TOWN OF COLLINGWOOD

2019 Annual Wastewater Compliance Report

Contents

Acronyms

BOD	Biochemical Oxygen Demand
CBOD5	Carbonaceous Biochemical Oxygen Demand
cfu	Colony Forming Units
COD	Chemical Oxygen Demand
DO	Dissolved Oxygen
ECA	Environmental Compliance Approval
Hg	Mercury
FP	Filtered Phosphorous
HP	Horsepower
kg	Kilograms
kW	Kilowatt
MECP	Ministry of Environment, Conservation and Parks
mg/L	Milligrams per litre
ML/d	Mega litres per day
m3/d	Cubic metres per day
NH3	Ammonia
NO2	Nitrites
NO3	Nitrates
SVI	Sludge Volume Index
TBOD	Total Biochemical Oxygen Demand
TKN	Total Kjeldahl Nitrogen
TP	Total Phosphorous
TS	Total Solids
TSS	Total Suspended Solids
UV	Ultraviolet
VFA	Volatile Fatty Acids
VS	Volatile Solids
WWTP	Wastewater Treatment Plant

Executive Summary

The Collingwood Wastewater Treatment Plant operates in accordance with amended Environmental Compliance Approval (ECA) 5807-B8GM4G dated January 31, 2019 and amended ECA 6905-A4KMFS dated February 24, 2016. ECA 5807-B8GM4 requires that the Town prepares and submits an annual performance report to the Ministry of Environment, Conservation and Parks (MECP). This report has been prepared to satisfy the annual reporting requirements identified in ECA 5807-B8GM4 and the previous Certificate of Approval (CofA) 2639-5TLQB2, which was in effect until January 31, 2019.

Treatment Capacity

The WWTP has a treatment capacity rating of 24,548 m^3/d based on average day sewage influent flows. The average day flow at the WWTP was 16,202 m3/d, indicating the WWTP is operating at 66% of the rated treatment capacity. There were **0** bypass events in 2019.

2019 Flows at a Glance		
Total Flow to WWTP	5,913,688 m^3	5,913.6 ML
Design Average Daily Flow	24,548 m^3/d	24.548 ML/d
Average Daily Flow	16,202 m^3/d	16.20 ML/d

A review of the influent and effluent flow monitoring data for the WWTP was completed while preparing this report. This data review identified a gap in the Town's database from the influent flow meters. As such, effluent flow rates are used to represent the WWTP flows during 2019. The WWTP database has since been re-programmed to ensure that influent flow rates are now being recorded along with the effluent flow rates.

Effluent Quality

In addition to treatment capacity limitations, ECA 5807-B8GM4G specifies final effluent quality objectives and compliance limits for the WWTP. Final effluent samples are collected throughout the year and the results are reviewed and compared to these objectives and compliance limits to ensure the WWTP is operating properly. Adjustments to the WWTP operation are made based on the results of this sampling program.

Final Effluent Objectives		
Annual Average CBOD5	Objective	15 mg/L
Annual Average TSS	Objective	15 mg/L
Monthly Average TP	Objective	0.8 mg/L
Monthly Geomean E-Coli	Objective	100 cfu/100mL
pH Range	Objective	6.5 – 9.0

Final Effluent Compliance Limits		
Annual Average CBOD5	Concentration	25 mg/L
Annual Average CBOD5	Loading	613.7 kg/L
Annual Average TSS	Concentration	25 mg/L
Annual Average. TSS	Loading	613.7 kg/L
Monthly Average TP	Concentration	1.0 mg/L
Monthly Average TP	Loading	24.5 kg/d
pH Range	Concentration	6.0 – 9.5

The final effluent concentration and loading compliance limits were achieved throughout 2019, however the final effluent concentration objective was exceeded for E.coli **2** times in 2019. The monthly geometric mean density of E. coli was 150 cfu/100 mL in March 2019 and was 486 cfu/100 mL in April 2019. Both these exceedance occurred while upgrades to the UV system were taking place at the WWTP. No further E.coli exceedances occurred once the new UV system was commissioned.

The previous CofA 2639-5TLQB2 also had a monthly compliance limit for E.coli of 200 cfu/100 mL based on the geometric mean density of E.coli in the weekly final effluent samples. This criterion was met in January 2019 when monthly compliance limit for E.coli was in effect.

Section 1: Introduction

This report has been prepared to address the annual performance reporting requirements for the Collingwood Wastewater Treatment Plant (WWTP) as outlined in Condition 11 of Environmental Compliance Approval (ECA) 5807-B8GM4G. Section 4 of this report has been subdivided into subsections that specifically address the reporting requirements identified in this ECA. Additional information may also be provided to support and substantiate the required content.

This annual report has been presented to Council. A notice has also been placed in local newspapers notifying the public and any interested authority that the Collingwood Wastewater System's 2019 Annual Compliance Report can be viewed and downloaded on the website or upon request a copy will be made available free of charge.

