	0.02	427
ECA Schedule "C" Limit	0.1	2,774
Number exceeding Schedule "C" Limit	0	0

Table 9 shows that monthly and yearly average effluent un-ionized ammonia concentrations are, on average, more than an order of magnitude below Provincial Water Quality Objectives.

Table 9 Average WwTF Effluent Un-ionized Ammonia Concentrations

Month (2022)	Monthly Average Effluent Un-ionized Ammonia (ug/L)
January	0.74
February	0.86
March	0.93
April	0.22
May	0.64
June	0.18
July	0.09
August	0.13
September	0.24
October	0.31
November	1.56
December	0.27
Average	0.51
PWQO	20

Quarterly sampling of leachate-related parameters in final effluent began in the third quarter of 2018 when the requirement was imposed in the new ECA. The results sampling and analysis are shown in Table 10:

Table 10 WwTF 2022 Sampling and Analytical Results for Leachate Parameters in Final Effluent

Effluent Parameter	Detection Limit (mg/L)	Result (Feb 15, 2022)	Result (May 10, 2022)	Result (Aug. 08, 2022)	Result (Nov. 28, 2022)
Bis (2-ethyhexyl) phthalate	0.0020 (0.0010 Aug)	<0.002 mg/L	<0.002 mg/L	<0.001 mg/L	<0.002 mg/L
Boron	0.050 (2.0 Aug)	0.140 mg/L	0.197 mg/L	<20 mg/L	0.265 mg/L
Cobalt	0.007 (0.10 Aug)	<0.007 mg/L	<0.007 mg/L	<0.10 mg/L	<0.007 mg/L
Magnesium	0.2 (10.0 Aug)	16.9 mg/L	17.5 mg/L	20 mg/L	14.5 mg/L
Manganese	0.020(0.10 Aug)	0.041 mg/L	0.049 mg/L	<0.10 mg/L	0.038 mg/L
Potassium	0.5 (10.0 Aug)	14.5 mg/L	14.2 mg/L	10.0 mg/L	15.5 mg/L
Strontium	0.020	0.355 mg/L	0.420 mg/L	0.359 mg/L	0.332 mg/L

All samples were analyzed by E3 Laboratories Inc. for quarters 1,2, and 4 except that Bis (2-ethyhexyl) phthalate analysis was sub-contracted to ALS Canada Ltd. The 3rd quarter samples were subcontracted entirely to Paracel Laboratories Ltd, due to staffing issues related to Covid-19 protocols and other internal issues. The subcontracted samples were analyzed with detection limits above that are required by E3. The City of Barrie is procuring a new Lab Services Contract in 2023 and will include terms that all subcontracted samples must meet detection limits consistent with those specified in the contract by the primary laboratory.

Except for strontium, the leachate parameter values appear to be consistent with expected contributions from domestic water use and are consistent with 2018, 2019, 2020 and 2021 sample results. The typical value of strontium in domestic sewage is unknown however it is a common element in the earth's crust and has widespread commercial uses.

Effluent acute lethality monitoring was conducted quarterly in accordance with the federal Wastewater Systems Effluent Regulations (WSER). Sampling dates were January 20, April 13, July 14, and October 27. All four quarterly effluent samples were determined to be not acutely lethal according to methods EPS 1/RM/14 and EPS 1/RM/13.

Laboratory data sheets have been omitted but are available upon request.

Figures 5 and 6 offer a 13-year overview of WwTF final effluent nutrient level trends which demonstrate the ongoing success and adequacy of the sewage works in protecting the Lake Simcoe aquatic habitat. The average annual effluent concentration shown is the arithmetic mean of all single sample results for the year.

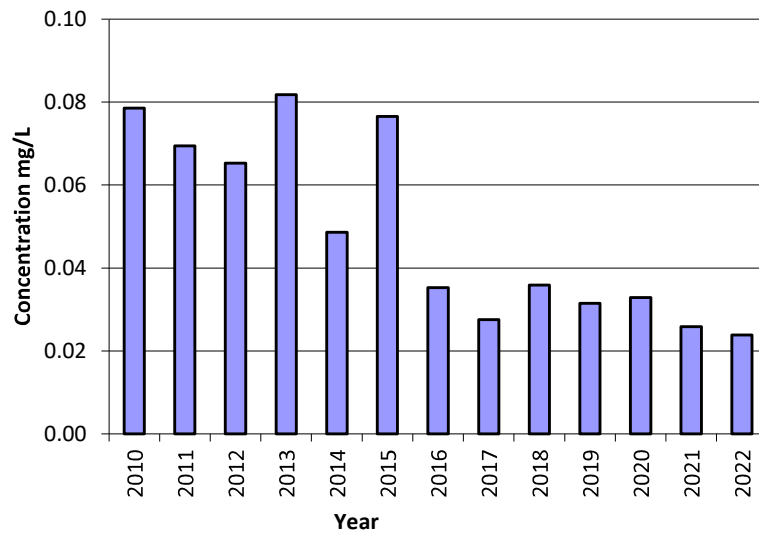


Figure 5 WwTF Average Annual Effluent Total Phosphorus Concentration (mg/L)

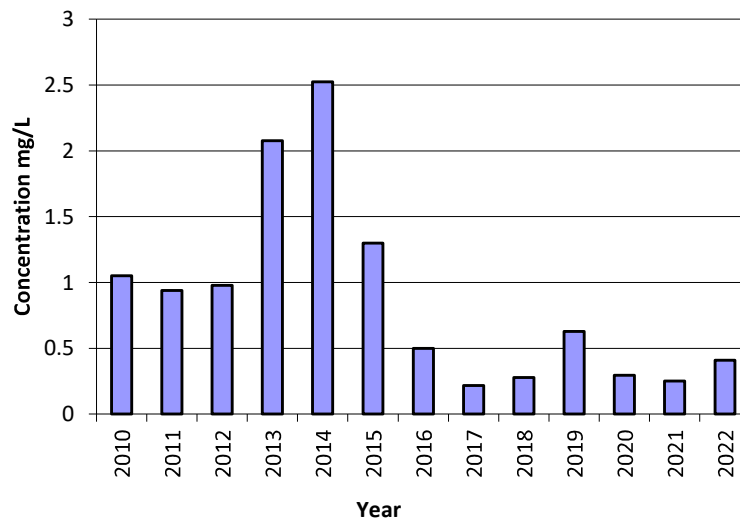


Figure 6 WwTF Average Annual Effluent Ammonia-N Concentration (mg/L)

It is evident from the figures and tables above that the Barrie WwTF achieved aggressive removal of two nutrients – total phosphorus and ammonia-N. These target parameters have the potential to cause toxicity and eutrophication in the aquatic environment of Lake Simcoe.

In summary, final effluent from the Barrie WwTF was of very high quality in comparison with provincial and federal regulatory standards.

Reporting Section 11(4) (c): Summary of Deviations from Monitoring Schedule

The City of Barrie sampling schedule meets or exceeds the minimum sampling requirements stipulated by Schedule “D” of the ECA. For example, the City monitors effluent phosphorus daily (7 days per week) including weekends and holidays. Although this ensures that the City meets its sampling requirements, it raises the number of potential exceedances of effluent objectives which are applied daily for purposes of compliance. However, it also provides a more accurate estimate of pollutant concentrations and loadings.

Regarding the four (4) sampling schedules prescribed in Schedule D, the City’s performance was as follows:

- Influent Sampling: Minimum weekly sampling requirements 100% completed in accordance with the ECA.
- Imported Sewage: Imported sewage was received 12 months of the year and a minimum of 12 monthly samples were taken and analyzed. However, the sample collection dates were not consistent. Starting in May sampling frequency was increased due to the increased amount of waste from various sources. In 2023 samples are scheduled to be taken weekly on Monday or Wednesdays in the event Monday is a holiday.
- Effluent Sampling: Minimum weekly sampling requirements 100% completed in accordance with the ECA.
- Leachate Related: Four quarterly samples 100% completed in accordance with the ECA.

Section 9 of the ECA requires that a sampling schedule for Schedule D parameters be created and rotated annually except where sampling is conducted 3 or more times per week. The sampling schedule that was utilized for Schedule D influent and effluent parameters in 2022 is shown in Table 11.

Table 11 WwTF Schedule 'D' Sampling Schedule

Day	Total Suspended Solids	CBOD ₅	BOD ₅	E. coli	Total Kjeldahl Nitrogen	Total Ammonia Nitrogen	Nitrate as Nitrogen	Total Phosphorus	Dissolved Reactive Phosphorus
Influent									
Monday	X		X		X			X	X
Tuesday	X		X		X			X	X
Wednesday	X		X		X			X	X
Thursday	X		X		X			X	X
Friday									
Saturday									
Sunday									
Effluent									
Monday	X	X			X	X	X	X	X
Tuesday				X		X		X	X
Wednesday	X	X		X	X	X	X	X	X
Thursday	X	X		X	X	X	X	X	X
Friday								X	
Saturday								X	
Sunday								X	

Deviations from the above schedule resulted from staff shortages on long weekends. For weekly influent and effluent (except effluent TP) sampling, the Monday sample was not obtained on long weekends that included Family Day, Good Friday, Victoria Day, Canada Day, the civic holiday, Labour Day and Christmas. However, minimum regulatory sampling requirements were maintained at all times.

Hauled sewage sampling was not scheduled in 2022 as receipt of hauled sewage was irregular. However, in 2023 the hauled sewage tank will be sampled on Monday of every week regardless of when deliveries are received. On holiday Mondays the sample will be shifted to Wednesday.

In 2022, E. coli sampling was changed from Monday to Thursday. Friday is not a good sampling day for E. coli samples or composite samples as several of the parameters tested have a 48-hour holding time and our external lab is unable to analyze them within that timeframe.

Leachate parameters were sampled as per the schedule in the 2021 report. In 2023 the Leachate-related sampling schedule will be rotated as shown in Table 12.

Table 12 Final Effluent Leachate Related Regulatory Sample Schedule 2023

Quarter	Date	Parameters
First	Wednesday, January 25, 2023	Boron, Cobalt, Magnesium, Manganese, Potassium, Strontium, Bis (2-ethylhexyl) Phthalate
Second	Thursday, April 27, 2023	
Third	Thursday, July 27, 2023	
Fourth	Thursday, October 26, 2023	

Reporting Section 11(4) (d): Summary of All Operating Issues and Corrective Actions

There were no major sewage treatment operating challenges as is evidenced by the performance data in Reporting Section 11(4) (b). Some significant issues that arose included:

1. COVID-19 precautions continued to place restrictions on meetings, training and staff communications, resulted in staggered shifts, increased expenditures on personal protective equipment and generally hindered workflow for parts of 2022, but did not affect final effluent quality.
2. The hauled sewage tank was sampled monthly, but due to increased volumes and strength it was adjusted to weekly in May of 2022 and will continue in 2023 to more accurately monitor process.
3. The cleaning of primary digester #2 revealed that it had to be re-lined. The digester has remained out-of-service since September 7, 2021, a contract is anticipated to be awarded and completed in 2023.
4. Filter #2 has had multiple problems with track, festoon cable, and sand. The sand and all the diffusers were changed out, scheduled the festoon cable to be replaced, and installed a new actuated front gate. Will be going back on-line early 2023.
5. There were issues with wet grit, causing excess water in the bin, making it difficult to transport by the contractor causing them to deny transport. A Hydro-Vac service was hired to evacuate the grit and transport to landfill. Process adjustments were made to the grit system, which reduced the amount of liquid. The outside Roll-off bin service was eliminated and replaced with the internal resources for disposal of grit.
6. In December, there were issues with above allowable LEL levels in the aerobic blending tanks, causing the process areas to be monitored 24 hours per day by plant staff. This incurred overtime for two (2) personnel working 10:30pm until 7am for one night. It was determined that the elevated LEL's and air locked pumps were the result of a faulty check valve allowing anaerobic sludge to backflow from Primary Digester #3. The valve was repaired, and the issue was resolved.
7. In December, Primary Digester #3 pumped down below set points due to an issue with the level monitoring sensor. This caused digester gas to enter the heat exchanger system and resulted in plant staff monitoring the system for 24 hours per day for a period of three (3) days, until the gas was completely removed from the heat exchanger pumps and piping. The issues with the level controls were addressed immediately and no further issues were noted.

See also ss. 11(4)(j) (Complaints) and 11(4)(k) (Abnormal events).

Reporting Section 11(4) (e): Normal and Emergency Repair Summary on Major Equipment Items

6643 work orders were created in 2022; 452 of which were classified as repairs and completed. A detailed summary of completed repair work orders is provided in Appendix “C”.

Several structures required extensive and costly replacement of brick veneers. The secondary digester had brick veneers removed in 2021 as part of a contract to resurface it and other areas of the plant. This project reached total completion on December 22, 2022.

Reporting Section 11(4) (f): Summary of Effluent QA/QC Program

The City of Barrie currently uses a member of the Canadian Association for Laboratory Accreditation (CALA), E3 Laboratories Inc., (“E3”), for analysis of all samples taken for regulatory reporting purposes. The following chapter is excerpted from E3’s Lab Quality Manual dated September 1st, 2015, and describes QA/QC procedures that were in place for 2022.

7.0 QUALITY CONTROL

Quality Control Samples are used, as appropriate, to ensure that the analytical process is in control. The various types of quality control samples and the characteristics they monitor are summarized as follows:

Type of Quality Control Samples	Characteristic Monitored
Standards/Lab QC	verify
Reference	calibration/stability
Material*	method accuracy
Duplicate	method precision
Samples Analyte	method recovery
Spike Reagent	contamination
Blank	(chemical)
Matrix Spike	sample recovery

* Reference materials may be either certified reference materials or can be prepared by the laboratory using the same compound as the calibration standards but using a different lot# or manufacturer of the chemical.

These Quality Control samples are defined as follows:

Standards/ Lab QC: A solution prepared by the use of a primary standard or purchased pre-made from a supplier who certifies its concentration. The analyst performing the applicable tests for which that standard will be used usually prepares standards. Standard preparation is documented in the Standard Logbook.

Certified Reference Material: A sample that contains the analytes of interest in concentrations that are known from a previous in-house analysis or provided by an outside source. In-house reference material preparation is documented in the Standard Logbook.

Analyte Spike: A sample prepared by adding a measured amount of a reference standard to reagent water or sample.

Reagent Blank: A sample containing laboratory high quality water which is analyzed as though it were a sample.

The quality control results for each run are monitored and verified by the analyst against the established control limits, which have been determined for the tests and/or specific parameters analyzed. The Laboratory Manager reviews quality control results on a regular basis. The values outside the established limits are automatically flagged by LTMS to warn the analysts of the outlier results. The Laboratory Manager will review all flagged data. The analyst in consultation with the Laboratory Manager reviews raw data and the steps followed

in the test procedure and take the appropriate action(s) to identify and resolve the situation.

If any quality control sample results fall outside the control limits, the acceptance or rejection of the results is at the discretion of the analyst in consultation with the Laboratory Manager. The Laboratory Manager has the final authority to accept or reject results.

If necessary, the analysis will be repeated, if sufficient sample remains. The Laboratory Manager will review the repeated test results.

7.1 Proficiency Testing and Inter-/Intra-laboratory Studies

An important part of our Quality Assurance program is the participation in proficiency testing and inter- and intra-laboratory studies. The Laboratory Manager ensures that the lab participates in external proficiency testing.

These include proficiency samples for CALA and other PT sample suppliers.

If a proficiency test study provides results that cause doubt concerning test method performance, the Laboratory Manager may initiate a Quality Audit. Based on the audit findings, corrective action is initiated.

The results of this audit and any actions taken shall be documented and maintained on file by the Laboratory Manager.

7.2 Control Charts and Control Limits

7.2.1 Control Charts

Control charts are used, as appropriate, to monitor and evaluate the quality of the QC data generated. Such charts relate on-going test method performance to either statistically defined (± 3 STD) or protocol defined control limits. The values that are outside these limits are automatically or manually flagged to notify the analyst of the deviation. The supervisor or senior analyst designated to the co-ordination/supervision of the respective test is responsible to ensure the continual monitoring of the method's performance. Prescribed control charting practices are contained in the method SOP. All control charts are maintained by the LIMS.

7.2.2 Control Limits

Control limits, or other specified limits, when exceeded, are automatically or manually flagged.

The analyst responsible for the test or reviewing the data is then expected to intervene and document the reason for the non-conformity or outlier result. This is realized through the LIMS or recorded in the appropriate logbook. Action limits may be assigned by the Laboratory Manager for results that impact the customer or regulatory limits.

Reporting Section 11(4) (g): Calibration and Maintenance on Influent, Imported Sewage and Effluent Monitoring Equipment

Influent/effluent monitoring consists of using automatic samplers and in-line pH/temp meters. In-line pH/temp meters are calibrated using the services of the external contractor Lacey Inst. These are checked or calibrated as per Table 13. In addition, effluent monitoring equipment consists of using various flow meters used to record flow volumes from which final effluent flow is calculated, that are calibrated annually by external contractor Franklin Empire. A summary of these calibration activities is shown in Table 13.

Table 13 Calibration Summary of Monitoring Equipment

Activity	Date (2022)	By
Calibrate hand-held temp/pH meter & check autosampler volumes	daily	operator
Clean and disinfect raw and final autosampler sample jugs	weekly	operator
Clean and disinfect raw and final autosampler sample tubing	monthly	operator
Calibrate in-line final temp/pH meter AIT_2156	monthly	Lacey Inst.
Calibrate Biosolids flow meter FIT_1969	Nov. 2	Franklin Empire
Calibrate Raw Sewage flow meters FIT0812_01/02/03/04/05/06	Oct. 19	Franklin Empire
Calibrate HPEW flow meter FIT_2157	Oct. 20	Franklin Empire
Calibrate WAS flow meter FIT_6145_01/02/03	Nov 2 & 3	Franklin Empire
Calibrate TWAS flow meter FIT 6162_01	Nov. 2	Franklin Empire
Calibrate Bioaugmentation tank flow meter FIT_1491	Oct. 20	Franklin Empire
Calibrate Grit tank flow meters FIT_2420_01/02/03/04	Oct. 20	Franklin Empire
Calibrate Septage tank flow meter FIT_1293	Nov. 3	Franklin Empire

Imported sewage was sampled and quantified manually; not automatically.

Calibration certificates and/or proof of calibration are available upon request.

Reporting Section 11(4) (h): Efforts Made in Meeting Effluent Objectives

The WwTF normally meets and surpasses all design objectives and the average annual daily flow has not reached 80% of design flow (=60.8 MLD). Efforts made in 2022 to maintain this high level of service included:

1. A major capital project is underway to implement membrane bioreactor (MBR) technology. This will enhance a continued ability to produce final effluent that will meet the effluent limit of 0.10 mg/L total phosphorus imposed by the LSPRS. The pre-design was complete, however the project has been converted to an Integrated Project Delivery and grouped with other conceptual upgrades. The consultant for final detailed design has been selected and is currently ongoing.

2. In 2015, under a Notice of Modification #2 to MECP the main alum addition point was moved from pre-aeration to post-aeration resulting in much better nutrient removal. This innovation resulted in a dramatic improvement in treatment and effluent quality. In 2021 installation of new alum pumps was commenced such that each secondary clarifier will have its own dedicated alum metering pump for better flow control. This project was the subject of a Notice of Modification of Sewage Works #2021-001 dated November 15, 2021 and signed by B. Araniyasundaran P. Eng., PMP, Director of Infrastructure, City of Barrie. This project reached substantial performance and was completed on May 20, 2022.
3. A dedicated process optimization engineer and analyst is kept on permanent staff.
4. The primary clarification process was optimized to produce a thicker primary sludge and reduce hydraulic loading rates on digesters. Another raw sludge pump will be added to provide operational flexibility and added redundancy (Notice of Modification of Sewage Works #2021-002 dated March 17, 2022)
5. Annual voluntary participation in national benchmarking (NWWBI) initiatives took place in 2022.
6. The Wastewater Operations Branch undertook a Hazard Identification and Risk Assessment study to predict and anticipate threats to wastewater operations. The study is ongoing.
7. Started the installation of additional Variable Frequency Drive (VFD) to more reliably achieve the required Return Activated Sludge rate. Project will continue into 2023.

Reporting Section 11(4) (i): Biosolids Volumes and Disposal Locations

Biosolids generated at the WwTF were transported to the Oro-Medonte Biosolids Storage Facility (BSF) or directly to appropriate agricultural land in accordance with the Nutrient Management Act. Supernatant from the BSF is returned on empty trucks to the WwTF for treatment. WESSUC Inc., the City's Biosolids contractor, conducted all biosolids land application activities and transported biosolids and supernatant between the WwTF, BSF and Non-Agricultural Source Material (NASM) application sites. Biosolids laboratory analysis and land application was completed in accordance with the Nutrient Management Act and O. Reg. 267/03.

Table 14 summarizes the volumes of biosolids and supernatant produced, hauled and volumes of biosolids land applied by month. The WwTF produced a total of 108,502 cubic meters (m³) of biosolids of which 44,225 m³ were applied directly to land and 64,276 m³ were sent to storage at the BSF. From the BSF, 50,375 m³ biosolids were applied to land while 22,872 m³ supernatant was returned to the WwTF. The amount of biosolids produced was reduced by approximately 20% from the previous year due to the primary clarification process being optimized to produce a thicker sludge. This initiative will continue in 2023.

Table 14 2022 Biosolids Haulage Volume Summary

Month (2022)	Plant to Field (m ³)	Plant to Storage (m ³)	Storage to Field (m ³)	Total from Plant (m ³)	Total to Field (m ³)	Supernatant Returned to WwTF (m ³)
January	0.00	9,216.30	0.00	9,216.30	0.00	4,494.50
February	0.00	8,685.27	0.00	8,685.27	0.00	6,497.00
March	0.00	9,618.53	0.00	9,618.53	0.00	5,473.50
April	4,045.13	6,455.98	5,745.49	10,501.11	9,790.62	3,737.00
May	6,483.88	2,716.00	7,210.55	9,199.88	13,694.43	1,335.50
June	4,349.35	4,851.94	6,323.55	9,201.29	10,672.90	0.00
July	4,485.44	3,780.72	4,547.37	8,266.16	9,032.81	0.00
August	7,434.53	1,291.28	10,690.19	8,725.81	18,124.72	0.00
September	6,941.03	3,157.81	6,429.21	10,098.84	13,370.24	0.00
October	5,995.33	2,404.70	2,702.44	8,400.03	8,697.77	0.00
November	4,491.01	3,556.45	6,727.01	8,047.46	11,218.02	0.00
December	0.00	8,541.50	0.00	8,541.50	0.00	1,335.00
Total	44,225.70	64,276.48	50,375.81	108,502.18	94,601.51	22,872.50

Table 15 below outlines the biosolids land application summary and identifies associated NASM Plan application sites, biosolids sources, total volume of biosolids applied and application dates.