Section 2: Wastewater System General Information

The WWTP operates under the amended ECA Number 5807-B8GM4G dated January 31, 2019 and amended ECA 6905-A4KMFS dated February 24, 2016.

System Information	
Wastewater System Name	Collingwood Wastewater Treatment Plant
Wastewater Works Number	120000550
Wastewater System Owner	Town of Collingwood
Wastewater System Category	Class III Certification
Period Reported	January 1, 2019 – December 31, 2019

Section 3: The Facility

The Collingwood WWTP, owned and operated by the Town of Collingwood, is a conventional activated sludge plant with alum addition for phosphorus removal. Treated effluent from the plant is discharged to Collingwood Harbour, which is situated in Georgian Bay on the south shore of Nottawasaga Bay.

The plant was first constructed in 1958 to provide primary treatment of the Town's domestic and industrial wastewater. The primary plant was expanded in 1968. Secondary treatment was added in 1981. The rated flow capacity is 24,548 m^3 /day with a peak flow rate of 60,900 m^3/day. Wastewater from the serviced area flows to the plant by gravity, although eight (8) pumping stations at Minnesota Street, St. Clair St., Paterson Street, Cranberry Trail, Black Ash Creek, Pretty River Estates Silver Glen and Tenth Line (Public Works) boost the flow throughout the area.

Major unit operations at the Collingwood WWTP include the following:

- Headworks - which provides the following preliminary process treatments:
    - Emergency plant bypass
    - Automated mechanical raked raw sewage screen
    - Manual raked bypass raw sewage screen
    - Raw sewage pumping station
    - Grit removal
    - Bio scrubber for headwork's odour control
    - Septic/leachate handling

- Primary Sedimentation
- Activated Sludge with Alum addition for Phosphorus Removal
- Secondary Clarification
- Disinfection with Ultraviolet irradiation (UV)
- Effluent discharge to Collingwood Harbour
- Thickening of waste activated sludge by Dissolved Air Flotation
- Anaerobic Sludge Digestion
- Odour control
- Liquid Digested Sludge Land Utilization Disposal
- Sludge Storage Lagoon (off site)
- Standby power source (diesel driven generator)
- Co-generation System

Section 4: Reporting Section 11 (3) of ECA

11 (3) a) Influent, Imported Sewage Monitoring Data

A summary and interpretation of all influent, imported sewage monitoring data, and a review of the historical trend of the sewage characteristics and flow rates

A summary of the available influent sewage monitoring data is provided in Attachment A, while a summary of the imported sewage monitoring data is provided in Attachment B. Attachment C includes graphs of historical influent sewage quality characteristics.

A comparison of the influent sewage quality results from 2019 to historical samples indicate that the 2019 influent sewage quality was comparable to historical influent sewage quality over the past five years. A couple of deviations from this assessment are elevated CBOD5 in May and much lower than the typical historical range of CBOD5 in July and August. In addition, there was elevated TSS in September, elevated TP in June, and lower than historical records of influent TKN concentrations in July and August. As the frequency of influent sewage sampling has increased since April 2019, it is anticipated that the additional sewage influent quality data will enable a better interpretation of any changes to the influent sewage quality in the coming years.

The amended ECA 5807-B8GM4G, which was issued on January 31, 2019, specified additional influent sewage flow and quality monitoring and reporting requirements for the WWTP. These additional requirements were not recognized by staff until the preparation of the 2019 annual performance report for the WWTP. As such, influent sewage flow monitoring data is not available for 2019. This monitoring and reporting gap was reported to the MECP as a non-compliance with the ECA on April 21, 2020.

Further, the influent and imported sewage sampling and quality analysis frequency was not increased to monthly, as required by amended ECA 5807-B8GM4G, until April 2019 and the influent and imported sewage samples were incorrectly analyzed for CBOD5 instead of BOD5 from May through December 2019. The non-compliance with the influent and septage sampling frequency was identified as part of the MECP inspection report in November 2019. As such, the monthly influent and imported sewage quality results are not available for February and March 2019, and the influent and imported sewage results do not include information about BOD5 concentrations. These non-compliances were reported to the MECP on May 4 and 5, 2020.

11 (3) b) Final Effluent Monitoring Data

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 the ECA, including an overview of the success and adequacy of the works

Attachment A provides a summary of all final effluent monitoring data with a comparison to the design objectives and compliance limits.

The final effluent concentration and loading compliance limits were achieved throughout 2019, however the final effluent concentration objective was exceeded for E.coli **2** times.

The monthly geometric mean density of E. coli was 150 cfu/100 mL in March 2019 and was 486 cfu/100 mL in April 2019. Both these exceedance occurred while upgrades to the UV system were taking place at the WWTP. Adjustments to the temporary UV system were made in consultation with the contractor to try to improve the operating efficiency while it was in service. No E.coli exceedances occurred following the commissioning of the new UV system.

11 (3) c) Monitoring Schedule Deviation Summary

A summary of any deviation from the monitoring schedule and reasons for the current reporting year and a schedule for the next reporting year.

The monitoring and sampling required as part of Condition 9 of ECA 5807-B8GM4G was completed throughout 2019, with the exception of the monthly influent sewage and imported sewage samples in February and March 2019. A revised sampling frequency was identified in the amended ECA, that required an increase in influent sewage and

septage monitoring frequencies. While this ECA came into effect on January 31, 2019 the adjustment to the monitoring program was not implemented until April 2019. The non-compliance was identified in the November 2019 MECP inspection report.

A review of the monthly septage sampling results for 2019 has identified that a septage sample was also missed in May 2019. This non-compliance was reported to the MECP on May 4, 2020.

The schedule for the 2020 monitoring and sampling program is provided as Attachment D.

11 (3) d) Operating Issues

A summary of all operating issues encountered and corrective actions taken

As part of the UV system upgrades that were completed at the WWTP in 2019, a temporary UV system was installed to disinfect the effluent during construction. The temporary UV system was only utilized while the old, underperforming UV system was decommissioned and prior to the installation of a new permanent UV system. The temporary UV system was commissioned on March 12, 2019.

While the installation of the new UV system occurred in March and April of 2019, the WWTP operators identified some high E-Coli results due to operating issues with the temporary by-pass UV system. On March 27, 2019 the operators adjusted the level sensors on the temporary UV unit as they indicated some water was running above the ultraviolet bulbs causing that portion of water to not receive disinfection. The operators then collaborated with Trojan UV consultants in order to adjust and clean the level sensors to ensure proper flow distribution and disinfection through the temporary UV system.

11 (3) e) Repairs and Maintenance

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

A log is kept for each piece of equipment at the Collingwood plant. These logs are available for inspection at the plant.

In 2019, we continued with the Continuous Service Program with Ainsworth Electric Co. Limited being the source provider. This program utilizes such tools as thermography, voltage, load and harmonic checks, vibrations analysis etc. and has been designed using predictive and preventative maintenance to increase safety, reduce down time, reduce maintenance costs, protect asset value and extend equipment life.

Regarding electrical inspections, the WWTP and eight pumping stations were reviewed under the Electrical Safety Authority. Any deficiencies or repairs identified were rectified promptly. The associated logbook is available for review at each site.

All boiler and pressure vessels were inspected by personnel from the Boiler Inspection and Insurance Company of Canada - no concerns were reported.

All primary and secondary clarifiers were taken out of service for inspection and repairs implemented as required (e.g. damaged flights replaced, drive chains changed, etc.).

The UV system was upgraded and new system was commissioned in June 2019. UV lamps on the disinfection system were in good operation and did not require replacement.

Yearly inspection/maintenance was performed by T & T Power Group on standby power equipment at the main plant and pumping stations.

Gas monitoring equipment was calibrated and serviced as OEM recommendation.

Maintenance was completed on one of the aerations tanks. The tank was drained and a repair was completed on the aeration header.

11 (3) f) Effluent Quality Assurance or Control Measures

A summary of any effluent quality assurance or control measures undertaken

In order to protect the receiving water body, Nottawasaga Bay, the Collingwood WWTP operators take pride in working to achieve the highest quality effluent. By conducting daily equipment checks throughout the entire operation 7 days per week and monitoring SCADA alarms 24 hrs per day, the operators ensure a continuous, consistent and effective approach to the plant operations. An onsite laboratory adds another control measure to observe plant performance on a day to day basis, allowing the operators to foresee and mitigate a potential plant upset before it may arise.

11 (3) g) Calibration and Maintenance Summary

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 the ECA or recommended by the manufacturer

Flows at the Collingwood WWTP are monitored using in-line flow meters, including ultrasonic meters for two of the influent sewage pumps, a magnetic flow meter for the third influent sewage pump, and a level to flow transducer at the final efluent weir. The manufacturer recommends annual calibration of these flow measuring devices.

The flow meters are calibrated annually for accuracy (must be +/- 15%of flow rate) to satisfy condition 9 (4) of the ECA. Certificates are included Attachment E.

Calibrations		
Date	**Equipment Calibrated/ Maintained**	**Performed By**
June 22, 2019	Influent X 3, Raw Sludge Flow, Sludge Loading, Thickened Waste Activated Sludge (TWAS) and Final Effluent	Contracted Services

A review of the calibration record for the ultrasonic flow meters installed for sewage influent pumps 1 and 3 indicates that only one channel was calibrated in the shared transmitter for the two flow meters in 2019. With the establishment of influent sewage flow monitoring records in April 2020, staff will ensure the calibration of these flow meters in 2020 will include both channels.