Table 15 2022 Biosolids Land Application Summary

Site	Farmer	Farm Identification	NASMA	Expiry	Lot	Conc.	Township	Area Spread (ha)	Source to field			Total m3 to Applied	Dates Spread
									Barns	Barns Storage	Barns Tank Cleanout		
S11080	Robert Virgic	Snobs	24023	2028	8	3	Vaughan	104	579.17	486.87		1066.04	April 11
S11081	Robert Virgic	Joseph	24057	2028	27	2	Vaughan	302	935.32	1639.83		2575.15	April 12, 18, 18
S11089	Robert Virgic	Home	24029	2025	8	3	Vaughan	143	578.71	876.53		1455.24	April 18, 22
S11087	Robert Virgic	Home	24034	2028	9	10	Springwater	120	345.34	656.94		1002.28	April 21
S11034	Jim Drury	Imrick	24088	2028	15	1	Vaughan	353	1838.50	2385.32		4223.82	April 28, 30, 30
S12089	Terry Clark	Ramage	23103	2023	10	3	Cro-Medonte	297	1200.93	1844.38		3045.31	May 5, 10
S12089	Doug Strapp	Home	24122	2024	15	7	Cro-Medonte	132	481.05	926.03		1407.08	May 11, 12
S12049	Ed Polnowski	5th Line	24050	2028	18	5	Cro-Medonte	211	1542.19	1277.88		2820.07	May 13, 15, 18, 18
S12010	Andy McIlwain	Morison	24007	2028	17, 18	8	Cro-Medonte	288	2271.52	1544.88		3816.40	May 20, 24, 25, 26
S12053	Ed Polnowski	4th Line	24053	2028	25	5	Cro-Medonte	290	1291.82	2187.28		3479.10	May 30, 31, June 1
S12070	Terry Clark	Home Farm	23107	2023	28	2	Cro-Medonte	302	1291.03	2303.9		3594.93	June 2, 3, 4
S12027	Les Chalmers	Chalmers Farm	23847	2023	8	3	Cro-Medonte	207	927.41	1849.1		2776.51	June 23, 24, 25
S12098	Karl MacGregor	Home Farm	24339	2024	26, 27	4	Cro-Medonte	198	1483.81	849.69		2333.50	June 27, 28, 29
S12098	John Mathison	10th Line	24293	2024	13	10	Cro-Medonte	129	355.47	641.12		1006.59	June 30
S3003	Barry Chapin	Home Farm	25065	2028	24	10	Essex	5.2	885.75			885.75	July 6
S3024	Ted Corbett	Home Farm	24086	2023	23	8	Essex	2.9	355.44			355.44	July 7
S3049	Barry Upkin	Garry Dennis - Upkin	24320	2025	5	10	Essex	2.7	311.42			311.42	July 13, 14
S12106	Karl MacGregor	McCauley	25048	2028	4	2nd Range	Cro-Medonte	270	1840.85	2191.04		3831.89	July 19, 20, 21
S12018	Donna VanderHeyden	Home	24129	2025	12	5	Cro-Medonte	133	399.01	1023.32		1422.33	July 22
S12015	Chris Donovon	Home	24108	2025	13	11	Cro-Medonte	154	712.32	872.38		1584.7	July 28
S11078	Jordan Carson	Murray	24084	2025	8	1	Springwater	175	1024.28	1124.44		2148.72	July 29, August 2
S11078	Matt Priest	Gen Adams/Yenne	24519, 24001	2025, 2023	4, 5	9	Springwater	383	2002.89	2988.89		4991.78	August 3, 5, 6, 8
S11098	John Kapteyn	Vandenberg	24215	2028	12, 13	1	Springwater	234	887.7	1888.18		2775.88	August 10, 10
S3018	Roger Kell	Hayles	25105	2028	19, 20	9	Essex	135	1780.21			1780.21	August 12, 15, 16
S12094	Ed Polnowski	Kenny	24030	2023	9	2	Cro-Medonte	252			2501.1	2081.1	August 16, 17, 18
S3055	Roger Kell	Cochrane	24131	2023	19	9	Essex	112	1024.24	347.14		1371.38	August 18, 19, 20
S11018	Jamie Tufelmeier	Burton	25045	2028	8	5 North	Sewern	9.3	89.01	1022.35		1111.36	August 24, 25
S12048	Jim Partridge	Squire	24082	2028	8	16	Cro-Medonte	1408	946.18	778.44		1724.62	August 26, 27, 29, 30
S12036	Jim Partridge	Lucas	24319	2024	17	9	Cro-Medonte	213	1376.88	810.31	433.67	2620.86	August 31, September 1, 6
S11009	Jamie Tufelmeier	Oliver/Gutson/Needles	25046	2028	11, 12, 13	8 Northem	Sewern	5.5		552.83		552.83	September 7, 8, 9
S12054	Jenny Hubbert	Home	24123	2024	23, 24	9	Cro-Medonte	144	844.19	1027.8		1871.99	September 7, 8
S11063	Jim Partridge	Cumming	25175	2028	14, 15	5	Cro-Medonte	184	1598.42	1018.34		2616.76	September 9, 12, 14
Site	Farmer	Farm Identification	NASMA	Expiry	Lot	Conc.	Township	Area Spread (ha)	Source to field			Total m3 to Applied	Dates Spread
									Barns	Barns Storage	Barns Tank Cleanout		

S11063	Matt Priest	Brad Adams	24519	2025	5	9	Springwater	28.8	2405.37	1616.79		4022.16	September 16, 20, 21, 23
S11072	John Kapteyn	Scheer	24935	2026	13	2	Springwater	39.0	1958.7	3395.05		5353.75	September 29, 30, October 1, 3
S3044	Rob Henry	Morrison	24926	2026	8	9	Essex	8.2	1149.27			1149.27	October 4, 6, 7
S11086	John Kapteyn	Phelpston	25125	2026	10	2	Springwater	17.5	1336.26	786.86		2123.12	October 14, 15, 17, 18
S4011	Barry Jebb	McCauge	25136	2026	16	9	New Tecumseth	9.7	1193.53			1193.53	October 11, 14, 19, 20, 21
S4006	John Hall	Gene Lynch	25122	2025	16	13	New Tecumseth	12.5	1737.24			1737.24	Oct 24, 26, 27, 28, 31, Nov 1
S4030	Paul Langford	Murphy	25146	2026	16, 17	14	New Tecumseth	10.7	1552.92			1552.92	November 1, 2, 4, 7, 8
S12017	Kevin Elises	Koole/Bateman	24940	2026	26, 28	4	Oro-Medonte	34.7	1023.6	4518.80		5542.40	November 8, 9, 10, 11, 12
S12078	Kevin Elises	Sanderson	23713	2023	24	4	Oro-Medonte	14.9	578.91	1539.03		2117.94	November 12, 14
S11099	Kevin Elises	Clark	24949	2026	15	1	Oro-Medonte	6.6	534.34	401.37		935.71	November 15
S3041	Lou Bellwood	Rita's	25249	2026	9	31	Essex	1.4	178.07			178.07	November 25
S11002	Leo Moreau	Home/Stone	23455 & 23458	2022	18	4	Springwater	8.6	400.58	267.80		668.38	Nov 29
							TOTAL	775.86	44225.70	47041.03	3334.77	94601.50	

Reporting Section 11(4) (j): Complaint Summary and Resolution

The WwTF received one (1) odour complaint on September 12, 2022. A summary of events is outlined below.

- On Monday, September 12th, a resident was driving with family on Bradford Street past the WwTF and noticed an unbearable sewage odour that affected their eyes and throats both at 2:40pm and at 4:30pm. She stated that they affected by the odour for several hours afterwards.
- At approximately 4:30pm, she called Service Barrie to report the odour and called 911 to report what she believed was a methane leak.
- At 4:50pm Barrie Fire and Emergency Services (BFES) attended the site, met with operations staff and investigated. There were no unusual odours, the plant was operating normally, and BFES determined there was no issue.
- The CoB Environmental Compliance Officer on-call also went to the WwTF and noticed no appreciable odour.
- On Tuesday, September 13th, WWOB performed a thorough investigation of our facility and confirmed that all processes that could produce any sort of odour and the odour control unit itself were operating properly.
- During the afternoon of the 13th, Martin Shaw, Supervisor of Wastewater Technical Services called the resident to confirm details. Once the WWOB investigation was complete, he called the resident again to confirm that the WwTF was operating normally, and that if she smells anything in the future that she may contact us directly.
- On Wednesday, September 14th, Mr. Shaw notified the MECP that we had received an odour complaint and outlined the details of both the complaint and our actions taken.

It was concluded through correspondence with the MECP that there was no further action required on this matter.

Reporting Section 11(4) (k): Bypass/Overflow/Abnormal Events

There were no overflows or bypasses from the WwTF in 2022.

Reporting Section 11(4) (l): Status of Notices of Modification

In 2015, under a Notice of Modification #2 to MECP the main alum addition point was moved from pre-aeration to post-aeration resulting in much better nutrient removal. This innovation resulted in a dramatic improvement in treatment and effluent quality. In 2021 installation of new alum pumps was commenced such that each secondary clarifier will have its own dedicated alum metering pump for better flow control. A Notice of Modification of Sewage Works #2021-001 dated November 15, 2021 and signed by B. Araniyasundaran P. Eng., PMP, Director of Infrastructure, City of Barrie. The project reached substantial completion on May 20, 2022. Correspondence associated with the project completion and a copy of the Substantial Performance Certificate are attached in Appendix B.

Notice of Modification of Sewage Works #2021-002 dated October 13, 2021 and signed by G. Jorden was issued to install and operate a 6th raw sludge pump to the existing gallery of 5 pumps. The new pump is identical in size and capacity as the existing 5 pumps (13L/s at 12 m TDH) and was added for purposes of redundancy. The 6th pump allows 2 pumps to be dedicated to each of 3 primary clarifiers. As of December 31, 2022 construction was ongoing.

Copies of Notices of Modification are attached in Appendix A.

Reporting Section 11(4) (m): Summary of Efforts Re: Procedure F-5-1

The objective of Guideline F-5 appears to be in promoting secondary treatment of sewage as a minimum level of treatment. This involves meeting certain effluent criteria stipulated in the procedure, preventing upsets and breakdowns and avoiding overflows and bypasses. The WwTF also far exceeded the secondary effluent criteria in Procedure F-5-1. Although the WwTF was designed to meet secondary treatment standards it easily meets and consistently exceeds the Advanced Treatment standards set by Procedure F-5-1 (BOD=10 mg/L, TSS = 5 mg/L and TP=0.3 mg/L) as demonstrated in Table 4.

This section summarizes various strategies the City of Barrie currently uses to avoid overflows, bypasses, upsets and breakdowns:

- Routine bi-weekly cleaning of all sand filters using sodium hypochlorite.
- Routine weekly cleaning of WwTF raw wet well and pump station wet wells
- Check of all pump stations typically at least 2 times per week for pump run hours, alarms, float conditions etc.
- Routine daily inspections of all WwTF critical equipment.
- Routine quarterly cleaning of pump station wet wells and float alarms
- Balancing flows and sludge levels between tanks on a daily basis
- Using good engineering practice to design and operate the WwTF and pump stations
- Using the wet well and sewer system to equalize flows and prevent bypasses and overflows
- Using ultrasonic level detectors in tanks to automatically control pump rates
- 24/7 automated tank level monitoring with redundant level detection systems
- Using SCADA systems and controls on all critical wastewater infrastructure
- Expansion of SCADA access stations throughout the WwTF and at some Sewage Pumping Stations to allow Operations staff to respond to alarms and potential issues more efficiently.
- Maintaining redundant backup generators at WwTF in case of power failure
- Maintaining backup generators in larger pump stations.
- Weekly testing of WwTF standby generators, transfer switches and switchgear
- Annual cleaning and inspection of high voltage equipment, transformers etc.
- Using a remote dialing system connected to SCADA to alarm a standby operator on call 24/7
- Using electronic security measures at pump stations and entry doors at WwTF
- Permanent staffing of an in-house Optimization Section one senior optimization engineer and one analyst
- Maintaining a computerized work management system which tracks and prioritizes maintenance and repairs
- Maintaining and enforcing a sewer use by-law
- Providing ample funding for repairs and upgrades
- Twinning all force mains at pump stations for redundancy
- Maintaining a separated sewer system
- Undertaking infiltration and inflow studies
- Maintaining sufficient staffing and training
- Sampling at multiple process locations in the WwTF to have a good understanding of plant process and pinpoint potential problems
- Maintaining an in-house laboratory and two lab technicians for redundancy and responsiveness
- Ongoing study to evaluate new wastewater equalization facilities
- Supplying all operators with cell phones to facilitate communications
- Conducting routine condition assessments of infrastructure
- Minimizing solids carryover in secondary effluent to keep filters clean
- Maximizing nitrification in aeration basins to minimize RBC solids going to sand filters

For more innovations that the City of Barrie is undertaking to ensure the highest quality of effluent please refer to Reporting Section 11(4) (h).

It is difficult to attach a discrete cost to each bullet above due to overlap, the generality of some costs and the frequency that the costs are incurred. Most items fall within the annual operating budget of the WwTF which remains at approximately \$16 million per year. Some items fall within capital works projects while others comprise capital engineering or planning projects.

Reporting Section 11(4) (n): Changes or Updates to Schedules for Proposed Works

There were no uncompleted Proposed Works for 2022.

2022 WwTF Annual Report - March 2023 - Part 1

Final Audit Report

2023-03-29

Created:	2023-03-29
By:	Meghan Thorn (Meghan.thorn@barrie.ca)
Status:	Signed
Transaction ID:	CBJCHBCAABAAb5zSyMDIUnFpOoP8y3chU0wMowg7TLZ6

"2022 WwTF Annual Report - March 2023 - Part 1" History



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Agreement completed.

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Appendix "A": Environmental Compliance Approvals



Ministry of the Environment, Conservation and Parks
Ministère de l'Environnement, de la Protection de la nature et des Parcs

AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 0284-B2ML52
Issue Date: August 24, 2018

The Corporation of the City of Barrie
70 Collier St
Post Office Box, No. 400
Barrie, Ontario
L4M 4T5

Site Location: City of Barrie Wastewater Treatment Facility
249 Bradford St Reference Plan 51R-11568
City of Barrie, County of Simcoe

You have applied under section 20.2 of Part II.1 of the Environmental Protection Act, R.S.O. 1990, c. E. 19 (Environmental Protection Act) for approval of:

usage and operation of existing municipal sewage works, for the treatment of sanitary sewage and disposal of effluent to Lake Simcoe via a Sewage Treatment Plant (City of Barrie Wastewater Treatment Facility) and Final Effluent disposal facilities as follows:

Classification of Collection System: Nominally Separate Sewer System

Classification of Sewage Treatment Plant: Secondary

Design Capacity of Sewage Treatment Plant

Design Capacity with All Treatment Trains in Operation	Prior to Completion of Construction of All Proposed Works	Upon Completion of Construction of All Proposed Works
Rated Capacity	76,000 m ³ /d	76,000 m ³ /d



Page 1 - NUMBER 0284-B2ML52

Influent, Imported Sewage and Processed Organic Waste

Receiving Location	Types
In Collection System	Sanitary Sewage/Septage/Holding Tank Waste/Portable Toilet Waste/Leachate/Pretreated Leachate/Pretreated Industrial Wastewater
At Sewage Treatment Plant	Septage/Holding Tank Waste/Portable Toilet Waste/Leachate

Proposed Works:

Secondary Treatment Systems

- Biological Treatment
 - relocate existing three (3) mixers within the selector tank at different location within the tank.
 - installation of three (3) new mixers within the selector to increase the number of mixers to six (6) in within the selector.

Sludge Management System

- Sludge Digestion
 - Primary Digesters
 - combine the two existing 100 kW circuits of the 200 kW existing heat exchanger to serve primary digester No.3 into one.
 - installation of two (2) new heat exchangers to serve primary digester No.3, each having a capacity of approximately 300 kW.

Existing Works:

Sanitary Sewage Pumping Stations

Raw Sewage Pumping Station

- three (3) inlet overflow channels into the wet well with manually raked bar screens.
- five (5) raw sewage pumps and one (1) standby pump rated at a nominal capacity of 34,560 m³/d with a discharge flow measurement device.

Secondary Pumping Station

- six (6) pumps, each rated at a nominal capacity of approximately 35,000 m³/d.

City of Barrie Wastewater Treatment Facility

Influent Sewers

- two (2) 1050 mm diameter inlet sewers to the Preliminary Treatment System;

Imported Sewage Receiving Facilities

- one (1) 300 m³ capacity (active volume) equalization/pretreatment hauled sewage holding compartment equipped with coarse bubble diffused aeration system, two (2) 7.5 kW positive displacement air blowers and two (2) submersible pumps, each rated at approximately 7 L/s against 4.2 m TDH discharging to the WTF influent sewer.
- one (1) in-line grinder capable of handling hauled sewage flowrate of approximately 28 L/s.

Biosolids Supernatant Compartment and Bioaugmentation Compartment

- one (1) approximately 500 m³ capacity (active volume) biosolids supernatant holding compartment equipped with one (1) rail mounted submersible propeller type mixer and three (3) submersible pumps, each rated at approximately 3 L/s against 5.0 TDH discharging to the WTF influent sewer.
- one (1) 132 m³ capacity (active volume) bioaugmentation holding compartment equipped with two (2) submersible pumps, each rated at approximately 76 L/s against 11 m TDH discharging to the WTF primary clarifier effluent. Also included are piping for enhanced nitrification.

Preliminary Treatment System

- Screening
 - 2 multi-rake bar screens (12.7 mm stainless steel mechanically cleaned bar screens), each coupled with a screenings washer compactor to reduce the quantity of organics captured in the screened material, designed to handle up to a peak instantaneous flow of 250,100 m³/d combined.
- Grit Removal
 - four (4) covered aerated grit tanks, each capable of handling approximately 130 m³ nominal liquid capacity.
 - four (4) horizontal screw conveyors to transport settled grit collected in aerated grit tanks for grit tanks (Nos. 1, 2, 3 and 4) conveyors, each having a rated capacity of approximately 0.5 m³/hr at

10% loading.

- four (4) horizontal, centrifugal screw impeller grit pumps, each having a normal operating rated capacity of approximately 13 L/s at 7.0 m Total Dynamic Head (TDH).
- three (3) grit blowers (2 duty, one standby), each rated at approximately 430 m³/hr.
- two (2) grit classifiers, each with two (2) hydrocyclones designed for a grit quantity of 10 to 100 mL grit/m³ wastewater and feed flow rate to each cyclone of approximately 13 L/s at 8.5m TDH.

Influent Flow Measurement and Sampling Point

- flow measurement devices to measure flow from the discharge of each raw sewage pump, then add the measured flows to get the total influent flow.
- automatic composite sampler at the Headworks Building;

Primary Treatment System

- three (3) covered primary clarifiers: Primary Clarifier 1 and 2 each measuring approximately 45.7 m x 16.5 m x 3.65 m in Side Water Depth (SWD), Primary Clarifier 3 measures approximately 46.1 m x 16.5 m x 3.65 m in SWD. Each is equipped with three (3) longitudinal collectors and one (1) cross collector, non-metallic chain and flight style sludge collectors.
- five (5) primary raw sludge pumps to the aerobic reactor / sludge blending tank and/or digester, each having a normal operating rated capacity of approximately 13 L/s at 12 m TDH.
- one (1) primary scum pump rated at approximately 13 L/s.
- nine (9) scum skimmers and nine (9) scum collection troughs.

Secondary Treatment Systems

- Biological Treatment
 - one (1) selector tank with nominal operating capacity of approximately 2,000 m³.
 - primary effluent flow splitter box.
 - the selector or the splitter or both may be used at any given time.
 - three (3) mixers for selector tank (approx. 3 kW per mixer) - (to be replaced as per Proposed

Works)

- five (5) high purity oxygen covered Reactors (UNOX): Reactors 1 and 2 each having a normal operating capacity of approximately 2,400 m³, Reactor 3 having a capacity of approximately 2,400 m³ and reactors 4 and 5 each having a normal operating capacity of approximately 2,400 m³.
- one (1) 30 kW and two (2) 20 kW mixers per each UNOX Reactors 1 to 5 inclusive.
- one (1) centrifugal blower to purge off gases from the aerobic reactors to the UNOX reactors, and having a rated capacity of 31 L/s at a discharge pressure of 695 mm water column with a direct drive of approximately 5.6 kW.
- one (1) centrifugal purge air blower for UNOX reactor no. 4 and 5, with a rated capacity of approximately 900 L/s at a discharge pressure of 4.5 kPa with a direct drive of approximately 12 kW.
- two (2) Thermax SG1700 HF ambient vaporizers with a combined capacity of 21.6 metric tonnes of liquid oxygen per day at a minimum ambient temperature of -30 °C. Liquid oxygen will be stored in a 48.5 m³ liquid oxygen storage tank.
- one (1) 75 kW electric oxygen vaporizer plus trim heater.
- Secondary Sedimentation
 - two (2) Return Activated Sludge (RAS) Chambers.
 - six (6) covered Secondary Clarifiers (2 cells each): Secondary Clarifiers 1, 2 and 3 each measuring approximately 63.6 m x 12.2 m x 3.3 in SWD and Secondary Clarifiers 4, 5, and 6 each measuring approximately 64.6 m x 12.2 m x 3.3 in SWD, each equipped with four (4) longitudinal collectors; one (1) cross collector; and two (2) scum skimmers, non-metallic chain and flight style sludge collectors.
 - six (6) Return Activated Sludge pumps, (three (3) for each RAS Chamber), each pump with a rated capacity of approximately 22,000 m³/d at 7.9 m TDH.
 - one (1) Secondary Scum Pump with a rated capacity of approximately 13 L/s (1,090 m³/d) at 15 m TDH.
 - twelve (12) geotextile inlet membrane baffles; two (2) in each of the six (6) secondary clarifiers.

Post-Secondary Treatment System

- Rotating biological contactors
 - thirty-six (36) rotating biological contactors (RBCs) for tertiary nitrification. Each RBC has a

contacting surface area of approximately 15,500m² for a total of approximately 558,000m². The RBC system has been designed to treat secondary effluent at an ammonia loading rate of 1.5 to 2 g/m²/day, and therefore has an approximate ammonia treatment capacity of 1,116 kg/day.

- Filtration
 - six (6) shallow bed, single media tertiary filters; each having dimensions of approximately 34.4 m long x 4.8 m wide; with six (6) filters having a combined peak design flow capacity of 156,000 m³/d (all in service).
 - filters 1 & 2 have an automatic backwash system consisting of a travelling bridge equipped with one (1) submersible pump for backwash rated at approximately 13 L/s and one (1) washwater pump rated at approximately 13 L/s.
 - filters 3 & 4 have an automatic backwash system consisting of a travelling bridge equipped with one (1) submersible pump for backwash rated at approximately 17 L/s and one (1) washwater pump rated at approximately 17 L/s.
 - filters 5 & 6 have an automatic backwash system consisting of a travelling bridge equipped with one (1) washwater pump rated at approximately 14 L/s.
 - air scour system: Tertiary filters 5 and 6 are equipped with an air scour system with a shared positive displacement blower having a rated capacity of approximately 78 m³/min for cleaning the filter media as part of routine maintenance.

Supplementary Treatment Systems

- Phosphorus Removal
 - two (2) below grade storage tanks PVC lined, for storage of Alum, each with approximately 38,000 L capacity located in the Chemical Building.
 - two (2) double-head positive displacement metering pumps installed in the existing chemical building to dose alum at the inlet works, the aeration tank influent channel and the mixed liquor channel; each metering pump having a rated capacity of approximately 680 L/hr for total capacity of 1360 L/hr.
 - two (2) peristaltic hose pumps rated at 371 L/hr each for total capacity of 742 L/hr.
 - one (1) positive displacement transfer pump with a rated capacity of approximately 640 L/hr installed in the existing chemical building for alum transfer to day tank storage of alum for use in the flash mixing tanks.
 - one (1) day tank for storage of alum, with approximately 3,200 L capacity, located in existing

concrete chemical storage tank between Ultra Violet (UV) disinfection channels.