11 (3) h) Design Objectives Summary

A summary of efforts made to achieve the design objectives in the ECA, 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;*

The ECA specifies that the plant is rated to treat an average daily flow of 24,548 m^3/day and a peak flow of 60,900 m^3/day. The Annual Average Daily Influent Flow to the WWTP in 2019 was 16,202 m3/d, which is only 66% of the design capacity, therefore an expansion to the WWTP is not required at this time.

Measurement	Design	Current Year	% of Capacity
ADF	24,548 m^3/d	16,202 m^3/d	66%
Peak flow m^3/d	60,900 m^3/d	33,460 m^3/d	55%

Final effluent objectives were achieved on all but one occasion in 2019 (March E.coli) and final effluent quality trends are stable, therefore no treatment upgrades are required at this time.

11 (3) i) Sludge Volume and Disposal

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; Sludge volume is to be measured every five (5) years, but may be estimated in the interim years. A summary of disposal locations and volumes of sludge disposed of must also be provided if sludge was disposed of during the reporting period

The WWTP currently stabilizes its bio solids (sludge) through anaerobic digestion comprised of 2 primary digesters, each with a capacity of 1,223 m^3, one (1) secondary digester for separation of digested sludge and collection and storage of gas, with a capacity of 1,223 m^3 and one (1) sludge holding tank with continuous air supply and a capacity of 990 m^3. A waste gas burner with a rated capacity of 560 m^3/hr is connected to the system.

Stabilized bio solids are spread on licensed agricultural land as a nutrient and soil conditioner.

Sludge produced at the Collingwood WWTP meets the quality criteria specified in the Ontario Guidelines for Sewage Sludge Utilization on Agricultural Lands. Sludge is applied in accordance with these guidelines and the conditions set out in the site Environmental Compliance Approval.

Sludge disposal through direct utilization on land is not practical during winter months, during periods of inclement weather and when agricultural fields are inaccessible. The provincial guidelines for bio solids utilization on land recommends municipalities provide 6 months sludge storage facilities. The Town of Collingwood contracts three 6,800 m^3 STF from a private contractor to achieve this guideline.

Sludge disposal operations are currently contracted to a private hauler.

A total volume of 30,752.6 m^3 of bio solids was disposed of from the Collingwood facility in 2019. It is estimated that 32,000 m3 of bio solids will be generated at the Collingwood facility in 2020 due to growth.

Samples of anaerobic sludge are collected twice monthly and sent for metals, E.coli, and nutrient analysis to a certified laboratory for testing. Attachment F provides a detailed summary report of sites utilized for sludge disposal in 2019. Original reporting analysis is available at the plant for viewing.

11 (3) j) Complaints

A summary of any complaints received and any steps taken to address the complaints

There were **3** complaints in 2019 and are summarized in the table below:

Complaints		
Date	**Nature of Complaint**	**Corrective Action**
April 15th, 2019	Odour	No issues found
May 15th, 2019	Odour, Flame Out	Re-light flame
May 16th, 2019	Odour	No issues found

11 (3) k) Bypasses, Overflows and Spills

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

There were no bypass, overflows or other situations outside normal operating conditions and spills within the meaning of Part X of EPA and abnormal discharge events in 2019.

11 (3) l) Notice of Modifications to Sewage Works

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

There were no Notice of Modifications to Sewage Works completed under Paragraph 1.d. of Condition 10 of the ECA in 2019.

11 (3) m) Procedure F-5-1 Summary

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

The Town replaced a sanitary sewer on Napier Street (between Hume and Erie) and replaced one sewer lateral in 2019 to help prevent inflow and infiltration (I/I) into the wastewater collection system and reduce the occurrence of bypasses/overflow events at the WWTP.

Another section of sanitary sewer has been budgeted for replacement on Napier Street (from Hume to Dillon) and $10,000 has been allocated for manhole repairs in 2020. These works will help to further reduce the I/I in the wastewater system in Collingwood.

11 (3) n) Proposed Works Schedule Changes

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 UV system was upgraded and new system was commissioned in June 2019. There were some delays (approximately 2 weeks) with respect to concrete removal, channel modification ECA delays and design changes.