- four (4) positive displacement metering pumps installed in the existing high pressure effluent pump room for alum feed for phosphorus removal, each metering pump having a rated capacity of approximately 53 L/hr, to dose alum from the day tank to the flash mixing tanks.
- three (3) flash mixing tanks having dimensions of approximately 8.5 m long x 4.0 m wide x 4.5 m SWD, to provide flash mixing of alum in the RBC effluent for phosphorus removal, equipped with approximately 12kW motor driven, propeller type mixers, respectively.
- six (6) flocculation tanks, two (2) downstream of each flash mixing tank for phosphorus removal at an average daily flow of 76,000 m³/day, each tank having dimensions of approximately 8.5 m x 8.5 m x 4.5 m SWD, equipped with a 2.2 kW and 1.1 kW motor driven, propeller type mixers, respectively.

Disinfection System

- Effluent Disinfection – UV Disinfection
 - two (2) approximately 14 m long x 2.5 m wide x 2 m SWD parallel, ultraviolet disinfection open channels, each ultraviolet disinfection channel equipped with a system control centre and a power distribution centre.
 - 18 modules per flow channel, (6 rows with 3 columns), total of 36 modules combined for the two channels, installed vertically with associated appurtenances with a total capacity of approximately 195,000m³/day.
 - two (2) positive displacement blowers installed to supply air for scouring during UV lamp cleaning, each blower having a rated capacity of approximately 120 L/s at a discharge pressure of approximately 48 kPa with an electric drive of approximately 11 kW.
 - one (1) approximately 2 m long x 1m wide x 2 m deep UV cleaning tank installed for UV lamp cleaning (acid) solution complete with scouring blower.
- Sodium Hypochlorite Disinfection
 - sodium hypochlorite storage and feed system consisting of two (2) storage tanks of approximately 6,000 L (combined);
 - two (2) peristaltic hose pumps rated at 550 L/hr each.
 - piping for addition of sodium hypochlorite to the tertiary filters for filter cleaning.

Final Effluent Flow Measurement and Sampling Point

- automatic composite sampler at outlet of the UV disinfection system;

Sludge Management System

- **Sludge Thickening**
 - three (3) positive displacement waste activated sludge pumps, each pump rated at approximately 25.0 L/s at 21 m TDH with approximately 19 kW variable frequency drive.
 - one (1) polymer feed system having a rated capacity of approximately 30 L/hr, adjusted per demand, consisting of a volumetric feeder, a polymer hopper wetting assembly, three (3) positive displacement rated capacity of approximately 20 kg/hr, post dilution feed pumps with polymer solution to be dosed after the waste activated sludge pumps.
 - three (3) approximately 1.3 m diameter x 4.8 m long rotary drum thickeners.
 - two (2) positive displacement thickened activated sludge pumps, each pump rated at approximately 13 L/s at 42 m TDH with approximately 22 kW variable frequency drive.
- **Sludge Pre-Treatment**
 - two (2) cells within one tank to be used in either anaerobic sludge blending process mode or aerobic dual-digestion process mode, with an approximate volume of 620 m³ each.
 - one (1) external propeller type draft tube mixer per cell to provide sludge mixing, each mixer having a rated capacity of approximately 19 m³/min and 11 kW.
 - capability for addition of atmospheric air or high purity oxygen to holding cells of approximately 4 m³/min (150 scfm).
 - two (2) centrifugal pumps to provide sludge transfer to the primary anaerobic sludge digesters, each pump having an approximate capacity of 22 L/s at a TDH of approximately 14 m with a variable frequency drive of approximately 8 kW.
 - one (1) centrifugal blower to purge off gases from the cells to the UNOX reactors, and having an approximate capacity of 31 L/s at a discharge pressure of 0.7 m. water column with a direct drive of approximately 6kW.
- **Sludge Digestion**
 - **Primary Digesters**

- two (2) primary anaerobic digesters (No. 1 and No. 2) with a volume of approximately 1,580 m³ each.
- four (4) internal draft tube mixers on Primary Digesters No. 1 and No. 2 (two per tank) to provide sludge mixing, each mixer having an approximate capacity of 27 m³/min with a reversible, variable frequency drive of approximately 8 kW.
- digesters No. 1 and No. 2 sludge heating system consists of two (2) sludge recirculation heaters rated at approximately 300 kW each, which are installed in the control room of these digesters; and hot water jacket type heaters affixed to the mechanical mixers of approximately 60 kW for each mixer.
- two (2) sludge re-circulating pumps, each pump having an approximate capacity of 22 L/s at a TDH of approximately 14 m with a variable frequency drive of approximately 8 kW, also having in-line grinders with by-pass for maintenance.
- two (2) transfer/recirculation pumps, transferring to the secondary digester or Primary Digester No. 3, each pump having an approximate capacity of 22 L/s at a TDH of approximately 14 m with a variable frequency drive of approximately 8 kW.
- one (1) primary anaerobic digester (No. 3) with volume of approximately 3,800 m³ which may be used as secondary digester.
- primary Digester No.3 sludge heating system consisting of two (2) sludge recirculation heaters rated at approximately 100 kW **(each to be upgraded as per Proposed Works)**
- primary digester No.3 sludge heating system consisting of two (2) sludge recirculation heaters rated at approximately 100 kW each. Primary Digester No.3 may be used as a secondary digester as required.
- total combined primary digester volume of approximately 7,000 m³ with minimum HRT of approximately 15 days at 76 MLD. Primary Digesters 1, 2 and 3 may be operated in series or parallel.
- Secondary Digesters
 - one (1) secondary digester, at approximately 3,800 m³ capacity, which may be used temporarily as a primary digester".
 - two (2) transfer pumps, each pump having a rated capacity of approximately 1700 L/hr and a TDH of 24 m, transferring to the on-site Biosolids Holding Tank #1; or Sludge Loading Station No. 2 adjacent to the chemical storage building.
- Biosolids Storage and Disposal

- one (1) on-site sludge storage tank of approximately 772 m³ capacity (Biosolids Holding Tank #1)
- two (2) transfer pumps for loading sludge haulage trucks each pump having a rated capacity of approximately 16 L/s at 8.4 m TDH.
- one (1) propeller mixing pump equipped with an approximate 15 kW motor driven.

Final Effluent Disposal Facilities

- Approximately 316 m of 1200 mm diameter sewer outfall with seventeen (17) open diffuser ports discharging to Kempenfelt Bay of Lake Simcoe.

including all other mechanical system, electrical system, instrumentation and control system, standby power system, piping, pumps, valves and appurtenances essential for the proper, safe and reliable operation of the Works in accordance with this Approval, in the context of process performance and general principles of wastewater engineering only;

all in accordance with the submitted supporting documents listed in Schedule A.

For the purpose of this environmental compliance approval, the following definitions apply:

1. "Annual Average Effluent Concentration" is the mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar year, calculated and reported as per the methodology specified in Schedule F;
2. "Annual Average Daily Effluent Flow" means the cumulative total Final Effluent discharged during a calendar year divided by the number of days during which Final Effluent was discharged that year;
3. "Annual Total Effluent Loading" means the value obtained by multiplying the Annual Average Effluent Concentration of a contaminant by the cumulative total Final Effluent discharged during the same calendar year;
4. "Annual Average Daily Influent Flow" means the cumulative total sewage flow of Influent to the Sewage Treatment Plant during a calendar year divided by the number of days during which sewage was flowing to the Sewage Treatment Plant that year;
5. "Approval" means this environmental compliance approval and any schedules attached to it, and the application;
6. "BOD5" (also known as TBOD5) means five day biochemical oxygen demand measured in an unfiltered sample and includes carbonaceous and nitrogenous oxygen demands;

7. "Bypass" means diversion of sewage around one or more treatment processes, excluding Preliminary Treatment System, within the Sewage Treatment Plant with the diverted sewage flows being returned to the Sewage Treatment Plant treatment train upstream of the Final Effluent sampling point(s) and discharged via the approved effluent disposal facilities;
8. "CBOD5" means five day carbonaceous (nitrification inhibited) biochemical oxygen demand measured in an unfiltered sample;
9. "Director" means a person appointed by the Minister pursuant to section 5 of the EPA for the purposes of Part II.1 of the EPA;
10. "District Manager" means the District Manager of the appropriate local district office of the Ministry where the Works is geographically located;
11. "*E. coli* " refers to the thermally tolerant forms of *Escherichia* that can survive at 44.5 degrees Celsius;
12. "EPA" means the *Environmental Protection Act* , R.S.O. 1990, c.E.19, as amended;
13. "Equivalent Equipment" means alternate piece(s) of equipment that meets the design requirements and performance specifications of the piece(s) of equipment to be substituted;
14. "Event" means an action or occurrence, at a given location within the Works that causes a Bypass or Overflow. An Event ends when there is no recurrence of Bypass or Overflow in the 12-hour period following the last Bypass or Overflow. Overflows and Bypasses are separate Events even when they occur concurrently;
15. "Existing Works" means those portions of the Works included in the Approval that have been constructed previously;
16. "Final Effluent" means effluent that is discharged to the environment through the approved effluent disposal facilities, including all Bypasses, that are required to meet the compliance limits stipulated in the Approval for the Sewage Treatment Plant at the Final Effluent sampling point(s);
17. "Imported Sewage" means sewage hauled to the Sewage Treatment Plant by licensed waste management system operators of the types and quantities approved for co-treatment in the Sewage Treatment Plant, including hauled sewage and leachate within the meaning of R.R.O. 1990, Regulation 347: General – Waste Management, as amended;
18. "Influent" means flows to the Sewage Treatment Plant from the collection system and Imported Sewage;
19. "Limited Operational Flexibility" (LOF) means the conditions that the Owner shall follow in order to undertake any modification that is pre-authorized as part of this Approval;
20. "Ministry" means the ministry of the government of Ontario responsible for the EPA and OWRA and

includes all officials, employees or other persons acting on its behalf;

21. "Monthly Average Effluent Concentration" is the mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar month, calculated and reported as per the methodology specified in Schedule F;
22. "Monthly Average Daily Effluent Flow" means the cumulative total Final Effluent discharged during a calendar month divided by the number of days during which Final Effluent was discharged that month;
23. "Monthly Average Daily Effluent Loading" means the value obtained by multiplying the Monthly Average Effluent Concentration of a contaminant by the Monthly Average Daily Effluent Flow over the same calendar month;
24. "Monthly Geometric Mean Density" is the mean of all Single Sample Results of *E.coli* measurement in the samples taken during a calendar month, calculated and reported as per the methodology specified in Schedule F;
25. "Nominally Separate Sewer Systems" means wastewater collection systems that comprised of Sanitary Sewers and Nominally Separate Sewers while runoff from precipitation and snowmelt are separately collected in Storm Sewers;
26. "Nominally Separate Sewers" means Sanitary Sewers that also have connections from roof leaders and foundation drains, and are not considered to be Combined Sewers;
27. "Normal Operating Condition" means the condition when all unit process(es), excluding Preliminary Treatment System, in a treatment train is operating within its design capacity;
28. "Operating Agency" means the Owner or the entity that is authorized by the Owner for the management, operation, maintenance, or alteration of the Works in accordance with this Approval;
29. "Overflow" means a discharge to the environment from the Works at designed location(s) other than the approved effluent disposal facilities or via the effluent disposal facilities downstream of the Final Effluent sampling point;
30. "Owner" means The Corporation of the City of Barrie and its successors and assignees;
31. "OWRA" means the *Ontario Water Resources Act* , R.S.O. 1990, c. O.40, as amended;
32. "Peak Daily Flow Rate" (also referred to as maximum daily flow or maximum day flow) means the largest volume of flow to be received during a one-day period for which the sewage treatment process unit or equipment is designed to handle;
33. "Peak Instantaneous Flow Rate" means the instantaneous maximum flow rate as measured by a metering device for which the sewage treatment process unit or equipment is designed to handle;

34. "Preliminary Treatment System" means all facilities in the Sewage Treatment Plant associated with screening and grit removal;
35. "Primary Treatment System" means all facilities in the Sewage Treatment Plant associated with the primary sedimentation unit process and includes chemically enhanced primary treatment;
36. "Processed Organic Waste" means organic waste within the meaning of R.R.O. 1990, Regulation 347: General – Waste Management, as amended, that is hauled to the Sewage Treatment Plant of the types and quantities approved for co-processing in the sludge management system;
37. "Proposed Works" means those portions of the Works included in the Approval that are under construction or to be constructed;
38. "Rated Capacity" means the Annual Average Daily Influent Flow for which the Sewage Treatment Plant is designed to handle;
39. "Secondary Treatment System" means all facilities in the Sewage Treatment Plant associated with biological treatment, secondary sedimentation and phosphorus removal unit processes;
40. "Sewage Treatment Plant" means all the facilities related to sewage treatment within the sewage treatment plant site excluding the Final Effluent disposal facilities;
41. "Single Sample Result" means the test result of a parameter in the effluent discharged on any day, as measured by a probe, analyzer or in a composite or grab sample, as required;
42. "Source Protection Plan" means a drinking water source protection plan prepared under the Clean Water Act, 2006;
43. "Storm Sewers" means pipes that collect and convey runoff resulting from precipitation and snowmelt (including infiltration and inflow);
44. "Works" means the approved sewage works, and includes Proposed Works, Existing Works and modifications made under Limited Operational Flexibility.

You are hereby notified that this environmental compliance approval is issued to you subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. GENERAL PROVISIONS

1. The Owner shall ensure that any person authorized to carry out work on or operate any aspect of the Works is notified of this Approval and the terms and conditions herein and shall take all reasonable measures to ensure any such person complies with the same.
2. The Owner shall design, construct, operate and maintain the Works in accordance with the conditions of this Approval.
3. Where there is a conflict between a provision of any document referred to in this Approval and the conditions of this Approval, the conditions in this Approval shall take precedence.

2. CHANGE OF OWNER AND OPERATING AGENCY

1. The Owner shall, within thirty (30) calendar days of issuance of this Approval, prepare/update and submit to the District Manager the Municipal and Local Services Board Wastewater System Profile Information Form, as amended (Schedule G) under any of the following situations:
 - a. the form has not been previously submitted for the Works;
 - b. this Approval is issued for extension, re-rating or process treatment upgrade of the Works;
 - c. when a notification is provided to the District Manager in compliance with requirements of change of Owner or Operating Agency under this condition.
2. The Owner shall notify the District Manager and the Director, in writing, of any of the following changes within thirty (30) days of the change occurring:
 - a. change of address of Owner;
 - b. change of Owner, including address of new owner;
 - c. change of partners where the Owner is or at any time becomes a partnership, and a copy of the most recent declaration filed under the *Business Names Act, R.S.O. 1990, c. B.17*, as amended, shall be included in the notification;
 - d. change of name of the corporation where the Owner is or at any time becomes a corporation, and a

copy of the most current information filed under the *Corporations Information Act, R.S.O. 1990, c. C.39*, as amended, shall be included in the notification.

3. The Owner shall notify the District Manager, in writing, of any of the following changes within thirty (30) days of the change occurring:
 - a. change of address of Operating Agency;
 - b. change of Operating Agency, including address of new Operating Agency.
4. In the event of any change in ownership of the Works, the Owner shall notify the succeeding owner in writing, of the existence of this Approval, and forward a copy of the notice to the District Manager.
5. The Owner shall ensure that all communications made pursuant to this condition refer to the environmental compliance approval number.

3. CONSTRUCTION OF PROPOSED WORKS / RECORD DRAWINGS

1. All Proposed Works in this Approval shall be constructed and installed and must commence operation within five (5) years of issuance of this Approval, after which time the Approval ceases to apply in respect of any portions of the Works not in operation. In the event that the construction, installation and/or operation of any portion of the Proposed Works is anticipated to be delayed beyond the time period stipulated, the Owner shall submit to the Director an application to amend the Approval to extend this time period, at least six (6) months prior to the end of the period. The amendment application shall include the reason(s) for the delay and whether there is any design change(s).
2. Within thirty (30) days of commencement of construction, the Owner shall prepare and submit to the District Manager a schedule for the completion of construction and commissioning operation of the Proposed Works. The Owner shall notify the District Manager within thirty (30) days of the commissioning operation of any Proposed Works. Upon completion of construction of the Proposed Works, the Owner shall prepare and submit a statement to the District Manager, certified by a Professional Engineer, that the Proposed Works is constructed in accordance with this Approval.
3. Within one (1) year of completion of construction of the Proposed Works, a set of record drawings of the Works shall be prepared or updated. These drawings shall be kept up to date through revisions undertaken from time to time and a copy shall be readily accessible for reference at the Works.

4. BYPASSES

1. Any Bypass is prohibited, except:
 - a. an emergency Bypass when a structural, mechanical or electrical failure causes a temporary reduction in the capacity of a treatment process or when an unforeseen flow condition exceeds the design capacity of a treatment process that is likely to result in personal injury, loss of life, health hazard, basement flooding, severe property damage, equipment damage or treatment process upset, if a

portion of the flow is not bypassed;

- b. a planned Bypass that is a direct and unavoidable result of a planned repair and maintenance procedure or other circumstance(s), the Owner having notified the District Manager in writing at least fifteen (15) days prior to the occurrence of Bypass, including an estimated quantity and duration of the Bypass, an assessment of the impact on the quality of the Final Effluent and the mitigation measures if necessary, and the District Manager has given written consent of the Bypass;
2. Notwithstanding the exceptions given in Paragraph 1, the Operating Agency shall undertake everything practicable to maximize the flow through the downstream treatment process(es) prior to bypassing.
3. At the beginning of a Bypass Event, the Owner shall immediately notify the Spills Action Centre (SAC) and the local Medical Officer of Health. This notice shall include, at a minimum, the following information:
 - a. the type of the Bypass as indicated in Paragraph 1 and the reason(s) for the Bypass;
 - b. the date and time of the beginning of the Bypass;
 - c. the treatment process(es) gone through prior to the Bypass and the treatment process(es) bypassed;
 - d. the effort(s) done to maximize the flow through the downstream treatment process(es) and the reason(s) why the Bypass was not avoided.
4. Upon confirmation of the end of a Bypass Event, the Owner shall immediately notify the Spills Action Centre (SAC) and the local Medical Officer of Health. This notice shall include, at a minimum, the following information:
 - a. the date and time of the end of the Bypass;
 - b. the estimated or measured volume of Bypass.
5. For any Bypass Event, the Owner shall collect daily sample(s) of the Final Effluent, inclusive of the Event and analyze for all effluent parameters outlined in Compliance Limits condition, except for *E. coli*, toxicity to Rainbow Trout and *Daphnia magna*, total residual chlorine / bisulphite residual, dissolved oxygen, pH, temperature and unionized ammonia, following the same protocol specified in the Monitoring and Recording condition as for the regular samples. The sample(s) shall be in addition to the regular Final Effluent samples required under the monitoring and recording condition, except when the Event occurs on a scheduled monitoring day.
6. The Owner shall submit a summary report of the Bypass Event(s) to the District Manager on a quarterly basis, no later than each of the following dates for each calendar year: February 15, May 15, August 15, and November 15. The summary reports shall contain, at a minimum, the types of information set out in Paragraphs (3), (4) and (5) and either a statement of compliance or a summary of the non-compliance notifications submitted as required under Paragraph 1 of Condition 11. If there is no Bypass Event

during a quarter, a statement of no occurrence of Bypass is deemed sufficient.

7. The Owner shall develop a notification procedure in consultation with the District Manager and SAC and notify the public and downstream water users that may be adversely impacted by any Bypass Event.

5. OVERFLOWS

1. Any Overflow is prohibited, except:
 - a. an emergency Overflow in an emergency situation when a structural, mechanical or electrical failure causes a temporary reduction in the capacity of the Works or when an unforeseen flow condition exceeds the design capacity of the Works that is likely to result in personal injury, loss of life, health hazard, basement flooding, severe property damage, equipment damage or treatment process upset, if a portion of the flow is not overflowed;
 - b. a planned Overflow that is a direct and unavoidable result of a planned repair and maintenance procedure or other circumstance(s), the Owner having notified the District Manager in writing at least fifteen (15) days prior to the occurrence of Overflow, including an estimated quantity and duration of the Overflow, an assessment of the impact on the environment and the mitigation measures if necessary, and the District Manager has given written consent of the Overflow;
2. Notwithstanding the exceptions given in Paragraph 1, the Operating Agency shall undertake everything practicable to maximize the flow through the downstream treatment process(es) and Bypass(es) prior to overflowing.
3. At the beginning of an Overflow Event, the Owner shall immediately notify the Spills Action Centre (SAC) and the local Medical Officer of Health. This notice shall include, at a minimum, the following information:
 - a. the type of the Overflow as indicated in Paragraph 1 and the reason(s) for the Overflow;
 - b. the date and time of the beginning of the Overflow;
 - c. the point of the Overflow from the Works, the treatment process(es) gone through prior to the Overflow, the disinfection status of the Overflow and whether the Overflow is discharged through the effluent disposal facilities or an alternate location;
 - d. the effort(s) done to maximize the flow through the downstream treatment process(es) and Bypass(es) and the reason(s) why the Overflow was not avoided.
4. Upon confirmation of the end of an Overflow Event, the Owner shall immediately notify the Spills Action Centre (SAC) and the local Medical Officer of Health. This notice shall include, at a minimum, the following information:

- a. the date and time of the end of the Overflow;
 - b. the estimated or measured volume of the Overflow.
5. For any Overflow Event
 - a. in the Sewage Treatment Plant, the Owner shall collect grab sample(s) of the Overflow, one near the beginning of the Event and one every eight (8) hours for the duration of the Event, and have them analyzed at least for CBOD₅, total suspended solids, total phosphorus, total ammonia nitrogen, nitrate as N, nitrite as N, total Kjeldahl nitrogen, *E. coli* , except that raw sewage and primary treated effluent Overflow shall be analyzed for BOD₅, total suspended solids, total phosphorus and total Kjeldahl nitrogen only.
6. The Owner shall submit a summary report of the Overflow Event(s) to the District Manager on a quarterly basis, no later than each of the following dates for each calendar year: February 15, May 15, August 15, and November 15. The summary report shall contain, at a minimum, the types of information set out in Paragraphs (3), (4) and (5). If there is no Overflow Event during a quarter, a statement of no occurrence of Overflow is deemed sufficient.
7. The Owner shall develop a notification procedure in consultation with the District Manager and SAC and notify the public and downstream water users that may be adversely impacted by any Overflow Event.
8. The Owner shall develop a response plan for any unplanned Overflows, consisting of measures to mitigate and prevent the contamination of drinking water.

6. DESIGN OBJECTIVES

1. The Owner shall design and undertake everything practicable to operate the Sewage Treatment Plant in accordance with the following objectives:
 - a. Final Effluent parameters design objectives listed in the table(s) included in Schedule B.
 - b. Final Effluent is essentially free of floating and settleable solids and does not contain oil or any other substance in amounts sufficient to create a visible film or sheen or foam or discolouration on the receiving waters.
 - c. Annual Average Daily Influent Flow is within the Rated Capacity of the Sewage Treatment Plant.

7. COMPLIANCE LIMITS

1. The Owner shall operate and maintain the Sewage Treatment Plant such that compliance limits for the Final Effluent parameters listed in the table(s) included in Schedule C are met.
2. The Owner shall operate and maintain the Sewage Treatment Plant such that the Final Effluent is

disinfected continuously year-round / during the disinfection period between January 01 and December 31 inclusive.

8. OPERATION AND MAINTENANCE

1. The Owner shall ensure that, at all times, the Works and the related equipment and appurtenances used to achieve compliance with this Approval are properly operated and maintained. Proper operation and maintenance shall include effective performance, adequate funding, adequate staffing and training, including training in all procedures and other requirements of this Approval and the OWRA and regulations, adequate laboratory facilities, process controls and alarms and the use of process chemicals and other substances used in the Works.
2. The Owner shall update and maintain the operations manual for the Works within six (6) months of completion of construction of the Proposed Works, that includes, but not necessarily limited to, the following information:
 - a. operating procedures for the Works under Normal Operating Conditions;
 - b. inspection programs, including frequency of inspection, for the Works and the methods or tests employed to detect when maintenance is necessary;
 - c. repair and maintenance programs, including the frequency of repair and maintenance for the Works;
 - d. procedures for the inspection and calibration of monitoring equipment;
 - e. operating procedures for the Works to handle situations outside Normal Operating Conditions and emergency situations such as a structural, mechanical or electrical failure, or an unforeseen flow condition, including procedures to minimize Bypasses and Overflows;
 - f. a spill prevention and contingency plan, consisting of procedures and contingency plans, including notification to the District Manager, to reduce the risk of spills of pollutants and prevent, eliminate or ameliorate any adverse effects that result or may result from spills of pollutants;
 - g. procedures for receiving, responding and recording public complaints, including recording any followup actions taken.
3. The Owner shall maintain the operations manual up-to-date and make the manual readily accessible for reference at the Works.
4. The Owner shall ensure that the Operating Agency fulfils the requirements under O. Reg. 129/04, as amended for the Works, including the classification of facilities, licensing of operators and operating standards.

9. MONITORING AND RECORDING

1. The Owner shall, upon commencement of operation of the Works, carry out a scheduled monitoring program of collecting samples at the required sampling points, at the frequency specified or higher, by means of the specified sample type and analyzed for each parameter listed in the tables under the monitoring program included in Schedule D and record all results, as follows:
 - a. all samples and measurements are to be taken at a time and in a location characteristic of the quality and quantity of the sewage stream over the time period being monitored.
 - b. a schedule of the day of the week/month for the scheduled sampling shall be created. The sampling schedule shall be revised and updated every year through rotation of the day of the week/month for the scheduled sampling program, except when the actual scheduled monitoring frequency is three (3) or more times per week.
 - c. definitions and preparation requirements for each sample type are included in document referenced in Paragraph 3.b.
 - d. definitions for frequency:
 - i. Daily means once every day;
 - ii. Weekly means once every week;
 - iii. Thrice per week means three times per week.
 - iv. Monthly means once every month;
 - v. Quarterly means once every three months;
 - vi. Annually means once every year;
2. In addition to the scheduled monitoring program required in Paragraph 1, the Owner shall collect daily sample(s) of the Final Effluent, on any day when there is any situation outside Normal Operating Conditions, by means of the specified sample type and analyzed for each parameter listed in the tables under the monitoring program included in Schedule D, except for *E. coli*, toxicity to Rainbow Trout and *Daphnia magna*, total residual chlorine / bisulphite residual, dissolved oxygen, pH, temperature and unionized ammonia.
3. The methods and protocols for sampling, analysis and recording shall conform, in order of precedence, to the methods and protocols specified in the following documents and all analysis shall be conducted by a laboratory accredited to the ISO/IEC:17025 standard or as directed by the District Manager:
 - a. the Ministry's Procedure F-10-1, "Procedures for Sampling and Analysis Requirements for Municipal and Private Sewage Treatment Works (Liquid Waste Streams Only), as amended;

- b. the Ministry's publication "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater Version 2.0" (January 2016), PIBS 2724e02, as amended;
- c. the publication "Standard Methods for the Examination of Water and Wastewater", as amended.
- d. the Environment Canada publications "Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Rainbow Trout" (EPS 1/RM/13 Second Edition - December 2000) and "Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to *Daphnia magna* " (EPS 1/RM/14 Second Edition - December 2000), as amended, subject to the following:
 - i. the use of pH stabilization in the determination of acute lethality of Final Effluent to Rainbow Trout in accordance with the Environment Canada publication "Procedure for pH Stabilization during the Testing of Acute Lethality of Wastewater Effluent to Rainbow Trout (EPS 1/RM/50)" (2008), as amended, is permitted only if:
 - a. all the three criteria stipulated in the Environment Canada EPS 1/RM/50 are met; and
 - b. the Final Effluent is not discharged to a receiver in which the Final Effluent contributes more than 50% of the total flow in the receiving water, unless the District Manager, having reviewed additional information submitted regarding the Final Effluent and the receiving water approves on the use of RM50 on a site-specific basis.
- 4. If the Owner monitors Bisulphite Residual as a surrogate to Total Residual Chlorine, then detected levels of Bisulphite Residual in the sample shall be deemed to confirm absence of Total Residual Chlorine.
- 5. The minimum monitoring frequency with respect to acute lethality to Rainbow Trout and *Daphnia magna* shall, after eight (8) consecutive quarters of monitoring results not indicating acute lethality, be reduced to annually. If any Final Effluent sample indicates acute lethality to Rainbow Trout or *Daphnia magna*, the monitoring frequency shall revert back to quarterly and the Owner shall carry out the following immediately:
 - a. Review the following:
 - i. Final Effluent quality and confirm that concentrations of ammonia are within the limits;
 - ii. plant operations around the time of the toxicity event; and
 - iii. all data available regarding plant operations and Final Effluent quality.
 - b. If the observed effluent toxicity is not associated with ammonia, an investigation shall be undertaken to determine the cause or source of the toxicity.
 - c. Upon determination of cause or source of acute lethality to Rainbow Trout and *Daphnia magna*, the Owner shall determine appropriate control measures to achieve non-acutely lethal effluent and time lines for the implementation of identified control measures. The Owner shall submit the proposed

control measures and implementation time lines for approval to the District Manager.

6. The Owner shall monitor and record the flow rate and daily quantity using flow measuring devices or other methods of measurement as approved below calibrated to an accuracy within plus or minus 15 per cent (+/- 15%) of the actual flowrate of the following:
 - a. Influent flow to the Sewage Treatment Plant by continuous flow measuring devices and instrumentations/pumping rates/details of other methods (e.g. top water elevation of lagoons), or in lieu of an actual installation of equipment, adopt the flow measurements of the Final Effluent for the purpose of estimating Influent flows if the Influent and Final Effluent streams are considered not significantly different in flow rates and quantities;
 - b. Final Effluent discharged from the Sewage Treatment Plant by continuous flow measuring devices and instrumentations/pumping rates/details of other methods (e.g. level of lagoons), or in lieu of an actual installation of equipment, adopt the flow measurements of the Influent for the purpose of estimating Final Effluent flows if the Influent and Final Effluent streams are considered not significantly different in flow rates and quantities;
 - c. each type of Imported Sewage received for co-treatment at the Sewage Treatment Plant by flow measuring devices/pumping rates/haul truck manifests;
7. The Owner shall retain for a minimum of five (5) years from the date of their creation, all records and information related to or resulting from the monitoring activities required by this Approval.

10. LIMITED OPERATIONAL FLEXIBILITY

1. The Owner may make pre-authorized modifications to the sewage pumping stations and Sewage Treatment Plant in Works in accordance with the document "Limited Operational Flexibility - Protocol for Pre-Authorized Modifications to Municipal Sewage Works" (Schedule E), as amended, subject to the following:
 - a. the modifications will not involve the addition of any new treatment process or the removal of an existing treatment process, including chemical systems, from the liquid or solids treatment trains as originally designed and approved.
 - b. the scope and technical aspects of the modifications are in line with those delineated in Schedule E and conform with the Ministry's publication "Design Guidelines for Sewage Works 2008", as amended, Ministry's regulations, policies, guidelines, and industry engineering standards;
 - c. the modifications shall not negatively impact on the performance of any process or equipment in the Works or result in deterioration in the Final Effluent quality;
 - d. where the pre-authorized modification requires notification, a "Notice of Modifications to Sewage Works" (Schedule E), as amended shall be completed with declarations from a Professional Engineer and the Owner and retained on-site prior to the scheduled implementation date. All supporting

information including technical memorandum, engineering plans and specifications, as applicable and appropriate to support the declarations that the modifications conform with LOF shall remain on-site for future inspection.

2. The following modifications are not pre-authorized under Limited Operational Flexibility:
 - a. Modifications that involve addition or extension of process structures, tankages or channels;
 - b. Modifications that involves relocation of the Final Effluent outfall or any other discharge location or that may require reassessment of the impact to the receiver or environment;
 - c. Modifications that involves addition of or change in technology of a treatment process or that may involve reassessment of the treatment train process design;
 - d. Modifications that requires changes to be made to the emergency response, spill prevention and contingency plan; or
 - e. Modifications that are required pursuant to an order issued by the Ministry.

11. REPORTING

1. The Owner shall report to the District Manager orally as soon as possible any non-compliance with the compliance limits, and in writing within seven (7) days of non-compliance.
2. The Owner shall, within fifteen (15) days of occurrence of a spill within the meaning of Part X of the EPA, submit a full written report of the occurrence to the District Manager describing the cause and discovery of the spill, clean-up and recovery measures taken, preventative measures to be taken and schedule of implementation, in addition to fulfilling the requirements under the EPA and O. Reg. 675/98 "Classification and Exemption of Spills and Reporting of Discharges".
3. The Owner shall, upon request, make all manuals, plans, records, data, procedures and supporting documentation available to Ministry staff, Source Protection Authority and any other parties identified in the Source Protection Plans.
4. The Owner shall prepare performance reports on a calendar year basis and submit to the District Manager by March 31 of the calendar year following the period being reported upon. The reports shall contain, but shall not be limited to, the following information pertaining to the reporting period:
 - a. a summary and interpretation of all Influent and Imported Sewage monitoring data, and a review of the historical trend of the sewage characteristics and flow rates;
 - b. a summary and interpretation of all Final Effluent monitoring data, including concentration, flow rates, loading and a comparison to the design objectives and compliance limits in this Approval, including an overview of the success and adequacy of the Works;

- c. a summary of any deviation from the monitoring schedule and reasons for the current reporting year and a schedule for the next reporting year;
- d. a summary of all operating issues encountered and corrective actions taken;
- e. a summary of all normal and emergency repairs and maintenance activities carried out on any major structure, equipment, apparatus or mechanism forming part of the Works;
- f. a summary of any effluent quality assurance or control measures undertaken;
- g. a summary of the calibration and maintenance carried out on all Influent, Imported Sewage and Final Effluent monitoring equipment to ensure that the accuracy is within the tolerance of that equipment as required in this Approval or recommended by the manufacturer;
- h. a summary of efforts made to achieve the design objectives in this Approval, including an assessment of the issues and recommendations for pro-active actions if any are required under the following situations:
 - i. when any of the design objectives is not achieved more than 50% of the time in a year, or there is an increasing trend in deterioration of Final Effluent quality;
 - ii. when the Annual Average Daily Influent Flow reaches 80% of the Rated Capacity;
- i. a tabulation of the volume of sludge generated, an outline of anticipated volumes to be generated in the next reporting period and a summary of the locations to where the sludge was disposed;
- j. a summary of any complaints received and any steps taken to address the complaints;
- k. a summary of all Bypasses, Overflows, other situations outside Normal Operating Conditions and spills within the meaning of Part X of EPA and abnormal discharge events;
- l. a summary of all Notice of Modifications to Sewage Works completed under Paragraph 1.d. of Condition 10, including a report on status of implementation of all modification.
- m. a summary of efforts made to achieve conformance with Procedure F-5-1 including but not limited to projects undertaken and completed in the sanitary sewer system that result in overall Bypass/Overflow elimination including expenditures and proposed projects to eliminate Bypass/Overflows with estimated budget forecast for the year following that for which the report is submitted.
- n. any changes or updates to the schedule for the completion of construction and commissioning operation of major process(es) / equipment groups in the Proposed Works.

The reasons for the imposition of these terms and conditions are as follows:

1. Condition 1 regarding general provisions is imposed to ensure that the Works are constructed and operated in the manner in which they were described and upon which approval was granted.
2. Condition 2 regarding change of Owner and Operating Agency is included to ensure that the Ministry records are kept accurate and current with respect to ownership and Operating Agency of the Works and to ensure that subsequent owners of the Works are made aware of the Approval and continue to operate the Works in compliance with it.
3. Condition 3 regarding construction of Proposed Works/record drawings is included to ensure that the Works are constructed in a timely manner so that standards applicable at the time of Approval of the Works are still applicable at the time of construction to ensure the ongoing protection of the environment, and that prior to the commencement of construction of the portion of the Works that are approved in principle only, the Director will have the opportunity to review detailed design drawings, specifications and an engineer's report containing detailed design calculations for that portion of the Works, to determine capability to comply with the Ministry's requirements stipulated in the terms and conditions of the Approval, and also ensure that the Works are constructed in accordance with the Approval and that record drawings of the Works "as constructed" are updated and maintained for future references.
4. Condition 4 regarding Bypasses is included to indicate that Bypass is prohibited, except in circumstances where the failure to Bypass could result in greater damage to the environment than the Bypass itself. The notification and documentation requirements allow the Ministry to take action in an informed manner and will ensure the Owner is aware of the extent and frequency of Bypass Events.
5. Condition 5 regarding Overflows is included to indicate that Overflow of untreated or partially treated sewage to the receiver is prohibited, except in circumstances where the failure to Overflow could result in greater damage to the environment than the Overflow itself. The notification and documentation requirements allow the Ministry to take action in an informed manner and will ensure the Owner is aware of the extent and frequency of Overflow Events.
6. Condition 6 regarding design objectives is imposed to establish non-enforceable design objectives to be used as a mechanism to trigger corrective action proactively and voluntarily before environmental impairment occurs.
7. Condition 7 regarding compliance limits is imposed to ensure that the Final Effluent discharged from the Works to the environment meets the Ministry's effluent quality requirements.
8. Condition 8 regarding operation and maintenance is included to require that the Works be properly operated, maintained, funded, staffed and equipped such that the environment is protected and deterioration, loss, injury or damage to any person or property is prevented. As well, the inclusion of a comprehensive operations manual governing all significant areas of operation, maintenance and repair is prepared, implemented and kept up-to-date by the Owner. Such a manual is an integral part of the operation of the Works. Its compilation and use should assist the Owner in staff training, in proper plant operation and in

identifying and planning for contingencies during possible abnormal conditions. The manual will also act as a benchmark for Ministry staff when reviewing the Owner's operation of the Works.

9. Condition 9 regarding monitoring and recording is included to enable the Owner to evaluate and demonstrate the performance of the Works, on a continual basis, so that the Works are properly operated and maintained at a level which is consistent with the design objectives and compliance limits.
10. Condition 10 regarding Limited Operational Flexibility is included to ensure that the Works are constructed, maintained and operated in accordance with the Approval, and that any pre-approved modification will not negatively impact on the performance of the Works.
11. Condition 11 regarding reporting is included to provide a performance record for future references, to ensure that the Ministry is made aware of problems as they arise, and to provide a compliance record for this Approval.

Schedule A

1. Application for Environmental Compliance Approval submitted by Robert Sutton, Director of Engineering of The City of Barrie received on September 11, 2017, including design report, final plans and specifications.

Schedule B

Final Effluent Design Objectives

Concentration Objectives

Final Effluent Parameter	Averaging Calculator	Objective (milligrams per litre unless otherwise indicated)
CBOD5	Single Sample Result	10.0 mg/L
Total Suspended Solids	Single Sample Result	10.0 mg/L
Total Phosphorus	Single Sample Result	0.12 mg/L
Total Ammonia Nitrogen	Single Sample Result	3.0 mg/L (June 01 - October 31) 8.0 mg/L (November 01 - May 31)
<i>E. coli</i>	Monthly Geometric Mean Density	*100 CFU per 100 mL (January 01 to December 31)
pH	Single Sample Result	6.5 - 8.5 inclusive

* If the MPN method is utilized for *E. coli* analysis the objective shall be 100 MPN/100 mL

Schedule C

Final Effluent Compliance Limits

Concentration Limits

Final Effluent Parameter	Averaging Calculator	Limit (maximum unless otherwise indicated)
CBOD5	Monthly Average Effluent Concentration	15.0 mg/L
Total Suspended Solids	Monthly Average Effluent Concentration	15.0 mg/L
Total Phosphorus	Monthly Average Effluent Concentration	0.18 mg/L
Total Ammonia Nitrogen	Monthly Average Effluent Concentration	4.0 mg/L (June 01 - October 31) 10.0 mg/L (November 01 - May 31)
<i>E. coli</i>	Monthly Geometric Mean Density	*200 CFU per 100 mL (January 01 to December 31)
pH	Single Sample Result	between 6.0 - 9.5 inclusive

* If the MPN method is utilized for *E. coli* analysis the limit shall be 200 MPN/100 mL

Loading Limits

Final Effluent Parameter	Averaging Calculator	Limit (maximum unless otherwise indicated)
CBOD5	Monthly Average Daily Effluent Loading	1,140 kg/d
Total Suspended Solids	Monthly Average Daily Effluent Loading	1,140 kg/d
Total Phosphorus	Monthly Average Daily Effluent Loading	13.7 kg/d
Total Ammonia Nitrogen	Monthly Average Daily Effluent Loading	304 kg/d (June 01 - October 31) 760 kg/d (November 01 - May 31)

Lake Simcoe Phosphorus Reduction Strategy (LSRPS) Compliance Limits

Final Effluent Parameter	Annual Average Concentration (maximum unless otherwise indicated)	Annual Total Loading (maximum unless otherwise indicated)
Total Phosphorus Baseline Concentration	0.1 mg/L	-
Total Phosphorus Baseline Load	-	2,774 kg/year

Schedule D

Monitoring Program

Influent - Influent sampling point

Parameters	Sample Type	Minimum Frequency
BOD5	24 hour composite	Weekly
Total Suspended Solids	24 hour composite	Weekly
Total Phosphorus	24 hour composite	Weekly
Total Kjeldahl Nitrogen	24 hour composite	Weekly
Dissolved Reactive Phosphorus	24 hour composite	Weekly

Imported Sewage - Imported Sewage Receiving Station

Parameters	Sample Type	Minimum Frequency
BOD5	Grab	Monthly
Total Suspended Solids	Grab	Monthly
Total Phosphorus	Grab	Monthly
Total Kjeldahl Nitrogen	Grab	Monthly

Final Effluent - Final Effluent sampling point

Parameters	Sample Type	Minimum Frequency
CBOD5	24 hour composite	Weekly
Total Suspended Solids	24 hour composite	Weekly
Total Phosphorus	24 hour composite	Thrice per week
Dissolved Reactive Phosphorus	24 hour composite	Thrice per week
Total Ammonia Nitrogen	24 hour composite	Thrice per week
Total Kjeldahl Nitrogen	24 hour composite	Weekly
Nitrate as Nitrogen	24 hour composite	Weekly
<i>E. coli</i>	Grab	Weekly (January 01 to December 31)
pH*	Grab/Probe/Analyzer	Thrice per week
Temperature*	Grab/Probe/Analyzer	Thrice per week
Un-ionized Ammonia**	As Calculated	Thrice per week

*pH and temperature of the Final Effluent shall be determined in the field at the time of sampling for Total Ammonia Nitrogen.

**The concentration of un-ionized ammonia shall be calculated using the total ammonia concentration, pH and temperature using the methodology stipulated in "Ontario's Provincial Water Quality Objectives" dated July 1994, as amended.

Leachate Related - Final Effluent sampling point

Parameters	Sample Type	Minimum Frequency
Boron	Grab	Quarterly
Cobalt	Grab	Quarterly
Magnesium	Grab	Quarterly
Manganese	Grab	Quarterly
Potassium	Grab	Quarterly
Strontium	Grab	Quarterly
Bis (2-ethylhexyl) Phthalate	Grab	Quarterly

Schedule E

Limited Operational Flexibility

Protocol for Pre-Authorized Modifications to Municipal Sewage Works

1. General

1. Pre-authorized modifications are permitted only where Limited Operational Flexibility has already been granted in the Approval and only permitted to be made at the pumping stations and sewage treatment plant in the Works, subject to the conditions of the Approval.
2. Where there is a conflict between the types and scope of pre-authorized modifications listed in this document, and the Approval where Limited Operational Flexibility has been granted, the Approval shall take precedence.
3. The Owner shall consult the District Manager on any proposed modifications that may fall within the scope and intention of the Limited Operational Flexibility but is not listed explicitly or included as an example in this document.
4. The Owner shall ensure that any pre-authorized modifications will not:
 - a. adversely affect the hydraulic profile of the Sewage Treatment Plant or the performance of any upstream or downstream processes, both in terms of hydraulics and treatment performance;
 - b. result in new Overflow or Bypass locations, or any potential increase in frequency or quantity of Overflow(s) or Bypass(es).
 - c. result in a reduction in the required Peak Flow Rate of the treatment process or equipment as originally designed.

2. Modifications that do not require pre-authorization:

1. Sewage works that are exempt from Ministry approval requirements;
 2. Modifications to the electrical system, instrumentation and control system.
- 3. Pre-authorized modifications that do not require preparation of "Notice of Modification to Sewage Works"**
1. Normal or emergency maintenance activities, such as repairs, renovations, refurbishments and replacements with Equivalent Equipment, or other improvements to an existing approved piece of equipment of a treatment process do not require pre-authorization. Examples of these activities are:
 - a. Repairing a piece of equipment and putting it back into operation, including replacement of minor

components such as belts, gear boxes, seals, bearings;

- b. Repairing a piece of equipment by replacing a major component of the equipment such as motor, with the same make and model or another with the same or very close power rating but the capacity of the pump or blower will still be essentially the same as originally designed and approved;
 - c. Replacing the entire piece of equipment with Equivalent Equipment.
2. Improvements to equipment efficiency or treatment process control do not require pre-authorization. Examples of these activities are:
- a. Adding variable frequency drive to pumps;
 - b. Adding on-line analyzer, dissolved oxygen probe, ORP probe, flow measurement or other process control device.
4. Pre-Authorized Modifications that require preparation of "Notice of Modification to Sewage Works"
- 1. Pumping Stations
 - a. Replacement, realignment of existing sewers including manholes, valves, gates, weirs and associated appurtenances provided that the modifications will not add new influent source(s) or result in an increase in flow from existing sources as originally approved.
 - b. Extension or partition of wetwell to increase retention time for emergency response and improve station maintenance and pump operation;
 - c. Replacement or installation of inlet screens to the wetwell;
 - d. Replacement or installation of flowmeters, construction of station bypass;
 - e. Replacement, reconfiguration or addition of pumps and modifications to pump suctions and discharge pipings including valve, gates, motors, variable frequency drives and associated appurtenances to maintain firm pumping capacity or modulate the pump rate provided that the modifications will not result in a reduction in the firm pumping capacity or discharge head or an increase in the peak pumping rate of the pumping station as originally designed;
 - f. Replacement, realignment of existing forcemain(s) valves, gates, and associated appurtenances provided that the modifications will not reduce the flow capacity or increase the total dynamic head and transient in the forcemain.
 - 2. Sewage Treatment Plant
 - 1. Sewers and appurtenances

- a. Replacement, realignment of existing sewers (including pipes and channels) or construction of new sewers, including manholes, valves, gates, weirs and associated appurtenances within the a sewage treatment plant, provided that the modifications will not add new influent source(s) or result in an increase in flow from existing sources as originally approved and that the modifications will remove hydraulic bottlenecks or improve the conveyance of sewage into and through the Works.
2. Flow Distribution Chambers/Splitters
 - a. Replacement or modification of existing flow distribution chamber/splitters or construction of new flow distribution chamber/splitters, including replacements or installation of sluice gates, weirs, valves for distribution of flows to the downstream process trains, provided that the modifications will not result in a change in flow distribution ratio to the downstream process trains as originally designed.
3. Imported Sewage Receiving Facility
 1. Replacement, relocation or installation of loading bays, connect/disconnect hook-up systems and unloading/transferring systems;
 2. Replacement, relocation or installation of screens, grit removal units and compactors;
 3. Replacement, relocation or installation of pumps, such as dosing pumps and transfer pumps, valves, piping and appurtenances;
 4. Replacement, relocation or installation of storage tanks/chambers and spill containment systems;
 5. Replacement, relocation or installation of flow measurement and sampling equipment;
 6. Changes to the source(s) or quantity from each source, provided that changes will not result in an increase in the total quantity and waste loading of each type of Imported Sewage already approved for co-treatment.
4. Preliminary Treatment System
 - a. Replacement of existing screens and grit removal units with equipment of the same or higher process performance technology, including where necessary replacement or upgrading of existing screenings dewatering washing compactors, hydrocyclones, grit classifiers, grit pumps, air blowers conveyor system, disposal bins and other ancillary equipment to the screening and grit removal processes.
 - b. Replacement or installation of channel aeration systems, including air blowers, air supply main, air headers, air laterals, air distribution grids and diffusers.