Section 5: Conclusion

This report has been compiled in accordance with the reporting requirements of Condition 11 of ECA 5807-B8GM4G and Condition 10 of CofA 2639-5TLQB2. If further clarification is required please do not hesitate to contact:

Jenn Adams
Supervisor, Wastewater
705-445-1351, Ext. 3315

Attachment A – 2019 WWTP Performance Summary

2019 Performance Summary – Collingwood WWTP

2019	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Annual average	Loading
FLOWS	*Design Capacity 24,548 m^3/d*													
Monthly (m^3/d)	17,505	17,995	18,440	21,726	18,951	16,253	12,607	10,716	11,401	12,625	18,188	184,72	16,202	
Total (m^3)	542,650	503,870	571,636	651,789	587,483	487,600	390,820	321,470	342,020	391,370	550,360	572,620		
Max day (m^3/d)	32,410	33,460	26,313	26,138	24,402	20,210	18,230	12,920	13,560	23,300	29,960	29,690		
Min day (m^3/d)	13,190	12,420	13,250	18,811	15,811	13,410	8,950	9,650	8,580	10,520	14,650	14,610		
BOD5														
Influent (mg/L)	no data	no data	no data	65.3	784	no data	no data	no data	no data	no data	no data	no data		
CBOD5	*Effluent Average Annual: Objective 15 mg/L, Compliance Concentration Limit 25 mg/L, Compliance Loading Limit 613.7 kg/d*													
Influent (mg/L)	no data	no data	no data	no data	no data	166	53	8	132	170	129	55		
Effluent (mg/L)	3.26	2.00	3.88	2.3	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	3.0	48.28
Plant Efficiency	no data	no data	97%	97%	100%	98%	94%	63%	98%	98%	98%	95%		
TSS	*Effluent Average Annual: Objective 15 mg/L, Compliance Concentration Limit 25 mg/L, Compliance Loading Limit 613.7 kg/d*													
Influent (mg/L)	no data	no data	no data	71	170	140	110	40	230	740	240	190		
Effluent (mg/L)	6.0	2.5	6.5	6.4	4.6	4.0	6.0	4.3	6.0	6.6	7.8	8.5	5.8	93.50
Plant Efficiency	no data	no data	no data	91%	97%	97%	95%	89%	97%	99%	97%	96%		
TP	*Effluent Average Monthly: Objective 0.8 mg/L, Compliance Concentration Limit 1 mg/L, Compliance Loading Limit 24.5 kg/d*													
Influent (mg/L)	no data	no data	no data	2.08	3.88	12.00	4.80	2.59	2.06	6.34	2.84	2.55		
Effluent (mg/L)	0.31	0.13	0.15	0.13	0.09	0.17	0.30	0.31	0.32	0.13	0.24	0.21	0.21	3.35
Plant Efficiency	no data	no data	no data	94%	98%	99%	94%	88%	84%	98%	92%	92%		
TKN														
Influent (mg/L)	no data	no data	no data	17.5	37.8	35.1	18.8	8.1	39.3	46.3	20.9	1.6		
Effluent (mg/L)	3.2	3.6	7.0	5.0	8.7	2.0	2.3	1.1	1.2	1.2	1.6	6.7	3.73	
TAN														
Effluent (mg/L)	1.20	2.65	6.45	3.85	3.56	0.37	0.73	0.10	0.11	0.06	0.10	4.25	1.95	
pH	*Effluent Single Sample: Objective 6.5 to 9.0, Compliance Limit 6.0 to 9.5*													
Effluent Min	7.3	7.4	6.6	6.7	6.7	7.2	6.8	7.0	7.0	6.8	7.0	6.9		
Effluent Max	7.8	7.8	7.8	7.7	7.9	7.8	7.6	7.7	7.6	7.31	7.3	7.35		
E-Coli	*Effluent Monthly Geomean: Objective 100 CFU/100 mL*													
Effluent (CFU/100 mL)	34*	32	**150**	**486**	3	6	47	24	24	5	24	8		

Notes:

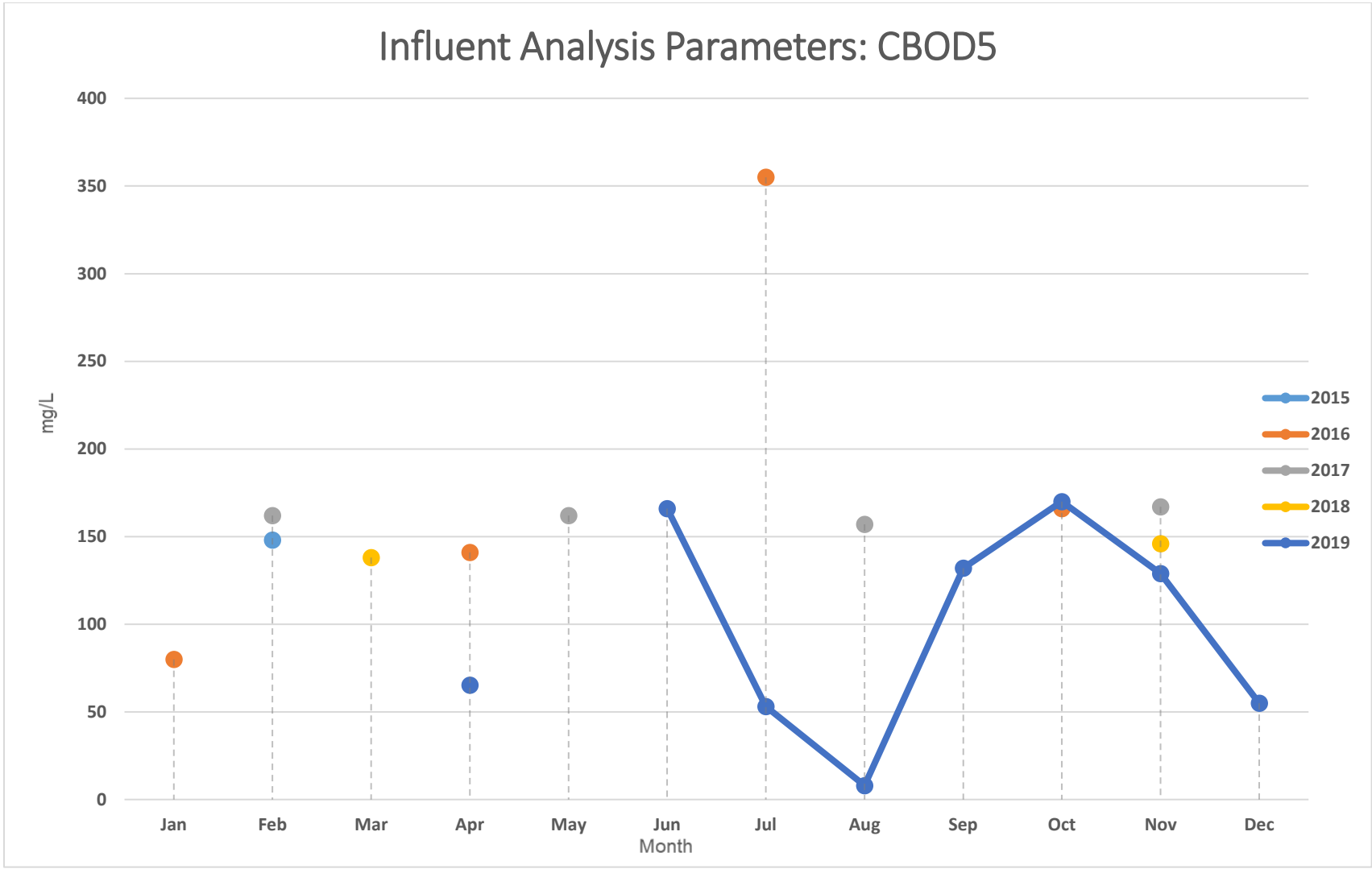
* E.coli effluent compliance limit is a monthly geometric mean of 200 cfu/100 mL in January 2019