5. Primary Treatment System

- a. Replacement of existing sludge removal mechanism, including sludge chamber;
- b. Replacement or installation of scum removal mechanism, including scum chamber;
- c. Replacement or installation of primary sludge pumps, scum pumps, provided that: the modifications will not result in a reduction in the firm pumping capacity or discharge head that the primary sludge pump(s) and scum pump(s) are originally designed to handle.

6. Secondary Treatment System

1. Biological Treatment

- a. Conversion of complete mix aeration tank to plug-flow multi-pass aeration tank, including modifications to internal structural configuration;
- b. Addition of inlet gates in multi-pass aeration tank for step-feed operation mode;
- c. Partitioning of an anoxic/flip zone in the inlet of the aeration tank, including installation of submersible mixer(s);
- d. Replacement of aeration system including air blowers, air supply main, air headers, air laterals, air distribution grids and diffusers, provided that the modifications will not result in a reduction in the firm capacity or discharge pressure that the blowers are originally designed to supply or in the net oxygen transferred to the wastewater required for biological treatment as originally required.

2. Secondary Sedimentation

- a. Replacement of sludge removal mechanism, including sludge chamber;
- b. Replacement or installation of scum removal mechanism, including scum chamber;
- c. Replacement or installation of return activated sludge pump(s), waste activated sludge pump(s), scum pump(s), provided that the modifications will not result in a reduction in the firm pumping capacity or discharge head that the activated sludge pump(s) and scum pump(s) are originally designed to handle.

7. Post-Secondary Treatment System

- a. Replacement of filtration system with equipment of the same filtration technology, including feed pumps, backwash pumps, filter reject pumps, filtrate extract pumps, holding tanks associated with the pumping system, provided that the modifications will not result in a reduction in the capacity of

the filtration system as originally designed.

8. Disinfection System

1. UV Irradiation

- a. Replacement of UV irradiation system, provided that the modifications will not result in a reduction in the design capacity of the disinfection system or the radiation level as originally designed.

2. Chlorination/Dechlorination and Ozonation Systems

- a. Extension and reconfiguration of contact tank to increase retention time for effective disinfection and reduce dead zones and minimize short-circuiting;
- b. Replacement or installation of chemical storage tanks, provided that the tanks are provided with effective spill containment.

9. Supplementary Treatment Systems

1. Chemical systems

- a. Replacement, relocation or installation of chemical storage tanks for existing chemical systems only, provided that the tanks are sited with effective spill containment;
- b. Replacement or installation of chemical dosing pumps provided that the modifications will not result in a reduction in the firm capacity that the dosing pumps are originally designed to handle.
- c. Relocation and addition of chemical dosing point(s) including chemical feed pipes and valves and controls, to improve phosphorus removal efficiency;
- d. Use of an alternate chemical provided that it is a non-proprietary product and is a commonly used alternative to the chemical approved in the Works, provided that the chemical storage tanks, chemical dosing pumps, feed pipes and controls are also upgraded, as necessary..

10. Sludge Management System

1. Sludge Holding and Thickening

- a. Replacement or installation of sludge holding tanks, sludge handling pumps, such as transfer pumps, feed pumps, recirculation pumps, provided that modifications will not result in reduction in the solids storage or handling capacities;

2. Sludge Digestion

- a. Replacement or installation of digesters, sludge handling pumps, such as transfer pumps, feed pumps, recirculation pumps, provided that modifications will not result in reduction in the solids storage or handling capacities;
- b. replacement of sludge digester covers.

3. Sludge Dewatering and Disposal

- a. Replacement of sludge dewatering equipment, sludge handling pumps, such as transfer pumps, feed pumps, cake pumps, loading pumps, provided that modifications will not result in reduction in solids storage or handling capacities.

4. Processed Organic Waste

- a. Changes to the source(s) or quantity from each source, provided that changes will not result in an increase in the total quantity already approved for co-processing.

11. Standby Power System

1. Replacement or installation of standby power system, including feed from alternate power grid, emergency power generator, fuel supply and storage systems, provided that the existing standby power generation capacity is not reduced.

12. Pilot Study

1. Small side-stream pilot study for existing or new technologies, alternative treatment process or chemical, provided:
 - i. all effluent from the pilot system is hauled off-site for proper disposal or returned back to the sewage treatment plant for at a point no further than immediately downstream of the location from where the side-stream is drawn;
 - ii. no proprietary treatment process or propriety chemical is involved in the pilot study;
 - iii. the effluent from the pilot system returned to the sewage treatment plant does not significantly alter the composition/concentration of or add any new contaminant/inhibiting substances to the sewage to be treated in the downstream process;
 - iv. the pilot study will not have any negative impacts on the operation of the sewage treatment plant or cause a deterioration of effluent quality;
 - v. the pilot study does not exceed a maximum of two years and a notification of completion shall be

submitted to the District Manager within one month of completion of the pilot project.


13. Lagoons

- a. installing baffles in lagoon provided that the operating capacity of the lagoon system is not reduced;
- b. raise top elevation of lagoon berms to increase free-board;
- c. replace or install interconnecting pipes and chambers between cells, provided that the process design operating sequence is not changed;
- d. replace or install mechanical aerators, or replace mechanical aerators with diffused aeration system provided that the mixing and aeration capacity are not reduced;
- e. removal of accumulated sludge and disposal to an approved location offsite.

3. Final Effluent Disposal Facilities

- 1. Replacement or realignment of the Final Effluent channel, sewer or forcemain, including manholes, valves and appurtenances from the end of the treatment train to the discharge outfall section, provided that the sewer conveys only effluent discharged from the Sewage Treatment Plant and that the replacement or re-aligned sewer has similar dimensions and performance criteria and is in the same or approximately the same location and that the hydraulic capacity will not be reduced.

This page contains an image of the form entitled "Notice of Modification to Sewage Works". A digital copy can be obtained from the District Manager.

 Ontario	Ministry of the Environment, Conservation and Parks	Notice of Modification to Sewage Works
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RETAIN COPY OF COMPLETED FORM AS PART OF THE ECA ON-SITE PRIOR TO THE SCHEDULED IMPLEMENTATION DATE

Part 1 – Environmental Compliance Approval (ECA) with Limited Operational Flexibility <small>(insert the ECA's owner, number and issuance date and notice number, which should start with "01" and consecutive numbers thereafter)</small>		
ECA Number	Issuance Date (mm/dd/yyyy)	Notice number (if applicable)
ECA Owner		Municipality

Part 2: Description of the modifications as part of the Limited Operational Flexibility <small>(Attach a detailed description of the sewage works)</small>
<p>Description shall include:</p> <ol style="list-style-type: none"> 1. A detail description of the modifications and/or operations to the sewage works (e.g. sewage work component, location, size, equipment type/model, material, process name, etc.) 2. Confirmation that the anticipated environmental effects are negligible 3. List of updated versions of, or amendments to, all relevant technical documents that are affected by the modifications as applicable, i.e. submission of documentation is not required, but the listing of updated documents is (design brief, drawings, emergency plan, etc.)

Part 3 – Declaration by Professional Engineer	
<p>I hereby declare that I have verified the scope and technical aspects of this modification and confirm that the design:</p> <ol style="list-style-type: none"> 1. Has been prepared or reviewed by a Professional Engineer who is licensed to practice in the Province of Ontario; 2. Has been designed in accordance with the Limited Operational Flexibility as described in the ECA; 3. Has been designed consistent with Ministry's Design Guidelines, adhering to engineering standards, industry's best management practices, and demonstrating ongoing compliance with s.53 of the Ontario Water Resources Act; and other appropriate regulations. <p>I hereby declare that to the best of my knowledge, information and belief the information contained in this form is complete and accurate</p>	
Name (Print)	PEO License Number
Signature	Date (mm/dd/yyyy)
Name of Employer	

Part 4 – Declaration by Owner	
<p>I hereby declare that:</p> <ol style="list-style-type: none"> 1. I am authorized by the Owner to complete this Declaration; 2. The Owner consents to the modification; and 3. This modification to the sewage works are proposed in accordance with the Limited Operational Flexibility as described in the ECA. <p>4. The Owner has fulfilled all applicable requirements of the <i>Environmental Assessment Act</i>.</p> <p>I hereby declare that to the best of my knowledge, information and belief the information contained in this form is complete and accurate</p>	
Name of Owner Representative (Print)	Owner representative's title (Print)
Owner Representative's Signature	Date (mm/dd/yyyy)

EAPB Form July 25, 2019

Schedule F

Methodology for Calculating and Reporting Monthly Average Effluent Concentration, Annual Average Effluent Concentration and Monthly Geometric Mean Density

1. Monthly Average Effluent Concentration

- Step 1: Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar month and proceed as follows depending on the result of the calculation:
- If the arithmetic mean does not exceed the compliance limit for the contaminant, then report and use this arithmetic mean as the Monthly Average Effluent Concentration for this parameter where applicable in this Approval;
 - If the arithmetic mean exceeds the compliance limit for the contaminant and there was no Bypass Event during the calendar month, then report and use this arithmetic mean as the Monthly Average Effluent Concentration for this parameter where applicable in this Approval;
 - If the arithmetic mean exceeds the compliance limit for the contaminant and there was Bypass Event(s) during the calendar month, then proceed to Step 2;
 - If the arithmetic mean does not exceed the compliance limit for the contaminant and there was Bypass Event(s) during the calendar month, the Owner may still elect to proceed to Step 2 calculation of the flow-weighted arithmetic mean.
- Step 2: Calculate the flow-weighted arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar month and proceed depending on the result of the calculation:
- Group No Bypass Days (NBPD) data and Bypass Days (BPD) data during a calendar month separately;
 - Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured on all NBPD during a calendar month and record it as **Monthly Average NBPD Effluent Concentration**;
 - Obtain the “**Total Monthly NBPD Flow**” which is the total amount of Final Effluent discharged on all NBPD during the calendar month;
 - Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured on all BPD during a calendar month

and record it as **Monthly Average BPD Effluent Concentration**;

- e. Obtain the “**Total Monthly BPD Flow**” which is the total amount of Final Effluent discharged on all BPD during the calendar month;
- f. Calculate the flow-weighted arithmetic mean using the following formula:

$$\frac{[(\text{Monthly Average NBPD Effluent Concentration} \times \text{Total Monthly NBPD Flow}) + (\text{Monthly Average BPD Effluent Concentration} \times \text{Total Monthly BPD Flow})]}{(\text{Total Monthly NBPD Flow} + \text{Total Monthly BPD Flow})}$$

It should be noted that in this method, if there are no Bypass Event for the month, the calculated result would be the same as the non-flow-weighted arithmetic mean method;

- g. Report and use the lesser of the flow-weighted arithmetic mean obtained in Step 2 and the arithmetic mean obtained in Step 1 as the Monthly Average Effluent Concentration for this parameter where applicable in this Approval.

2. Annual Average Effluent Concentration

Step 1: Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar year and proceed as follows depending on the result of the calculation:

- a. If the arithmetic mean does not exceed the compliance limit for the contaminant, then report and use this arithmetic mean as the Annual Average Effluent Concentration for this parameter where applicable in this Approval;
- b. If the arithmetic mean exceeds the compliance limit for the contaminant and there was no Bypass Event during the calendar year, then report and use this arithmetic mean as the Annual Average Effluent Concentration for this parameter where applicable in this Approval;
- c. If the arithmetic mean exceeds the compliance limit for the contaminant and there was Bypass Event(s) during the calendar year, then proceed to Step 2;
- d. If the arithmetic mean does not exceed the compliance limit for the contaminant and there was Bypass Event(s) during the calendar year, the Owner may still elect to proceed to Step 2 calculation of the flow-weighted arithmetic mean.

Step 2: Calculate the flow-weighted arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar year and proceed depending on the result of the calculation:

- a. Group No Bypass Days (**NBPD**) data and Bypass Days (**BPD**) data during a calendar year

separately;

- b. Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured on all NBPD during a calendar year and record it as **Annual Average NBPD Effluent Concentration**;
- c. Obtain the “**Total Annual NBPD Flow**” which is the total amount of Final Effluent discharged on all NBPD during the calendar year;
- d. Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured on all BPD during a calendar year and record it as **Annual Average BPD Effluent Concentration**;
- e. Obtain the “**Total Annual BPD Flow**” which is the total amount of Final Effluent discharged on all BPD during the calendar year;
- f. Calculate the flow-weighted arithmetic mean using the following formula:

$$\frac{[(\text{Annual Average NBPD Effluent Concentration} \times \text{Total Annual NBPD Flow}) + (\text{Annual Average BPD Effluent Concentration} \times \text{Total Annual BPD Flow})]}{(\text{Total Annual NBPD Flow} + \text{Total Annual BPD Flow})}$$

It should be noted that in this method, if there are no Bypass Event for the calendar year, the calculated result would be the same as the non-flow-weighted arithmetic mean method;

- g. Report and use the lesser of the flow-weighted arithmetic mean obtained in Step 2 and the arithmetic mean obtained in Step 1 as the Annual Average Effluent Concentration for this parameter where applicable in this Approval.

3. Monthly Geometric Mean Density

Geometric mean is defined as the n^{th} root of the product of n numbers. In the context of calculating Monthly Geometric Mean Density for *E.coli*, the following formula shall be used:

$$\sqrt[n]{x_1 x_2 x_3 \cdots x_n}$$

in which,

“ n ” is the number of samples collected during the calendar month; and

“ x ” is the value of each Single Sample Result.

For example, four weekly grab samples were collected and tested for *E.coli* during the calendar month. The *E.coli* densities in the Final Effluent were found below:

Sample Number	<i>E.coli</i> Densities* (CFU /100 mL)
1	10
2	100
3	300
4	50

The Geometric Mean Density for these data:

$$\sqrt[4]{10 \times 100 \times 300 \times 50} = 62$$

*If a particular result is zero (0), then a value of one (1) will be substituted into the calculation of the Monthly Geometric Mean Density. If the MPN method is utilized for *E. coli* analysis, values in the table shall be in MPN/100 mL.

Schedule G

Municipal and Local Services Board Wastewater System Profile Information Form

(For reference only, images of the form are attached on the next four pages. A digital copy can be obtained from the District Manager.)



Ontario

Ministry of the
Environment,
Conservation and Parks

**Municipal and Local Services Board Wastewater
System Profile Information Form**

The information in this form is necessary to administer the Ministry's approvals, compliance and enforcement programs with respect to wastewater treatment and collection systems owned by municipalities and local services boards. These programs are authorized under the *Ontario Water Resources Act*, the *Environmental Protection Act*, the *Nutrient Management Act* and their respective regulations.

Email the completed form to: waterrforms@ontario.ca
For any questions call 1-866-793-2588.

[A] SYSTEM PROFILE INFORMATION					
Wastewater System Number (# assigned)			<input type="checkbox"/> New Profile <input type="checkbox"/> Update Existing Profile		
Name of System			Level of Treatment (select one*) <input type="checkbox"/> Primary <input type="checkbox"/> Secondary <input type="checkbox"/> Tertiary <input type="checkbox"/> Secondary Equivalent <input type="checkbox"/> Other (specify): <i>*See Terms and Concepts on page 4</i>		
Name of Municipality or Local Services Board					
Population Served	Population (Design)	Type of System <input type="checkbox"/> Treatment & Collection System <input type="checkbox"/> Collection System Only			
Design Rated Capacity (m ³ /day)	Peak Flow Rate (m ³ /day)	Current Environmental Compliance Approval (ECA) Number	Current ECA Issue Date (yyyy/mm/dd):		
The treatment plant receives sewage from: (Check all that applies. * If you have checked more than one option below, indicate the approximate %)					
<input type="checkbox"/> Sanitary Sewer <input type="checkbox"/> Combined Sewer <input type="checkbox"/> Nominally Separated Sewer <input type="checkbox"/> Partially Separated Sewer <i>*See Terms and Concepts on page 4</i>					
[B] OWNER INFORMATION					
Legal Name of Municipality or Local Services Board					
Unit No.	Street No.	Street Name		Street Type (St, Rd, etc)	Street Direction (N,S,E,W)
PO Box	City/Town			Postal Code	
<input type="checkbox"/> Dr <input type="checkbox"/> Miss <input type="checkbox"/> Mr <input type="checkbox"/> Mrs <input type="checkbox"/> Ms	Owner Contact First Name		Owner Contact Last Name		Owner Contact Job Title
Tel. No. () - ext.		Fax Number () -		Email address	
[C] OPERATING AUTHORITY <input type="checkbox"/> Check if same as owner					
Legal Name of Operator					
Unit No.	Street No.	Street Name		Street Type (St, Rd, etc)	Street Direction (N,S,E,W)
PO Box	City/Town			Postal Code	
<input type="checkbox"/> Dr <input type="checkbox"/> Miss <input type="checkbox"/> Mr <input type="checkbox"/> Mrs <input type="checkbox"/> Ms	Operator Contact First Name		Operator Contact Last Name		Operator Contact Job Title
Tel. No. () - ext.		Fax Number () -		Email address	

Oct 2014

Page 1 of 4

[D] 24/7 CONTACT					
<input type="checkbox"/> Dr <input type="checkbox"/> Miss		First Name		Last Name	
<input checked="" type="checkbox"/> Mr <input type="checkbox"/> Mrs					
<input type="checkbox"/> Ms					
Tel. No.		Fax Number		Email address	
() - ext.		() -			
[E] SYSTEM CIVIC LOCATION ADDRESS (I.E. ADDRESS OF TREATMENT PLANT)					
Unit No.	Street No.	Street Name		Street Type (St., Rd., etc.)	Street Direction (N, S, E, W)
PO Box	City/Town			Postal Code	
If the Wastewater System has no street address					
Geographical Township			Lot	Concession	
Geographical Referencing (if known, enter the Geographical Reference Information for this Wastewater System)					
Map Datum	Geo-Referencing Method		Accuracy Estimate	Location Reference	
Latitude	Longitude		Zone	Easting	Northing
[F] TREATMENT PROCESS					
Preliminary	Primary	Secondary	Secondary Equivalent	Post-Secondary	Additional Treatment
<input type="checkbox"/> Screening <input type="checkbox"/> Shredding/ grinding <input type="checkbox"/> Grit Removal <input type="checkbox"/> Other(specify):	<input type="checkbox"/> Settling/sedimentation/ clarification <input type="checkbox"/> Scum Removal <input type="checkbox"/> Polymer Addition <input type="checkbox"/> Other(specify):	<input type="checkbox"/> Conventional Activated Sludge (CAS) <input type="checkbox"/> Extended Aeration <input type="checkbox"/> Membrane Bioreactor (MBR) <input type="checkbox"/> Sequencing Batch Reactor (SBR) <input type="checkbox"/> Rotating Biological Contactor (RBC) <input type="checkbox"/> Trickling Filter (TF) <input type="checkbox"/> Biological Aerated Filter (BAF) <input type="checkbox"/> Other(specify):	<input type="checkbox"/> Aerated Lagoon <input type="checkbox"/> Facultative Lagoon <input type="checkbox"/> Anaerobic Lagoon <input type="checkbox"/> Aerobic Lagoon <input type="checkbox"/> Other(specify):	<input type="checkbox"/> Filtration <input type="checkbox"/> Clarification <input type="checkbox"/> Intermittent Sand Filter (after lagoons) <input type="checkbox"/> Polishing Wetlands <input type="checkbox"/> Polishing Lagoons <input type="checkbox"/> Other(specify):	<input type="checkbox"/> Phosphorous Removal <input type="checkbox"/> Biological <input type="checkbox"/> Chemical If chemical is used, specify: <input type="checkbox"/> Nitrification <input type="checkbox"/> Denitrification <input type="checkbox"/> Other(specify):
[G] DISINFECTION					
Method of Disinfection			Disinfection Period		
<input type="checkbox"/> Chlorination If you chlorinate, do you practice de-chlorination? <input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/> Continuous <input type="checkbox"/> Seasonal		
<input type="checkbox"/> Ultraviolet Irradiation			<input type="checkbox"/> Continuous <input type="checkbox"/> Seasonal		
<input type="checkbox"/> Other (specify):			<input type="checkbox"/> Continuous <input type="checkbox"/> Seasonal		

[H] SLUDGE	
Sludge Stabilization Process	Method of Sludge Disposal/Utilization
<input type="checkbox"/> Aerobic Digestion	<input type="checkbox"/> Agricultural
<input type="checkbox"/> Anaerobic Digestion	<input type="checkbox"/> Landfill
<input type="checkbox"/> Drying & Pelletization	<input type="checkbox"/> Incineration
<input type="checkbox"/> Lime Treatment	<input type="checkbox"/> Other (specify):
<input type="checkbox"/> Composting	
<input type="checkbox"/> Other (specify):	
Available Sludge Storage Capacity (m ³):	
[I] EFFLUENT	
Effluent Disposal Method	Effluent Discharge Frequency
<input type="checkbox"/> Surface Water Receiving Water Body Name:	<input type="checkbox"/> Continuous <input type="checkbox"/> Seasonal
<input type="checkbox"/> Subsurface	<input type="checkbox"/> Continuous <input type="checkbox"/> Seasonal
<input type="checkbox"/> Other (specify):	<input type="checkbox"/> Continuous <input type="checkbox"/> Seasonal
Is the effluent discharged in a vulnerable area identified in the local source protection assessment report approved under the Clean Water Act, 2006?	
<input type="checkbox"/> Yes <input type="checkbox"/> No	
[J] INFLUENT	
Does the plant receive sewage from another municipality or local services board either through an interconnected collection system or hauled sewage?	
<input type="checkbox"/> Yes <input type="checkbox"/> No	
(if yes, name(s) of other municipality or local services board):	
Plant receives:	
<input type="checkbox"/> Leachate (approximate annual volume in m ³):	
<input type="checkbox"/> Septage (approximate annual volume in m ³):	
<input type="checkbox"/> Industrial Input (approximate annual volume in m ³):	
or (approximate volume in %):	

Terms and Concepts

The following Terms and Concepts are provided to assist you when completing Wastewater System Profile Information Form.

In order to determine the level of treatment that applies to the wastewater system, the effluent quality objectives that the wastewater treatment plant was designed to meet must be considered. The process based approach often used in the past has led to confusion and is open to interpretation due to recent developments and practices in the wastewater treatment industry. For example, a plant with a high rate filter (often referred to as a tertiary filter) after its secondary treatment was considered a tertiary treatment in the past since the filter was designed and operated to produce a tertiary quality effluent. However, secondary plants are now being constructed with these filters as a safeguard against any potential secondary clarifier performance degradation and not for the purpose of ensuring tertiary treatment performance. Also, new technologies have evolved that can produce tertiary quality effluent without having these high rate filters (e.g., membrane bioreactors). Lagoons were considered in the past as being capable of providing only secondary equivalent treatment. However, with add-on treatment after the lagoons (e.g. Intermittent sand filters), many lagoon treatment systems are capable of producing secondary or tertiary quality effluent.

During the establishment of sewage works, site-specific effluent limits (including averaging periods) are provided by the Ministry's Regional Technical Support Section, considering the assimilative capacity of the receivers and the minimum treatment requirements provided in Procedure F-5-1. The designer of the sewage works then selects objective values that are acceptable to the Ministry and are less (i.e. more stringent) than the effluent limits, in order to provide an adequate safety factor based on the designer's confidence/experience with the technology chosen and other site-specific conditions. The sewage works are then designed (and operated) to meet these design objectives in a reliable and consistent manner. Therefore, the values that are to be used in the determination of the level of treatment that applies to the sewage works must be based on the design objectives, and not the effluent limits.

Two common parameters used in almost all sewage works designs and performance evaluations are CBOD₅ (carbonaceous biochemical oxygen demand) (BOD₅ – biochemical oxygen demand - for primary sewage works) and total suspended solids (TSS). Therefore, it is logical that the objective values of these two parameters are used to determine the level of treatment at the sewage works.

Level of Treatment:

Primary:

Wastewater treatment plants that have only settling/sedimentation (with or without chemical addition) and providing 30% and 50% or better reduction of BOD₅ and TSS respectively are considered primary plants (MOE Procedures F-5-1 and F-5-5).

Secondary:

Wastewater treatment plants that have biological processes (e.g. activated sludge process and its variations, fixed film processes) or physical-chemical processes producing an effluent quality of CBOD₅ and TSS of 15 mg/L or better are considered secondary plants (MOE Design Guidelines for Sewage Works, 2008).

Secondary Equivalent:

Wastewater treatment plants producing an effluent quality of CBOD₅ of 25 mg/L and TSS of 30 mg/L or better are considered as secondary equivalent plants.

Note: Wastewater treatment plants that provide only primary settling of solids and the addition of chemicals to improve the removal of TSS (and phosphorus) are not considered as secondary treatment plants or secondary equivalent plants (MOE Design Guidelines for Sewage Works, 2008).

Tertiary:

Wastewater treatment plants that have biological processes (e.g. activated sludge process and its variations, fixed film processes) and/or physical-chemical processes producing an effluent quality of CBOD₅ and TSS of 5 mg/L or better are considered tertiary plants.

Note: Biological processes such as nitrification, denitrification and enhanced biological phosphorus removal can be part of either a secondary or tertiary treatment plant. They may be described as secondary treatment plant with nitrification, secondary treatment plant with enhanced biological phosphorus removal, tertiary treatment plant with nitrification etc.

Sewer System Type:

Sanitary Sewers:

Pipes that convey sanitary sewage flows made up of wastewater discharges from residential, commercial, institutional and industrial establishments plus extraneous flow components from such sources as groundwater and surface run off.

Combined Sewers:

Pipes that convey both sanitary sewage and stormwater runoff through a single-pipe system.

Partially Separated Sewers:

Exist when either a portion of the combined sewer area was retrofitted to separate (sanitary and storm) sewers and/or a service area with combined sewers has had a new development area with separate sewers added to the service area, whatever the case may be, the final flows will be combined sewage.

Nominally Separated Sewers:

These sewers are constructed as separate sewers, but the sanitary sewers accept stormwater from roof and foundation drains (i.e., these are separated sewers in name only).

Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s).
2377-ALXPQL issued on July 7, 2017.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

- a. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
- b. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

1. The name of the appellant;
2. The address of the appellant;
3. The environmental compliance approval number;
4. The date of the environmental compliance approval;
5. The name of the Director, and;
6. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

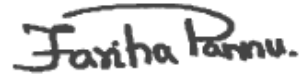
AND

The Director appointed for the purposes of Part II.1 of
the Environmental Protection Act
Ministry of the Environment, Conservation and Parks
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

* Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or www.ert.gov.on.ca

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 24th day of August, 2018



Fariha Pannu, P.Eng.
Director
appointed for the purposes of Part II.1 of the
Environmental Protection Act

YK/

c: DWMD Supervisor, MECP Barrie
Igor Sapun, Hatch Corporation



Ministry of the Environment, Conservation and Parks
Ministère de l'Environnement, de la Protection de la nature et des Parcs

AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 6401-C2FKWA

Issue Date: June 2, 2021

The Corporation of the City of Barrie
70 Collier St
Post Office Box, No. 400
Barrie, Ontario
L4M 4T5

Site Location: 249 Bradford Street
249 Bradford St
Barrie City, County of Simcoe
L4M 4T5

You have applied under section 20.2 of Part II.1 of the Environmental Protection Act, R.S.O. 1990, c. E. 19 (Environmental Protection Act) for approval of:

- one (1) cogeneration system consisting of:
 - one (1) reciprocating engine (Source ID: COGEN1), firing digester gas and natural gas, having a rating of 298 kilowatts, discharging to the air at a maximum volumetric flow rate of 0.65 cubic metre per second through a stack having an exit diameter of 0.2 metre, extending 13.3 metres above grade;
 - one (1) reciprocating engine (Source ID: COGEN2), firing digester gas and natural gas, having a rating of 298 kilowatts, discharging to the air at a maximum volumetric flow rate of 0.65 cubic metre per second through a stack having an exit diameter of 0.2 metre, extending 13.3 metres above grade;
 - one (1) boiler (Source ID: BOILER1), having a maximum heat input of 1.94 million kilojoules per hour, discharging to the air at a maximum volumetric flow rate of 0.28 cubic metre per second through a stack having an exit diameter of 0.2 metre, extending 13.2 metres above grade; and
 - one (1) boiler (Source ID: BOILER2), having a maximum heat input of 3.53 million kilojoules per hour, discharging to the air at a maximum volumetric flow rate of 0.51 cubic metre per

second through a stack having an exit diameter of 0.2 metre, extending 13.2 metres above grade;

- one (1) exhaust system (Source ID: FILTER1), serving the Tertiary Treatment/Filter Building, discharging to the air at a maximum volumetric flow rate of 4.0 metres per second through a stack having an exit diameter of 1.35 metres, extending 2.5 metres above grade;
- one (1) exhaust system (Source ID: FILTER2), serving the Tertiary Treatment/Filter Building, discharging to the air at a maximum volumetric flow rate of 4.0 metres per second through a stack having an exit diameter of 1.8 metres, extending 2.5 metres above grade;
- one (1) exhaust system (Source ID: FILTER3), serving the Tertiary Treatment/Filter Building, discharging to the air at a maximum volumetric flow rate of 4.0 metres per second through a stack having an exit diameter of 1.8 metres, extending 2.5 metres above grade;
- one (1) candlestick flare (Source ID: FLARE) to burn excess digester gas generated at the Facility, having a maximum heat input of 10.7 million kilojoules per hour, discharging to the atmosphere at a maximum volumetric flow rate of 1.4 cubic metres per second through a stack having an exit diameter of 1.48 metres, extending 7.5 metres above grade;
- one (1) exhaust system (Source ID: AEROBIC), serving the Aerobic Reactor Room Building, discharging to the air at a maximum volumetric flow rate of 1.5 cubic metres per second through a stack having an exit diameter of 0.5 metre, extending 5.5 metres above grade;
- one (1) standby diesel generator set (Source ID: GEN1), having a rating of 1180 kilowatts, to provide standby power to the Facility during emergency situation, discharging to the air at a maximum volumetric flow rate of 4.0 cubic metres per second through a stack having an exit diameter of 0.35 metre, extending 11.3 metres above grade;
- one (1) exhaust system (Source ID: SLPUMP), serving the Sludge Pumping Room, discharging to the air at a maximum volumetric flow rate of 1.5 cubic metres per second through a stack having an exit diameter of 0.5 metre, extending 5.5 metres above grade;
- one (1) exhaust fan (Source ID: INLET1), serving the Inlet Works Building, discharging to the air at a maximum volumetric flow rate of 1.67 cubic metres per second through a sidewall vent having an exit diameter of 0.87 metre, located 10 metres above grade;
- one (1) exhaust fan (Source ID: INLET2), serving the Inlet Works Building, discharging to the air at a maximum volumetric flow rate of 1.67 cubic metres per second through a sidewall vent having an exit diameter of 0.87 metre, located 10 metres above grade;
- one (1) odour control biotower (Source ID: OCU), serving the blending tank, sludge holding tank, Biosolids Loading Station No. 1, screening and grit handling equipment in the influent building, and the aerated grit chambers, equipped with irrigated upper heterotrophic attached growth media stages maintained temperatures between 15 degrees to 37 degrees Celsius, discharging to the air at a maximum volumetric flow rate of 0.84 cubic metre per second through a stack having an exit

diameter of 0.46 metre, extending 7.9 metres above grade;

- one (1) activated carbon adsorption unit (Source ID: SEPTAGE), serving Septage Receiving, equipped with 91 kilograms of activated carbon, discharging to the air at a maximum volumetric flow rate of 0.095 cubic metre per second through a stack having an exit diameter of 0.1 metre, located 1.2 metres above grade;
- one (1) exhaust system (Source ID: THICK), serving the Rotary Drum Thickener Building, discharging to the air at a maximum volumetric flow rate of 0.5 cubic metre per second through a sidewall exhaust located 3 metres above grade;
- one (1) exhaust system (Source ID: WETWELL), serving the Wet Well, discharging to the air at a maximum volumetric flow rate of 0.5 cubic metre per second through a sidewall vent having an exit diameter of 1.34 metres, located 4.3 metres above grade;

all in accordance with the Environmental Compliance Approval Application submitted by The Corporation of the City of Barrie, dated December 19, 2019, and signed by Sherry Diemert, P.Eng. Manager of Infrastructure Planning for Bala Araniyasundaran, P.Eng., Director of Infrastructure Planning; the supporting Emission Summary and Dispersion Modelling Report prepared by WSP Canada Inc., dated December 12, 2019, and signed by Willy de Wit, P.Eng.; the supporting Acoustic Assessment Report prepared by WSP Canada Inc., dated December 16, 2019, and signed by Kana Ganesh, P.Eng.; and the additional information provided by Valens Nicholson, P.Eng., City of Barrie, dated March 16, 2021, April 9, 2021 and May 21, 2021, and Willy de Wit, P.Eng., WSP Canada Inc., dated April 9, 2021 and April 27, 2021.

For the purpose of this environmental compliance approval, the following definitions apply:

1. "Approval" means this Environmental Compliance Approval, including the application and supporting documentation listed above;
2. "Biofilter" means the odour control biotower (Source ID: OCU) described in the Company's application, this Approval and in the supporting documentation submitted with the application, to the extent approved by this Approval.
3. "Company" means The Corporation of the City of Barrie that is responsible for the construction or operation of the Facility and includes any successors and assigns in accordance with section 19 of the EPA;
4. "District Manager" means the District Manager of the appropriate local district office of the Ministry, where the Facility is geographically located;
5. "EPA" means the Environmental Protection Act, R.S.O. 1990, c.E.19;
6. "Exhausted" means the capacity of the Equipment to adsorb emissions is reached and the Equipment is no longer able to effectively reduce emissions;
7. "Equipment" means the equipment and processes described in the Company's application, this

Approval and in the supporting documentation submitted with the application, to the extent approved by this Approval;

8. "Facility" means the entire operation located on the property where the Equipment is located;
9. "Manual" means a document or a set of documents that provide written instructions to staff of the Company;
10. "Ministry" means the ministry of the government of Ontario responsible for the EPA and includes all officials, employees or other persons acting on its behalf;
11. "Publication NPC-300" means the Ministry Publication NPC-300, "Environmental Noise Guideline, Stationary and Transportation Sources – Approval and Planning, Publication NPC-300", August 2013, as amended.

You are hereby notified that this environmental compliance approval is issued to you subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. OPERATION AND MAINTENANCE

1. The Company shall ensure that the Equipment is properly operated and maintained at all times. The Company shall:
 - a. prepare, not later than six (6) months after the date of this Approval, and update, as necessary, a Manual outlining the operating procedures and a maintenance program for the Equipment, including:
 - i. routine operating and maintenance procedures in accordance with good engineering practices and as recommended by the Equipment suppliers;
 - ii. emergency procedures, including spill clean-up procedures;
 - iii. procedures for any record keeping activities relating to operation and maintenance of the Equipment; and
 - iv. all appropriate measures to minimize noise and odorous emissions from all potential sources;
 - b. implement the recommendations of the Manual.
2. The Company shall ensure that the activated carbon in the Equipment is replaced before it is Exhausted.

2. RECORD RETENTION

1. The Company shall retain, for a minimum of two (2) years from the date of their creation, all records and information related to or resulting from the recording activities required by this Approval, and make these records available for review by staff of the Ministry upon request. The Company shall retain:
 - a. all records on the maintenance, repair and inspection of the Equipment; and
 - b. all records of any environmental complaints, including:
 - i. a description, time and date of each incident to which the complaint relates;
 - ii. wind direction at the time of the incident to which the complaint relates; and
 - iii. a description of the measures taken to address the cause of the incident to which the complaint relates and to prevent a similar occurrence in the future.

3. NOTIFICATION OF COMPLAINTS

1. The Company shall notify the District Manager, in writing, of each environmental complaint within two (2) business days of the complaint. The notification shall include:
 - a. a description of the nature of the complaint; and
 - b. the time and date of the incident to which the complaint relates.

4. MONITORING

1. The Company shall install, conduct and maintain a program to monitor and record the Biofilter parameters as outlined in Schedule A attached to this Approval.

5. NOISE

1. The Company shall, at all times, ensure that the noise emissions from the Facility comply with the limits set out in Ministry Publication NPC-300.

SCHEDULE A

Biofilter Parameters

The Company shall monitor and record the operational parameters of the Biofilter, either as specified in the Manual of the Biofilter manufacturer, or as deemed necessary in accordance with site operational conditions, as follows:

1. Pressure drop across the biofilter bed (kilopascals) weekly;
2. Process air flow through the biofilter (cubic metres per second) daily;
3. Biofilter bed moisture (percent) weekly;
4. Biofilter bed temperature (degrees Celsius) daily;
5. Inlet air temperature (degrees Celsius), after the pre-humification chamber, daily;
6. Inlet air relative humidity (percent), after the pre-humidification chamber, daily;
7. pH of the water runoff from the biofilter bed, monthly; and
8. Water flow in the pre-humidification chamber and the media irrigation system, daily.

The reasons for the imposition of these terms and conditions are as follows:

1. Condition No. 1 is included to emphasize that the Equipment must be maintained and operated according to a procedure that will result in compliance with the EPA, the Regulations and this Approval.
2. Condition No. 2 is included to require the Company to keep records and to provide information to staff of the Ministry so that compliance with the EPA, the Regulations and this Approval can be verified.
3. Condition No. 3 is included to require the Company to notify staff of the Ministry so as to assist the Ministry with the review of the site's compliance.
4. Condition No. 4 is included to require the Company to gather accurate information so that the environmental impact and subsequent compliance with the EPA, the regulations and this Approval can be verified.
5. Condition No. 5 is included to provide the minimum performance requirements considered necessary to prevent an adverse effect resulting from the operation of the Facility.

**Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s).
1316-5MKTGU issued on October 23, 2006.**

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

- a. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
- b. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

1. The name of the appellant;
2. The address of the appellant;
3. The environmental compliance approval number;
4. The date of the environmental compliance approval;
5. The name of the Director, and;
6. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the purposes of Part II.1
of the Environmental Protection Act
Ministry of the Environment, Conservation and
Parks
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

* Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or www.ert.gov.on.ca

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 2nd day of June, 2021



Neryed Ragbar, P.Eng.
Director
appointed for the purposes of Part II.1 of the
Environmental Protection Act

ES/

c: District Manager, MECP Barrie
Willy de Wit, WSP Canada Inc.



Ministry of the
Environment,
Conservation and
Parks

Notice of Modification to Sewage Works

RETAIN COPY OF COMPLETED FORM AS PART OF THE ECA ON-SITE PRIOR TO THE SCHEDULED IMPLEMENTATION DATE.

Part 1 – Environmental Compliance Approval (ECA) with Limited Operational Flexibility

(Insert the ECA's owner, number and issuance date and notice number, which should start with "01" and consecutive numbers thereafter)

ECA Number: 0284-B2ML52

Issuance Date (8/24/2018)

Notice number (if applicable) 2021-001

ECA Owner: The Corporation of the City of Barrie

Municipality: City of Barrie

Part 2: Description of the modifications as part of the Limited Operational Flexibility

(Attach a detailed description of the sewage works)

Supplementary Treatment Systems: Modification to the existing Aluminum (Alum) Sulphate Chemical addition system to improve WwTF phosphorus removal including:

1. Removal of two (2) existing double head positive displacement metering pumps installed in the basement of the existing chemical building.
2. The two (2) existing peristaltic pumps, each rated at 371L/h, will be repurposed to be used as the backup to the transfer pump or, alternatively, to feed the front of the plant, if required.
3. Install six (6) new alum peristaltic hose pumps in the basement of the existing chemical building. The new alum dosing pumps are variable speed flow paced pumps; each metering pump has a rated capacity of approximately 500L/h for a total capacity of 3,000L/h. The new pumps provide multi-point alum flow proportional dosing to secondary clarifiers inlet channels 1-6.
4. Install six (6) area velocity flow meters in the secondary clarifier effluent channels 1-6 for flow pacing signals for the alum system pump upgrades.
5. There are no anticipated environmental effects due to the stated LOF application works.
6. Project related documents and amendments include: project drawings and specifications, building permit, operations and maintenance manuals, MECP Notice of Modification to Sewage Works.

Description shall include:


1. A detail description of the modifications and/or operations to the sewage works (e.g. sewage work component, location, size, equipment type/model, material, process name, etc.)
2. Confirmation that the anticipated environmental effects are negligible.
3. List of updated versions of, or amendments to, all relevant technical documents that are affected by the modifications as applicable, i.e., submission of documentation is not required, but the listing of updated documents is (design brief, drawings, emergency plan, etc.)

Part 3 – Declaration by Professional Engineer

I hereby declare that I have verified the scope and technical aspects of this modification and confirm that the design:

1. Has been prepared or reviewed by a Professional Engineer who is licensed to practice in the Province of Ontario;
2. Has been designed in accordance with the Limited Operational Flexibility as described in the ECA;
3. Has been designed consistent with Ministry's Design Guidelines, adhering to engineering standards, industry's best management practices, and demonstrating ongoing compliance with s.53 of the Ontario Water Resources Act; and other appropriate regulations.

I hereby declare that to the best of my knowledge, information and belief that the information contained in this form is complete and accurate


Name (Print)	Sinclair Garner, B.E.S., C.C.M., L.E.L. (PEO)	PEO License Number	100-114-049
Signature		Date (mm/dd/yy)	October 15, 2021
Name of Employer			
WSP Canada Inc.			

Part 4 – Declaration by Owner

I hereby declare that:

1. I am authorized by the Owner to complete this Declaration;
2. The Owner consents to the modification; and
3. This modifications to the sewage works are proposed in accordance with the Limited Operational Flexibility as described in the ECA.
4. The Owner has fulfilled all applicable requirements of the *Environmental Assessment Act*.

I hereby declare that to the best of my knowledge, information and belief the information contained in this form is complete and accurate

Name of Owner Representative (Print)	Owner representative's title (Print)
Bala Araniyasundaran, P. Eng., PMP	Director of Infrastructure
Owner Representative's Signature	Date (mm/dd/yy)
	Nov 15, 2021

EAPB Form July 26, 2018



Ontario

Ministry of the
Environment,
Conservation and
Parks

Notice of Modification to Sewage Works

RETAIN COPY OF COMPLETED FORM AS PART OF THE ECA ON-SITE PRIOR TO THE SCHEDULED IMPLEMENTATION DATE.

Part 1 – Environmental Compliance Approval (ECA) with Limited Operational Flexibility

(Insert the ECA's owner, number and issuance date and notice number, which should start with "01" and consecutive numbers thereafter)

ECA Number	Issuance Date (mm/dd/yyyy)	Notice number (if applicable)
0284-B2ML52	August 24, 2018	2021-002
ECA Owner	Municipality	
The Corporation of the City of Barrie	City of Barrie, County of Simcoe	

Part 2: Description of the modifications as part of the Limited Operational Flexibility

(Attach a detailed description of the sewage works)

This modification is to improve redundancy of the five (5) primary raw sludge pumps that service primary clarifiers one (1) through three (3). This work includes the installation of a sixth primary sludge pump rated at the same capacity as the existing pumps of approximately 13 L/s at 12m TDH. This work includes new 150mm suction and discharge piping to plumb in the new pump, and valve work to isolate the pump suction header between each primary clarifier. The new pump would be installed to service primary clarifier 2 and be named Primary Raw Sludge Pump 04. With this pump in service each primary clarifier will have a dedicated duty/standby raw sludge pump configuration with the intention of improving operation and maintenance procedures for servicing raw sludge pumps and cleaning primary clarifiers.

Upon completion of this work, Primary clarifier #01 will be serviced by Raw Sludge Pumps 01 & 02;

Primary Clarifier #02 will be serviced by Raw Sludge Pumps 03 & 04 (new); and

Primary Clarifier #03 will be serviced by Raw Sludge pumps 05 (Previously 04) and 06 (Previously 05).

The addition of this pump will not create any environmental effects.

Pump logic will need to be updated to operate pumps 1&2, and 3&4 on the same operating principle that is currently used by existing primary raw sludge pumps 4 (now 5) & 5 (now 6) as they operate in duty/standby configuration on primary clarifier #03.

The City is responsible for updating their engineering design documentation that will be affected by the works described within this Notice of Modification to Sewage Works

A non-exhaustive list of documents that may be affected by the works described herein are listed below:

- Design Brief
- Barrie WWTF Engineering Record Drawings
- Operation and Maintenance Manuals
- Process Control Narrative/Process Narrative
- Specifications

Part 3 – Declaration by Professional Engineer

I hereby declare that I have verified the scope and technical aspects of this modification and confirm that the design:

1. Has been prepared or reviewed by a Professional Engineer who is licensed to practice in the Province of Ontario;
2. Has been designed in accordance with the Limited Operational Flexibility as described in the ECA;
3. Has been designed consistent with Ministry's Design Guidelines, adhering to engineering standards, industry's best management practices, and demonstrating ongoing compliance with s.53 of the Ontario Water Resources Act; and other appropriate regulations.

I hereby declare that to the best of my knowledge, information and belief the information contained in this form is complete and accurate

Name (Print)

Kevin Vitone

PEO License Number

100503002

Signature

Kevin Vitone

Date (mm/dd/yy)

10/13/2021

Name of Employer

Stantec Consulting Ltd.

Part 4 – Declaration by Owner

I hereby declare that:

1. I am authorized by the Owner to complete this Declaration;
2. The Owner consents to the modification; and
3. This modifications to the sewage works are proposed in accordance with the Limited Operational Flexibility as described in the ECA.
4. The Owner has fulfilled all applicable requirements of the *Environmental Assessment Act*.

I hereby declare that to the best of my knowledge, information and belief the information contained in this form is complete and accurate

Name of Owner Representative (Print)

GREG JORDEN

Owner representative's title (Print)

MANAGER OF WASTEWATER OPERATIONS

Owner Representative's Signature

G. Jorden

Date (mm/dd/yy)

03/17/22

EAPB Form July 26, 2018

Appendix “B”: Approvals Correspondence

From: [Luc Paquin](#)
To: [Lisa Drumm \(Lisa.Drumm@WSP.com\)](#); [Warren Anderson \(WAnderson@WASstephenson.com\)](#)
Cc: [Richard Alt \(RAlt@WASstephenson.com\)](#); [Robert Sinclair Garner \(Sinclair.Garner@WSP.com\)](#); [Ken Lowther](#); [Dan O'Neill](#)
Subject: RE: 2021-024T WwTF Alum Upgrades - alum run, demo
Date: Wednesday, April 20, 2022 9:10:00 AM
Attachments: [image001.png](#)

Lisa, Warren,

Following a successful performance run of the new alum system, WSP and WA Stephenson is advised that the City will forgo the remaining testing days on alum.

WA Stephenson is hereby advised to proceed with the removal of existing alum pilot piping system at their earliest opportunity.

Should you have any questions, please feel free to contact me.

Luc Paquin

Senior Project Administration Technologist/
Certified health & safety worker representative/
Pronouns: he/him/his
Infrastructure Department
The City of Barrie
705-739-4220 x5226

Please consider the environment before printing this email.

From: Luc Paquin
Sent: 6 April 2022 13:29
To: Lisa Drumm ([Lisa.Drumm@WSP.com](#)) <lisa.drumm@wsp.com>; Warren Anderson ([WAnderson@WASstephenson.com](#)) <wanderson@wastephenson.com>

Cc: Rick Vasey <rickv@bglcc.ca>; Robert Sinclair Garner (Sinclair.Garner@WSP.com)
<sinclair.garner@wsp.com>; Ken Lowther <Ken.Lowther@barrie.ca>; Dan O'Neill
<Dan.O'Neill@barrie.ca>

Subject: 2021-024T WwTF Alum Upgrades - switch over to alum

Lisa, Warren,

The City will be switching from water testing to alum testing on Monday, 11 April 2022. The switchover reduces the 14-day testing on water by two days which will provide the City additional testing on alum, should it be required.

Operations will be on site Monday morning to switch over to alum. Once switched, the City requests that WA Stephenson disconnect the testing water system from the new alum pumps system Monday morning. Note that the "old", heat-traced system will remain in place until the 25 April.

At this time, the City wishes to advise WSP and WA Stephenson that we will proceed with the contract provisional item, Removal of Existing Alum Pilot Piping System, under 01030. Execution of this item is anticipated the week of the 25 April, following successful completion of the system testing on alum.

Thank you for your continued cooperation.

Luc Paquin

Senior Project Administration Technologist /
technologue senior de la gestion de projet
Certified health & safety worker representative/
représentant certifié des travailleurs pour la santé et la sécurité
Pronouns: he/him/his

Infrastructure Department



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CERTIFICATE OF PUBLICATION

This is to certify that this official notice appeared in the
Daily Commercial News on:

July 14, 2022

Canada/Ontario/Simcoe County/City of Barrie

249 Bradford Street, Barrie, Ontario

This is to certify that the contract for the following improvement:
WwTF Secondary Treatment Alum System Upgrades Contract No. 2021-024T)

To the above premises was substantially performed on: May 20, 2022

Date certificate signed: May 20, 2022

Name of owner: City of Barrie

Address for service: 249 Bradford Street, Barrie, Ontario L4N 3B7

Name of contractor: W.A. Stephenson Mechanical Contractors Limited

Address for service: 6701 Rexwood Road, Mississauga, ON L4V 1M7

Name of payment certifier: WSP Canada Inc.

Address: 100 Commerce Valley West, Thornhill, Ontario, L3T 0A1

Identification of premises for preservation of liens: 249 Bradford Street,
Barrie, Ontario L4N 3B7

Publication date: July 14, 2022

Form ID: [F9-36795](#)

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Appendix “C”: Completed Repair Work Order Summary

Completion Date	Description
1/19/2022	Please repair no hot water issue in administration building.
4/6/2022	Please have Lacey Instrumentation repair the 2 meters
11/22/2021	GDS6199_23 - LEL sensor is in alarm for signal fault
1/24/2022	pH probe not working needs to be checked and if needed replaced.
2/4/2022	Please repair under range alarm.
2/2/2022	3/1 gas detection pump not running
1/18/2022	Please replace MSA LEL sensors
3/11/2022	The location of this broken hatch is at the outlet gate for UNOX 2. It is part of the old mixed liquor channel right against the UNOX tank wall.
3/17/2022	Gas detection 1/1 keeps shutting down on run status. Ed and I checked it and figured it's a pump issue and may require replacement.
4/18/2022	HPOX valve FCV2541_51, feeding oxygen to unox 4&5 wondering past its Maximum clamp value of 23.0 % open. Doesn't respond to PC manual control
4/6/2022	Mixer train 3 stage 1 mixer has noise coming from the DE area of the motor and mixer. Possibly a Lovejoy coupling?
4/6/2022	Unox 5 stage 3 mixer has noise coming from the DE area of the motor and mixer connection. The DE bearing seal of the mixer looks like it may sweating the oil from the grease.
5/4/2022	Mixer 3/1 fail to start. Needs to be looked at. It is off as of 5:10am
5/18/2022	Please replace temp/pH sensor on Unox 5
5/6/2022	UNOX 5 Stage 1 LEL pump failure - Alarm comes in and out.
6/23/2022	Replace pump in lel monitor
7/18/2022	Took readings of DO, pH and temp of Unox effluent, and completed 30 min settling test and recorded all of the results in eRIS.
7/19/2022	Collecting MLSS and RAS samples and submitting them to the lab as well as probing the 5 Unox tanks to measure D.O. , temperature and pH and recording that data.
7/20/2022	Conduct the 30 minute settling percentage test and enter that data into e.RIS.
7/25/2022	Collecting and submitting MLSS and RAS samples and taking readings of pH, D.O. And temperature of the five UNOX tanks and entering that data into e.RIS.
8/28/2022	Keeps alarming for low flow. Johnnie replaced the filters and some sample lines but it keeps alarming.

5/9/2022	The skimmer is sitting crooked. One end is completely over and past the trough and the other is about 1 foot back from where it should be sitting. It faults in SCADA a few times a day saying it's not in the home position.
9/25/2022	Aeration 1/1 gas detection has a signal fault that has been coming in and out of alarm caused 2 call ins. I will disable the alarm until it can be fixed. GDS6199_11
11/20/2022	Aeration Gas Detection 1/3 Pump no longer working - no pump suction.
9/25/2022	DO probe for Tank #1 AIT0941_13A. If you look at trends the probe shows sharp spikes up and down on Saturday September 24/22 during evening and night. I think it might be worth changing out the probe if we have a new one. We have had issues in the past few weeks with low DO in this tank and thinking it may be the probe that is the issue.
11/14/2022	Heater in LP6199_21 not working. Please ensure all heaters are on within all Gas Detection panel on Aeration deck and in good working order.
9/1/2022	Oxygen valve to Unox 1 has no power
12/5/2022	Solid sampling for mass calculations.
6/11/2021	Pumps will only pump 54 m3/hr to digester #1 and 2 and 12 m3/hr to dig #3. seems like there may be a blockage.
1/13/2022	Oxygen analyzer needs to be calibrated
1/4/2022	Heater not working. Also wired different as the heater switch turns off the pump as well
6/16/2022	Hi float never came on or sent to scada
8/3/2022	The transfer line from the aerobics to PD3 is plugged and requires further flushing that may require more flush ports. The decision on what how to rectify this requires further assessment for corrective measures and ways to clear the plugging quickly and efficiently. Note that full flow is easily being produced when flow is directed to PD1.
8/31/2022	Please repair mixer on tank #2. It is very loud and needs to be looked at.
9/15/2022	LEL meter not working
9/13/2022	# 2 blending tank oxygen diffuser seems blocked. Please check and unplug them
9/21/2022	Oxygen analyzer has a flashing alarm light on it
9/13/2022	Oxygen purity meter low reading
2/22/2022	Please replace Aerobic blending tank transfer pump No.1
11/7/2022	Have spare A.R. blending mixer motor serviced as it might be needed soon
6/15/2022	Sump pump needs the plug repaired
7/12/2022	Set up new garden hose for wessuc drivers and dispose old hose
7/12/2022	Set up new garden hose for wessuc drivers and dispose old hose

4/12/2022	Mixer failed to start
11/22/2022	The 2" pipe that vents the back portion of the dual tanker is broken please repair. It is broken where the hose connects to the pipe.
2/28/2022	LEL sensor needs to be fixed. Called in for a signal fault, disabled alarm on SCADA
3/23/2022	Pump will not start and looks to be some burnt wires in control box.
3/16/2022	double burner comms failure, please have Sterling come up and investigate controller
7/18/2022	Drained the drip traps.
6/22/2022	Inspect and repair loss of water in boiler
12/29/2022	Resetting the red light alarm signals on the boiler building. An alarm for HI CO came in earlier and was acknowledged. The atmosphere in the boiler room is normal with 20.9 O2 and 0 CO. There is an LEL OF 7.5 in cogen. Asking an electrician to take a look at it. Chris said he reset it twice today.
1/6/2022	Alum pump (pmp1882_12) in chemical building hose broken and leaking alum
1/13/2022	Keeps going into leak detection alarm
1/19/2022	Please repair various leaks (alum) in chemical building basement.
2/17/2021	Please replace existing Natural gas hot water with electric hot water tank.
2/1/2022	Pd 3 to sludge loading station 2. Flow meter and corresponding totalizer not working. Flow meter flashing "reverse flow". Photos attached
3/15/2022	Hand valve , discharge side of pump, on chlorine line from hypo pump 2 destroyed.
3/17/2022	Please bypass the signal isolators in the analog output wiring for the 6 new alum pumps.
2/1/2022	Flow meter, fit 1866, and corresponding totalizer not working. Flashing a reverse flow. Meter for truck loading station 2
9/6/2021	Level sensor for Alum Tank #2 (west) is reading inaccurately (bouncing around a lot). Removed sensor and tried bleeding air (twice) also tried disconnecting the wiring and reconnecting haven't had any luck.
4/24/2022	The pump(s) are off the rails and having a nap.
5/13/2022	Hypo leak in tunnel from Chemical Building to RAS Gallery.
5/23/2022	Leak, at 90-degree elbow, on and beside alum transfer pump. Photo attached
6/7/2022	please replace leak on the pipe at the pump.
6/23/2022	Alum transfer pump hose is leaking
7/11/2022	Unplug floor drain in Chemical Building basement
7/26/2022	Alum transfer pump has developed a leak in the bottom curve of the T-shaped pipe. Substantial leak when pump is transferring.

7/30/2022	Alarm transfer line pipe fitting is leaking
8/10/2022	Valve from hypo tank 1 is leaking. Could someone do a quick repair so we can slowly empty the tank
8/3/2022	Please change the hose in hypo pump no.1
7/21/2022	Basement of chemical building hypo line wall support is corroded it needs to be replaced
7/13/2022	Inlet loading valve to tank #1 on outside of building is leaking through the cam locks and the valve is not holding properly, needs to be replaced
8/30/2022	There is a leak in the transfer discharge piping. It may be a defective "tee". The transfer is in process at this time
9/9/2022	Replaced all 6 alum dosing pump hoses due all closed to reach their expected hose life
9/9/2022	Please replace the hose in the pump
9/9/2022	Please replace the hose in the pump
9/9/2022	Please replace the hose in the pump
9/9/2022	Please replace the hose in the pump
9/9/2022	Please replace the hose in the pump
9/9/2022	Please replace the hose in the pump
9/14/2022	Signal fault
9/28/2022	Alum transfer pump leak detection
10/5/2022	replace sensor
8/26/2022	Supernatant tunnel sump hi float is broken
12/9/2020	Please investigate and repair cogen overloading issue
6/28/2021	When in PC Auto, valve stays open after cogen shut down (step 16) This prevents the program from going back to step 1.
2/15/2022	CLEAN HEATER 305B
2/25/2022	LEL Sensor needs to be looked at - signal fault. Disabled alarm, confirmed 0% LEL in room with gas detector
3/23/2022	CP 17 panel wiring needs to be cleaned up.
3/17/2022	Please have contractor repair cogen #2
4/22/2022	Please repair leak in primary cooling system expansion tank of cogen #1
3/28/2022	Please repair leaking seal in pump
3/7/2022	Please replace the oil sensors
3/9/2022	No longer operational - please repair.
1/25/2021	Please repair exhaust leak at flex coupling.
6/10/2021	please replace cogen #2

6/15/2021	Please repair exhaust leak on heat recovery silencer
9/1/2022	Cogen system failure keeps alarming and has been disabled. Please investigate
9/6/2022	Please have contractor service the UPS
7/25/2022	Cogen 1 natural gas line control valve and regulator replacement
10/17/2022	Chemical Make Up Backflow Preventer Leaking.
10/17/2022	Backflow prevention check valve is not functioning properly and won't stop dumping water.
12/20/2022	Please have contractor repair back flow preventers in the cogen room and boiler room
1/8/2022	Gas Booster #1 leaking gas. After using our gas detectors around the area, we suspect it is leaking around the drip trap.
2/10/2022	Investigate hot water pump, pmp1673-04B, secondary circuit no.4 hot water loop (pump rm of pri. digesters 1&2). When running motor hot to touch and circuit temp. drops. When pump off circuit temp. rises
2/14/2022	# 2 primary digester gas pressure indicator
10/5/2021	Explosion proof receptacle in the gas room on floor 2 on PD2 side broken - please replace.
5/20/2022	Could you please delay the lo and lol transfer flow for FIT1664 as it calls out but just takes a little time to get up to speed. for every alarm it has gotten up to speed and completed the cycle. Al B and Dan P know about this request.
5/26/2022	Sometimes some of our SCADA nodes do not start up after utility power issues and gen testing; it's great that they do, when they do. Sometimes the cabinet(s) must be opened to restart the PC. This is a list of SCADA cabinets we require for ease of operations and expeditious response to in plant issues. If we cannot get these PC's to restart then it would be great to have keys for the following: PD3; tunnel from PD1&PD2 leading to aerobic BT's 1&2; RAS gallery 1 and the units at Oro in the basements of the north and south facility. We should have keys or methods to breach the cabinets when there are restarting and UPS problems. Attached is a pic of the node cabinet in the aerobic tunnel, this cabinet uses a cut key not like the other cabinets which use a skeleton key, this node saves running to the ops room when you have to keep acknowledging stuff in the aerobics and as well as PD1 & PD2.
1/9/2022	Gas dryer #2 solenoid drain valve #2 is not working, it appears to be constantly open.

4/23/2022	The refrigerant suction pressure seems to be declining on gas dryer 1.
10/20/2020	Please remove mixer and install new mixer, rebuild old mixer.
6/2/2022	Replace filter grill cover for gas booster 2 VFD
6/22/2022	Investigate and repair loss of glycol
5/27/2022	Clean rotocut
7/4/2022	Breaker for SCADA Node in PD1 found tripped, please repair/replace as deemed necessary.
7/12/2022	Collecting weekly sludge samples from PD1, PD3, SD1, and Blending Tank and submitting them to the lab.
9/4/2020	Pump Oil appears to have water in it please check to make sure.
7/18/2022	Assisting with rotocut inspection and cleaning. Powered everything off and bled the line. Assisted him with opening the rotocut housing, turned everything back on after it was cleaned and hosed area down.
7/18/2022	Removed the nutrient container in the hallway from its cage and brought it over to the sumo pump and drained it. Also did my best to clean the container out after draining it. Replaced container and cage where they were until further instruction.
7/19/2022	Collected sludge samples from PD1, PD3, SD1, and Blending Tank #2, and submitted them to the lab.
7/25/2022	Assisted Johnnie L. With cleaning rotocuts, and putting it back online. Everything is good.
8/8/2022	Restoring flow in the transfer pipe from PD2 to SD1
8/23/2022	Appears the oil level on the pd1 recirc pump is either low or the oil sight tube is leaking or both
8/23/2022	Repair/Replace front operating screen on UPS.
9/12/2022	Digester MCC Room A/C does not seem to be working correctly. Please check and have repaired as required. Get Murray in if needed.
3/29/2022	Double door E047 On the east side of Pri digester 1&2 sludge heater room does not open. Can't be used as an emergency exit.
10/7/2022	VFD for gas booster 1 needs to be replaced.
8/31/2022	One of the seals on PD1 recirc pump 1 has failed. Please replace the seals on this pump.
10/20/2022	Scada node next to pd1/2 basement had an issue today after the generator run and we got it turned back on but now it's off again (2:32pm) so it needs to be looked at.

8/25/2022	Gas booster 1 has a gas leak. We opened the inlet and discharge valves of gas booster 1 and closed the valves on gas booster 2 after turning it off and that is when the gas alarms started going off.
11/16/2022	Please investigate and repair UPS fail alarm. Seems that there isn't a fuse in the 24v supply. (in PLC 16 Panel)
12/16/2022	Inspection and cleaning of pd1 rotocut.
7/7/2022	PLC 16 system error. No communication to SCADA and nothing is running in the area
3/22/2021	Valve FCV2766_08 is not functioning properly and so operations has had to resort in placing the valve in Local open. This valve being constantly open is now generating an alarm occasionally when PD3 transfers to SD1 as the line has a "possibility" to be used for either. There are manual valves that can not be seen by SCADA that separate the two but since SCADA can't see them it alarms "in case" it is valved to go to BHT. Fixing this valve issue would resolve us getting this alarm occasionally.
2/19/2021	Basement Sump pumps plugging due to high solids
11/8/2021	Seal leaking can we get electrically disconnected so I can remove to work on
12/2/2020	Secondary Heat Loop No.12 Hot Water Pump No.2 is leaking.
2/16/2022	Inline grinder #1 needs to be looked at.
3/28/2022	Please repair secondary hot water pump No.2
2/1/2021	January Item #12. Digester 3 Gas Room. Class C, Gas room being used for storage. Move equipment to dedicated storage area.
6/7/2022	PD#3 rotocut #1 becomes air locked daily. Air might be getting in through the seal or somewhere else.
10/20/2020	Please remove mixer and reinstall with rebuilt mixer, than rebuild old mixer.
4/27/2021	Pump has a water leak.
7/13/2022	Fitting/valve on waterline on top of PD3 is split/cracked and needs replacement.
7/13/2022	Cleaning overflow chamber on PD3.
1/13/2020	please rebuild mixer
7/20/2022	Rinsing out and cleaning PD3 overflow chamber.
12/6/2021	VFD is fried and disconnect switch needs replacing.
8/8/2022	Transfer pump from SD1- bio solids was airlocked. Flushed it and got it pumping again.
8/8/2022	Hosing down and cleaning the PD3 overflow chamber.

8/18/2022	Please repair or replace the UPS for the scada node in the PD3 pump room and verify that the scada node stays on during a power interruption.
9/7/2022	Hosing down and cleaning PD3 overflow chamber.
11/29/2022	Isolate and open the rotocut
12/1/2022	O-ring not sealing causing pump to airlock. GDR2776_02
12/1/2022	FCV2773_21 is in red and won't reset today. I believe SCADA has no control on it now.
11/11/2022	Leaking stuffing box.
12/5/2022	FCV2766_02 Valve keeps getting stuck when it's trying to open and close in auto
12/5/2022	FCV2773_10 Valve would not close in auto when SCADA was telling it to close
12/9/2022	Both grinders are air locking one from the larger main seal and the other leaking thru the gear box.
12/12/2022	Please remove guts of each grinder.
12/14/2022	Please put the grinders back in the roto cuts.
12/16/2022	Pump2766_03 VFD: changing of the speed limit of the pump in auto from a max. Of 50hz up to 60hz
12/22/2022	Please investigate and repair air lock issues with PD3 grinders and pumps.
3/11/2022	Alum pump #4 runs but will not pump product. Check valves changed still doesn't pump.
6/24/2022	Liquid is leaking out of wall along the Alum line
6/24/2022	Alum leak in line just outside staircase from secondary area.
6/20/2022	# 2 high pressure water pump. Could not reach the desired pressure when using #1. Has to use #1
8/8/2022	Please remove the O-L-PC Key switch on each Local Panel and insert with a filler.
9/6/2022	Please have contractor service spare UPS in Electrical Shop. Send UPS in Electrical Shop to Toshont for evaluation and quote a repair. David to put on skid secure and shrink wrap for Charlie to have it shipped Toshont.
12/2/2022	Please remove PLC test board from the wall behind the desk in the electrical shop to make room for network panel
4/19/2022	Replace the motor on floc mixer#3
7/27/2020	Please replace motor and fan blades

11/9/2021	Please have CAT check why engine would not start after E stop was pressed and then reset.
5/23/2022	Hypo leak. Outside of tunnel, beneath generator building. Line flushed with water, hypo pumps locked out, area caution taped off and hypo on ground cleaned up. 3 photos attached.
6/30/2022	The kW's have been holding steady at 830 since January 2022. This data comes from power meters and likely, there is a problem between the power meters and their interface to the PLC.
7/20/2022	Come back to plant and do resets after unscheduled plant generator run.
11/15/2022	Unit heater #2 is coming off the wall and the fuel oil overflow line is holding it up.
1/22/2021	Valves seized on pump #1 and pump #4 discharge lines. Seized valves have caution tape on them
2/15/2022	Grit bin is leaking. It has rusted through on the sides. See Pat for more details.
5/16/2022	Outlet on back wall of the grit pump room behind grit pump #4 has water dripping out of it.
6/8/2022	West LEL sensor fault
8/29/2022	Replace Liners, Auger, Seal, Shaft, and the Gearbox (if necessary).
9/21/2022	Inspect and assess the stage of wear for auger and liners at this time and plan for near future rebuild of the tank equipment
8/22/2022	Please inspect and repair as we are having issues with flow out of the grit pump.
10/5/2022	Please inspect tank and replace auger liners
5/8/2022	Hpx inlet valve is at 34% and max clamp in 23% valve will not respond to any values entered. Tried to bleed air and I operated the valve in local it will open and close just not in manual or auto.
5/15/2022	Valve exceeding its required setpoint. It is about 10% higher and giving a HI Vent Purity Alarm. Valve was exercised locally and through SCADA with no luck.
9/9/2022	Valve is currently over the Max clamp of 24%. I have operated the valve open and closed and also bled air but valve still over its set point.
11/2/2021	Check lighting throughout area, including pump room.
2/5/2021	Please repair the heater fan blades on the upper floor of the influent building
12/30/2021	Please repair the end bearing on the auger.
2/9/2022	Replace liners
1/24/2022	Motor is running but auger is not

3/2/2022	Install sensors to read the rag bin and interlocked with compactors to shut them down when bin is being emptied.
3/18/2022	Scada screen is not working in the MCC room upstairs in the Influent Building.
3/16/2022	Grit classifier1 and conveyor1 keep blowing fuses.
5/13/2022	ESA defect #3, notification number 20593003. Unused wiring to be removed from auger 1 and 2.
5/18/2022	ESA notification 20593003, defect 3, repair tech cable pulling out of connector.
11/25/2021	Please repair the heater fan motor in the upper influent room as the bearings are going. (Unit heater UH-102)
6/15/2022	Code Rule: OESC 2018 Rules 12-114, 2-130 and 12-3000 - Incomplete or unused wiring is required to be disconnected, removed or to made safe by terminating in approved enclosures. See Bulletin 12-25-*. Inspector Comments: Auger #1 and #2 - It was identified that the end of the conductor has been installed with marottes and electrical tape.
6/15/2022	Code Rule: OESC 2018 Rule 02-034 - The extension cord is not approved for use in the manner as used. Inspector Comments: It was identified that a general-purpose extension cord has been installed through two steel doors through a hazardous location to two puddle pumps, the cord SHALL be removed
10/13/2021	please replace noisy motor.
5/25/2022	Grit conveyor #2 has lost its gearbox and is now very noisy and is to the point of not running.
6/15/2022	Code Rule: OESC 2018 Rule 02-300 4) - Defective equipment shall either be put in good order or permanently disconnected. Inspector Comments: Conveyor B - it was identified that the multiple Teck cables are damaged at the connector, if the motor is to be moved another wiring method should be considered to prevent any future damage
8/8/2022	Please remove the wiring from the wiring arm for the card robbed from CP62. Drop off the unwired wiring arm to OT section.
9/13/2022	Please have ROHES clean out the grit bin.
9/6/2022	Overflowing grit to floor drains plugged
10/5/2022	please repair as required
3/4/2022	Please purchase a new grit bin
11/17/2022	fan blade on uh-101 upstairs grit area near the door leading to the old control room .. blade needs replace at the leat has shattered off
12/12/2022	Fail to start alarm. Check drive motor
4/6/2022	Please repair water leaks on drains of sinks in Lab.

7/19/2022	Conducted 30min settling test and cleaned up and washed the graduated cylinder as well as the sampling bottles.
7/21/2022	Conduct the 30 minute settling percentage test and enter the settling percentage into eRIS.
7/25/2022	Conducting a 30 minute settling test using the MLSS (activated sludge) sample. Recording and entering the settling percentage into e.RIS.
11/30/2022	Please have contractor install new cushion tank for hot line in lab area
2/21/2022	North Gate (Gate #3) has what they think is a blown fuse. Mike F manually opened it for oxygen delivery earlier.
6/1/2022	Replace O2 sensors in Jake.C and Leo.M personal portable Quattro gas detectors. Tim Lacey required.
8/1/2022	Check sampler operations and areas.
8/2/2022	Walk plant for cursory inspection. No tunnels were entered all inspections were done at grade or above grade. Checked samplers for operation.
2/18/2020	Work order to capture time and material for evacuation alarm system.
8/31/2022	Replace all PLC batteries
12/21/2022	Please change the batteries on generator No.1 as per the semi annual inspection done by T&T
11/10/2022	Clean bench
12/5/2022	Check on call vehicle BB7879 and fill tank.
8/14/2020	Lmi pump needs to be replaced.
9/15/2020	Irrigation line to the upper portion of the tower is broken or has come off. Please repair.
3/2/2022	Leak of water around the panel and effluent valve alarm
7/13/2022	Refilled odour control nutrient drum.
7/18/2022	Refilled odour control nutrient drum.
5/24/2022	Replace blower motor
6/13/2022	Receptacle for nutrient feeder in Tunnel not working GGCI would not reset. Repair or replace.
8/16/2022	Recirculation pump is leaking from the seals. Please check and repair.
9/24/2020	please replace valves on the east and west carbon media towers.
7/20/2022	Restarting equipment and resetting faulted VFD after an Emergency Generator Run.
7/26/2022	Pulled and chopped weeds in front parking lot. Threw out garbage from primary deck.
7/29/2022	Gathered Barriers and pylons and placed them near crucial driveways and entrances in preparation for barricading due to kempenfest.

8/1/2022	Fill out station check sheets.
8/5/2022	Cleaning all over the place , all types of cleaning and maintenance
7/27/2022	Weeding, brush clearing, cleaning and tree removal
7/28/2022	Clean up around the plant
3/7/2022	Elbow of pipe connected to hose on primary clarifier has split and needs to be replaced.
4/7/2022	Primary clarifier #2 keeps breaking shear pins. please inspect and repair.
7/5/2021	Primary Clarifier #2 Skimmer #2 is not working correctly. Needs to be adjusted.
8/13/2021	Please repair the cross collector.
3/21/2022	Broken Cross Collector needs repair
7/25/2022	PC1 pass 3 had a broken shear pin. The pin has been replaced and the pass is operating again.
7/25/2022	Clean up scrap metal and wood.
7/26/2022	Check sampling of raw sludge and clean out sump pit.
7/28/2022	Flushed plugged primary scum line and pump. Cleared trough 2 of grease buildup.
7/29/2022	Clear skimmer troughs of debris and grease.
8/21/2022	Sprayer to scum trough needs to be repaired. PC2 pass 1 - Dan S knows where it is
9/2/2022	Unplug scum line and tank
7/28/2022	Idler adjustments required for PC cross collector 3. PC 2 long collector 2. PC 1 long collector 3.
7/28/2022	Please review the pix. I would like to have 45deg elbows installed at all the flushpoints used for flushing the primary scum line. Reasons as follows: The hose gets pinched and cuts the flow drastically to where it is much less effective. The elbows will lower the hose connection point to a more manageable height. Note: the hose pinching right behind the ferrule is weakening the hose and someone may get scalded when they close the ball valve because closing the valve causes the line pressure to jump; literally!
11/30/2022	Please have ROHES unplug scum line
11/30/2022	Valve 1773-01C does not seem to work in auto.
12/19/2022	FCV1773-01C seems to be working the opposite way it should be. When temperature is below the set point the valve opens as opposed to staying closed. It should open when the temperature is above the set point not below the set point.
8/8/2022	This pump seems not to have any speed reference

8/10/2022	Raw sewage pump #4 not running. No faults present that would indicate a reason.
8/29/2022	RS pump #3 Uncommanded Stop
9/6/2022	H2S signal fault
8/7/2022	2 days in a row, raw sewage pump#1, has given a low flow alarm. Even after flushing, pump consistently underperformed from 200 to 400 m3/hr. Compared to other pumps running at same speed. Investigate please
10/7/2022	O2 reading is jumping around sporadically when a portable detector is reading a normal 20.9% throughout the entire room
10/25/2022	Please verify operation of raw sewage wet well miltronics
10/25/2022	PLC 24 goes down every time there is power interruption. (generator test) Please repair
12/13/2021	SCADA does not match with the flow meter FIT2434_01 for raw sludge. Flow meter and/or wiring needs to be checked.
9/3/2020	Valve failing to close please check if it limits
2/10/2022	Packing leaking please repair replace
6/9/2022	Sump pump #1 check valve not operational
10/20/2022	SCADA view node is not working. It's getting power however when it's turned on it beeps a few times and turns off again. Tried restarting it multiple times.
10/24/2022	hot water pump pmp6234_11a isn't receiving power
8/24/2022	Raw Sludge Gallery East Exhaust and Supply Fans not operational. Repair or replace.
12/21/2022	Please have contractor repair back flow preventer in raw sludge area
2/26/2021	Cell #2 inlet weir is broken
7/11/2022	Weeding Rbc area
8/29/2022	Check oil levels on operating units and for noise as well as rough running.
3/2/2021	Crack on both leaking water, Cam can show you exactly where.
3/17/2022	Replace bearing on the non drive end
1/19/2022	Please repair alum leak in compressor B room tunnel (east end)
3/1/2022	#6 RAS fail to start. Please investigate
3/11/2022	There is a valve leaking in the area of RAS chamber 1. The valve needs replacing. It has been leaking for a while and probably makes the sump pumps work unnecessarily. The water line is used for washing down the area. There is falling drywall above the valve location so be careful.
3/9/2022	Flow meter not working showing 1200m3/hr when it should be 305 m3/hr

3/11/2022	Repair / replace the UPS in the RAS east galley SCADA node cabinet. The node shuts down during the weekly generator exercise. It is suspected that the UPS is not working or batteries are too weak to maintain power.
6/3/2022	RAS pump #1 makes noise at higher running speeds. Sounds like something in the volute. The speed control for this unit is a dedicated VFD so it is preferred to have it in the roster. please consult with Allen Baker.
3/3/2022	Replace existing flowmeter with a new one.
7/18/2022	Please repair chlorine transfer leak.
8/11/2022	Alum line just outside the little persons tunnel where the RAS compressor is
8/26/2022	Ras Pump 4 has no oil in it and running dry at the moment
9/9/2022	Used lift truck and jib crane to bring sampler from garage to the ras gallery
8/31/2022	Seal on RAS pump 6 is probably shot because the tail to tail oil sight tube was pressurized. Please check the seal for damage.
12/5/2022	Lock out the isolating valves for RAS pump 1.
12/21/2022	Please build and install a panel for a new gateway PLC
11/4/2020	Please inspect and repair any damaged equipment.
5/2/2022	Secondary cross collector 5/0 is vibrating and noisy. Needs to be looked at.
5/6/2022	ESA deficiencies number 11. Tek cables not properly supported coming off the tray and down the column.
6/14/2022	Please fix broken skimmer
6/14/2022	Secondary skimmer 2/1 needs repair
6/15/2022	Code Rule: OESC 2018 Rule 12-618 - Where armoured cable is run between boxes and fittings, it shall be supported by approved straps or other approved means within 300 mm (12) of every box or fitting and at intervals of not more than 1.5 m (5 ft) throughout the run. Inspector Comments: It was identified that multiple Teck cables are not support to the cable tray main support
10/14/2021	# 2 skimmer for # 2 secondary clarifier is not moving
7/11/2022	Weeding Secondary Deck
7/28/2022	Please replace the mounts for the TSS probes on tanks 4,5&6
6/2/2022	Secondary skimmer 2/2 is not moving the skimmer. The drive is working.
10/26/2022	Tank inspection
8/23/2022	Skimmer 1 in Secondary Clarifier 2 is off and in local. Please check
11/3/2022	Problem with TSS probes, all shut down with blown fuses, Chris got all but 3 and 4 going again. Found old unit in sea can that may work. Will require more 3.5 amp fuses

10/20/2022	Tunnel #3 secondary clarifier #3 expansion joint needs repair. Please have a contractor use crack injection to fix the leak.,
1/26/2022	Loading valve shows open locally but not in PC
11/4/2022	For the transfer pump SD1 to BHT1. A new bleed line was installed for unlocking air bound pump.
1/7/2022	220vac receptacle and plug for the construction heater was very hot. The plastic parts were a bit soft. I have unplugged it. The room may need a temporary replacement heater.
2/15/2022	SEC EFFLUENT WELL 1&2 LEVEL DIFF ALRM
2/28/2022	Secondary effluent pump #3 shaft and/or coupling need to be looked at and repaired/replaced
5/6/2022	ESA Deficiency 9. Ferrules to be used for terminating fine stranded wire in disconnect.
5/6/2022	Twist lock receptacle wire not properly identified in the disconnect, deficiencies number 10
5/6/2022	Notification 20593003 Deficiency 7
5/10/2022	No power going to secondary sump pumps. Main breaker in tertiary mcc room is likely defective
5/17/2022	ESA Notification 20593003 defect #10. Disconnect feeding two separate pieces of equipment.
6/6/2022	ESA defects
6/15/2022	Code Rule: OESC 2018 Rule 02-100 3) - All disconnect switches shall be marked in a conspicuous, legible and permanent manner as to which portion of the installation they protect and control. Inspector Comments: It was identified that a disconnect with a twist lock cord end has been installed with no labelling on what it controls
6/15/2022	Code Rule: OESC 2018 Rule 12-3032 2) a) - An enclosure for overcurrent devices, controllers and externally operated switches shall not be used as a junction box except where a single feeder is tapped from it using connectors providing independent clamping means for each conductor; or where wiring is being added to an enclosure forming part of an existing installation and the conductors, splices and taps do not fill the wiring space at any cross section to more than 75%. Inspector Comments: It was identified that a disconnect with a twist lock cord end has been installed and is feeding two different pieces of equipment

6/15/2022	Code Rule: OESC 2018 Rule 12-406 4) and 2-034 - Connectors used with fine-strand cables, such is DLO type, shall be approved for the purpose, see Bulletin 12-31-*. Inspector Comments: It was identified that a disconnect with a twist lock cord end and flexible cord has been installed in a disconnect without the use of ferrals or approved tape
6/15/2022	Code Rule: OESC 2018 Rule 04-030 1) - The identified conductor (white) in cables where used as a power conductor shall be permanently coloured other than white or green. Inspector Comments: It was identified that a disconnect with a twist lock cord end and flexible cord, the white wire has been installed as a power conductor
6/15/2022	Code Rule: OESC 2018 Rule 02-112 - The mechanical arrangement and execution of the work in connection with any electrical installation shall be acceptable. Inspector Comments: E075 - exhaust fan louver control - It was identified that open LIVE wires have been installed to the louver controller and SHALL be removed and installed to a OESC code compliant method
8/3/2022	Please check the pH calibration. Online meter says 5.98 when the portable indicated 7.67.
8/29/2022	There appears to be a leak in and around the stuffing box area.
10/30/2022	Sec Pump #6 seal water hose leaking.
4/24/2022	Mixer fails to start in PC and PC manual.
1/19/2022	Mixer 5 uncommanded stop then fail to start. Mixer 1,2 and 3 not starting after 4 5 6 run
9/9/2022	assisted new septage driver with septage procedure
11/15/2022	Uninstall currently dead UPS and replace.
11/16/2022	Filter backwash flow meter. This meter is showing a flow on SCADA but no pumps are running.
11/16/2022	Please install a utility outlet (on it's own breaker) in the PLC 13 panel so that the UPS can be plugged in. (currently hardwired). Please change UPS. Update drawing.
6/2/2022	oxygen valve
4/6/2022	April 2022 Item #6. 249 Bradford Tech Services Trailer. Class C. Clutter around electrical panel (fire hazard) Remove boxes to allow access to panel.
1/3/2022	Please check filter #1 backwash water pump
1/3/2022	Please check #1 back wash water pump
1/12/2022	Tertiary filter #5 bridge is not moving up and down at each cell. Filter is currently being shocked, it'll be flushed and drained in the morning.

1/23/2022	Light out in Hi Output #1 Channel #1
7/17/2021	Filter #4 wash water pump not functioning.
1/10/2022	Bridge #2 intermittently keeps losing power to the panel at the same spot along its travel path and that is around 2/3rds from the west side
10/20/2021	Filters 5 & 6 valve access hole are not aligned well with valves. It is very hard to operate the valves when filter shocking is required.
3/10/2022	Can you please check the blower for filter #5 and 6 as it is making a funny sound when it is running,.
11/12/2021	When filter was being scoured it was noticed that it has 17 blinded channels.
3/23/2022	Alum pump 6 motor needs replaced
3/15/2022	Milltronics reading for filter 5 is way out of whack with what SCADA reading
12/21/2021	Flash/Floc Alum Pump #5. Pump not in use but found it running...runs both in local and PC auto....but SCADA shows it has off in both local and PC auto. Had to throw breaker to off position to turn pump off.
12/15/2021	Filter bridge #2 seems to keep trying to ride up the rail causing loss of connection to the proximity switch
3/11/2022	Please repair the hoods on bridges#5 and 6
2/8/2022	Filter #2 sand removal and refill
3/1/2022	Filter #5 top of sand removed, replaced and releveled.
5/8/2022	UV CH1 Module 18 lost comm after 10 mins
5/16/2022	UV High output Ch 2 mod 2 - battery fail. All lamps are working however.
3/14/2022	Filter #6 Sand removal gravel cleaning and refill with new sand
5/30/2022	Hose from hypo line to barrel for filters 5,6 is leaking and needs to be replaced/fixed.
5/31/2022	Alum leak - Jake knows where it is
6/6/2022	ESA defects
6/7/2022	Small leak in hypo line about 1/3 of the way down tunnel 3.

6/15/2022	Code Rule: OESC 2018 Rule 02-022 - Disconnect unapproved equipment based on Subrule 1) requirements that no person shall use (including connect) any electrical equipment unless it has been approved in accordance with Ontario Regulation 438/07 and Rule 2-024. Inspector Comments: Inlet Automation Gate - the installation is not an approved Bulletin 12-31-3 (1) Application of appliance wiring material (AWM) Issues have arisen in Ontario with Appliance Wiring Material (AWM) conductors and cables that have been incorrectly used as part of a building wiring infrastructure during the installation of industrial machines and equipment. AWM is approved for internal and interconnecting wiring of equipment and is intended to be factory-installed or factory-provided components of complete equipment. Direction: AWM cables are not approved for use in building wiring systems
2/18/2021	please change the wheels on filter bridge#2
7/19/2021	Please repair wash water pump on filter #3
5/2/2022	Filter 2 climbing rails. Straightened it out but needs to be fixed properly.
10/21/2020	Filter #2 discharge channel gate repair or replace
7/15/2022	Filter 5 hood needs to be fixed
11/16/2021	Filter #3 wash water pump needs to be replaced.
11/17/2021	Please re and re filter 3 wash water pump. Take old pump to SPL for rebuild
7/25/2022	Shocked Tertiary filter #1
8/2/2022	Apply hypo to filter 3 and beat up the surface with a 2" hose to break the crust.
8/8/2022	Please rewire CP21 so that the PLC is on its own circuit and fuse protected. Update PLC drawing when complete and advise OT section.
8/15/2022	Pump out channels between the RBC'S and remove the algal growth.
8/8/2022	Please investigate PLC 21 system error and repair.
8/16/2022	Tertiary daily operations check list.
8/16/2022	In tunnel outside of HPEW, 3 of the operating hand wheels on Effluent Water line are seized.
8/30/2022	Daily area check, drawdowns, filter inspections and bacti samples submitted.
8/31/2022	Daily operations check list.
9/1/2022	Tertiary daily operations checklist.
9/2/2022	Re-do logbook entries because e.RIS was not updating entries on the mobile application! It is not a building.

8/30/2022	Filter 4 wash water pump will not prime. The air bleeder valve isn't helping, might be plugged or kinked. Not sure if the pump is rotating. There's plenty of H2O pix attached. I think the internals need checked as it is possibly operating like a pump with way to wide tolerances. It can't lift the discharge check valve.
7/4/2022	Secondary Effluent pump #5 keeps failing to start. Pump has been turned to OFF that is the only way alarm will clear on SCADA.
9/16/2022	Shock tertiary filter #3
8/17/2022	Filters 5 and 6 level indicators. It looks like SCADA is about 10mm lower than the displays at the filters.
9/30/2022	Filter 4 has an electrical issue. I opened the circuit at the local disconnect but the filter kept running.
10/24/2022	No flow during backwash cycle. Hood will lower and switch flipping can be heard, but the pump never engages.
10/10/2022	Floc tank mixer 3A has a noisy motor. We may want to verify that we have a spare motor. Also the oil level is low.
10/29/2022	Manual control knob on alum pump #7 is not working.. not sure if this can be fixed or not
8/15/2022	RBC inlet expansion joint/seal is leaking at each end and it is contributing to the mess of algae and filling up the 2 channels/pit between the RBC's.
9/13/2022	Please repair bridge drive system
10/14/2022	Filter 5 is jumping hard in a area about 2 meters long. See attachments please. Check log entry Oct14-22 @16:17:04.
8/31/2022	Re: UV channel 1. SCADA is reporting an intensity of over 110% while channel 2 appears normal.
11/9/2022	Wallwin Data to replace the Ethernet festoon cable on Filter 5 with new and terminate each end.
11/14/2022	Tiny leak in overhead hypo line in tunnel 4
12/20/2022	Bridge #1 backwash pump (pump in the channel) is making a lot of noise
10/24/2022	Filter bridge 5 wheel is rubbing against the rail and causing the whole bridge to bounce. It starts happening when bridge gets 3/4 of the way to the end.
3/17/2021	For some reason we are getting a lo lo on the analyzer for a short few seconds and then returns to normal. May be water in the line or flow adjustment needed. Can you have a look.
1/24/2022	4&5 vent purity meter not working well
1/19/2022	Please replace thermostats on aeration tank MSA LEL pumps
5/5/2022	Please replace coupler on Aeration Mixer 1-1

5/20/2022	Please check and make sure the coupler is good, making noise.
9/28/2022	Train 1 LEL fault
12/13/2022	UNOX 4 vent valve will not hold 35% in Manual. All lines have been heated and there is air flow. Valve currently in local and open .
9/23/2021	UV Bank 6 in South Channel - Module 17 fan not working
9/19/2021	UV bank 9 channel 1 alarming we shut off so no more alarms coming in
2/28/2022	CP 23
2/28/2022	CP 23
3/1/2022	CP23
3/1/2022	CP23 loses communication with SCADA network. Please repair.
2/8/2021	UV channel #2 module 17. On going communication problem with this module. Chris shut the power off to this module to avoid nuisance call outs tonight. Further investigation required.
9/28/2021	UV 3 in South Channel - Cord cap melted to the disconnect on module 8
9/29/2021	UV 12 North Channel - Module 17. Replace disconnect and cord cap. Started to melt.
4/27/2022	Bulbs burnt out
4/27/2022	Burnt out bulbs
4/26/2022	Please replace the U bolts on the gantry of the crane
5/4/2022	Bulbs in module 3
5/17/2022	ESA Notification 20593003 defect number 4. Bottom portion of fixture missing.
3/22/2022	Module 15 circuit 12 fan needs to be replaced
5/31/2022	Both UV Channels #1 & #2 need ballasts and bulbs replaced for the high output banks.
6/2/2022	Bulbs ballasts
6/6/2022	Replace ballast and high output bulb channel 2
6/15/2022	Code Rule: OESC 2018 Rule 02-300 - The deteriorated and/or damaged luminaires shall be repaired or replaced. Inspector Comments: UV Cleaning Control Panel - It was identified that the bottom of the fixture is missing the bottom cover plate and is exposing LIVE conductors
8/8/2022	Module 2 replace the uv sensor eye
8/8/2022	Replaced light bulbs
9/28/2022	UPS fault at CP 20, 21 and 23
9/28/2022	UPS is fault
10/3/2022	South UV channel is showing UV intensity of 33% but all lamps appear to be lit. Sensor eye may need replacement.

10/5/2022	Uv channel #1 Module #2 Ryan C reports the female connector is missing.
11/18/2022	Bank 3 Channel 1 Module 8 communications alarm keeps coming and going.
5/25/2020	WAS Pump seal leaking. Please replace.
3/8/2021	Pump failed and will not start. Pump run status is bypassed on SCADA to show it as not currently running
2/5/2020	Conduit at ceiling in basement is leaking water .
1/11/2021	Suspect bearing going on RDT 2 drive motor
1/30/2022	PMP6161_03 Pump is making a lot of noise and vibrating significantly
6/22/2021	RDT VFD has auxiliary fault 2 that will not clear. (safety kill switch?). Plus when put into PC AutoSCADA shows it in local.
4/4/2022	Please repair air leak in polymer mixing system.
4/4/2022	Please re-route potable water for the batch mixer venturi
3/28/2022	Leaky seal repair
4/18/2022	Dump valve for polymer tank not opening. Air getting to it and it tries to open, but doesn't. Increase the air pressure? Change the solenoid? Please investigate
4/21/2022	Drum banging and jerking looks like gearbox issue
6/20/2022	#1 RDT power wash
11/11/2021	Fix loose chain on RDT #3
2/11/2021	TWAS pump #2 seems very loud when running. Someone should have a listen might be in the stator.
4/5/2022	When booster pump is in local it shuts water solenoid off and pump runs dry . When the RDT is in local it must be a wiring issue as SCADA only controls PC operation of the unit
9/9/2022	Inspect and repair drum support and idler wheels as required
10/12/2022	Replace non working sprayers on RDT 1
11/29/2022	RDT 1 noisy when drum turns.
11/30/2022	Please replace faulty UPS
7/18/2022	WAS building heat pump #2 shut down. Was very hot to touch and smelled like burning.
8/22/2022	Clean wet well mezzanine after high flows
9/21/2022	Both bar screens are full of debris and need to be cleaned.