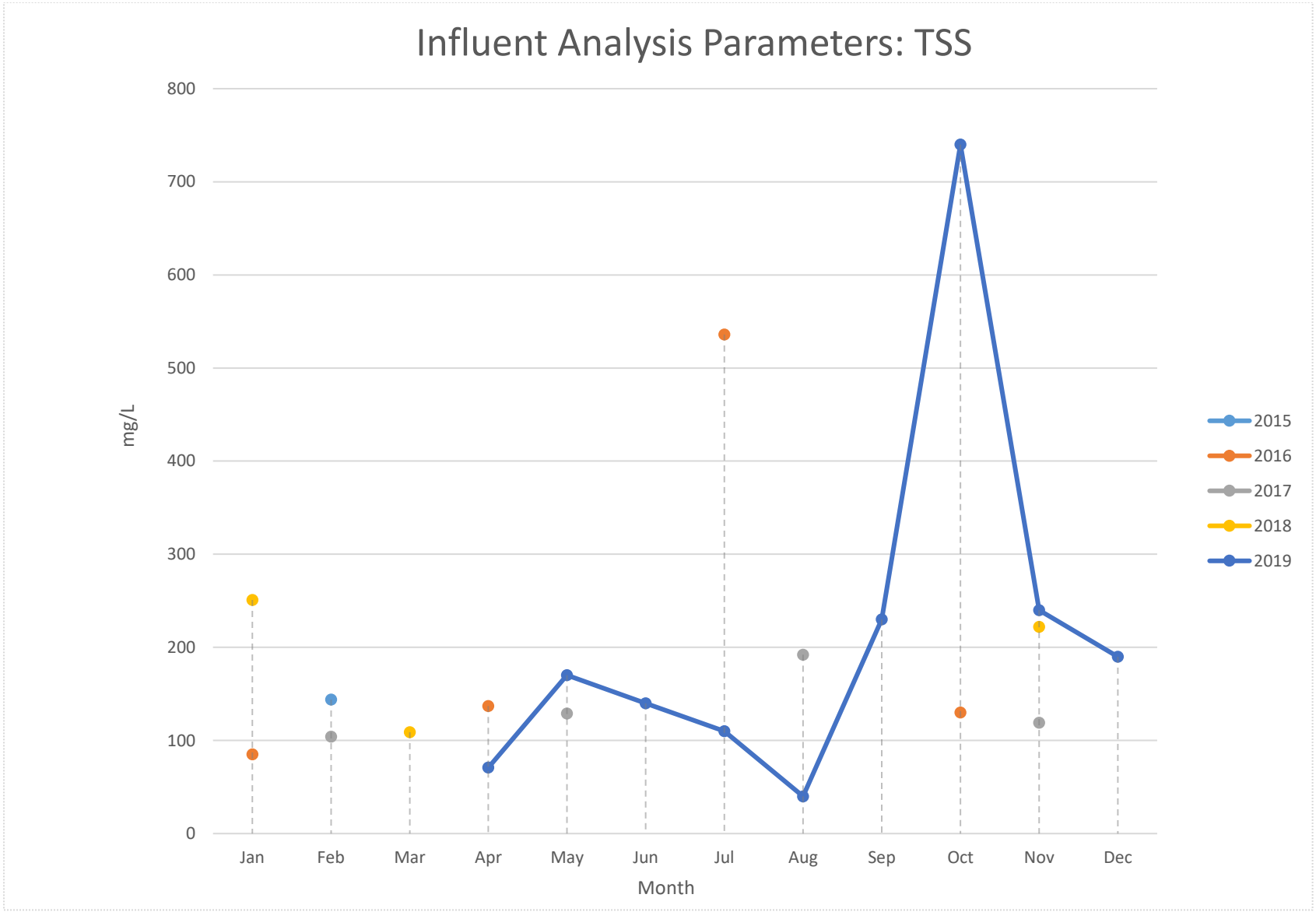
Attachment B – 2019 Septage Monitoring

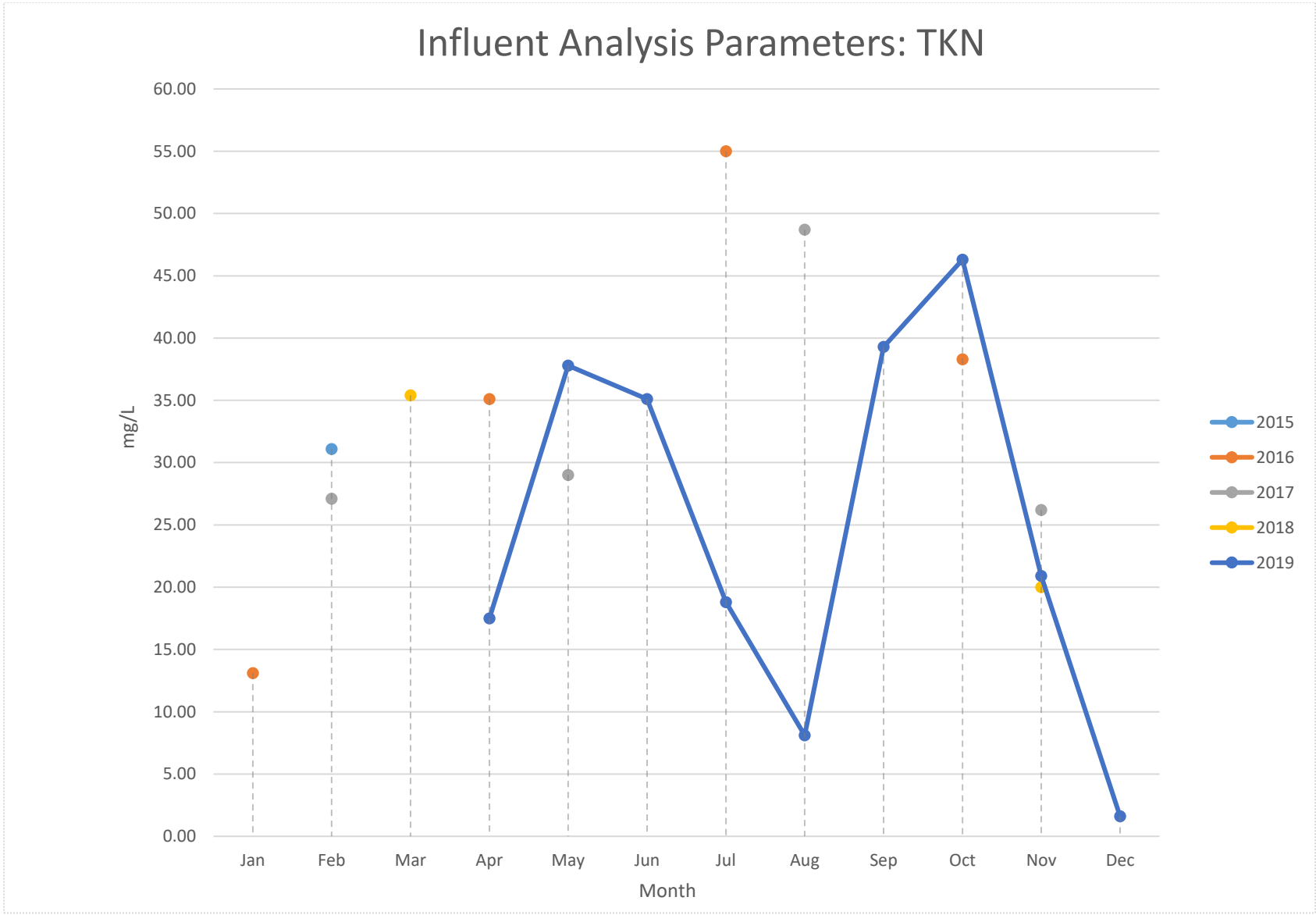
2019 Imported Septage Monitoring

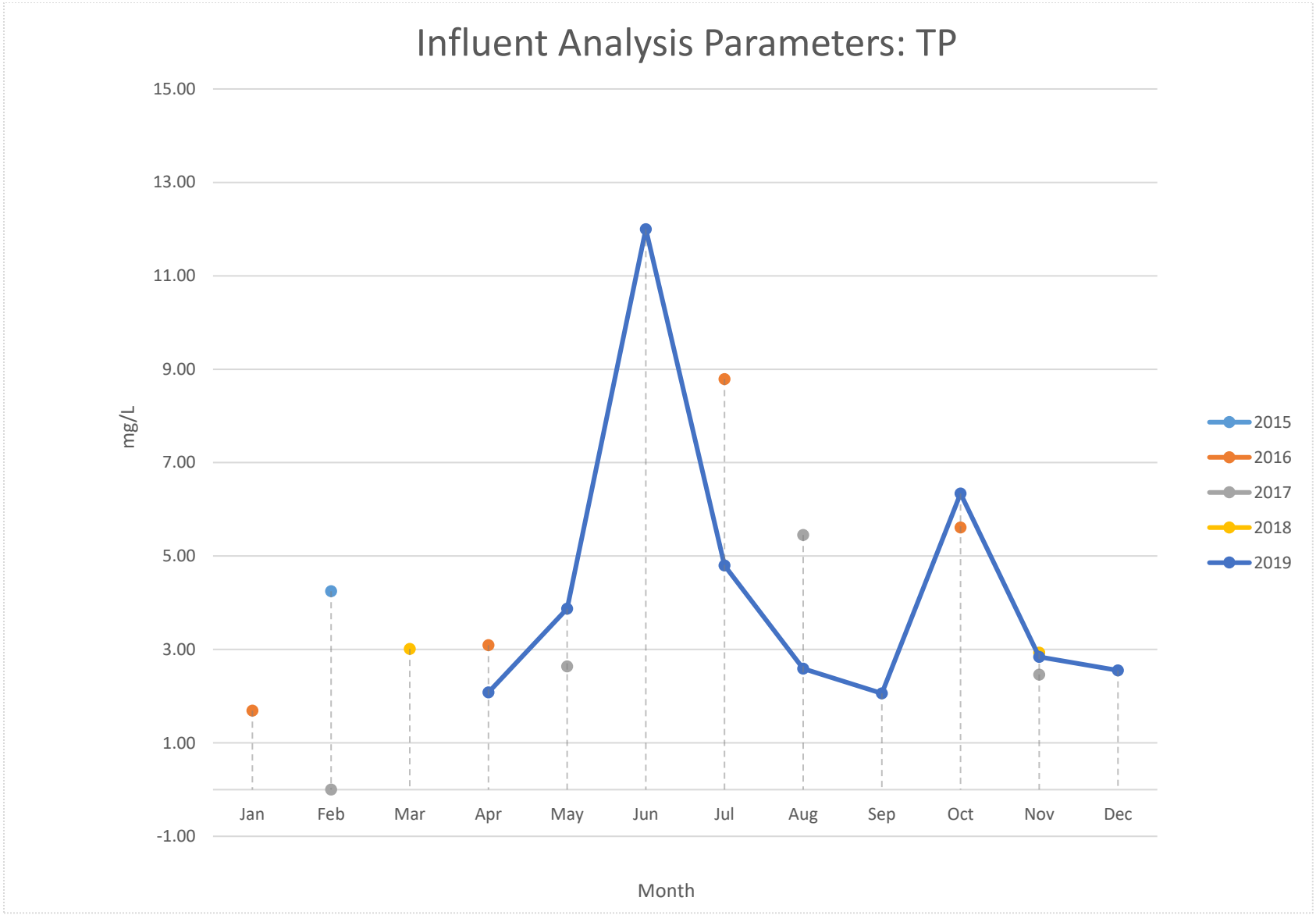
2019	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Annual average
BOD5 (mg/L)	no data	no data	no data	2,160	no data	no data	no data	no data	no data	no data	no data	no data	2,160
CBOD5 (mg/L)	no data	no data	no data	no data	no data	4,630	1,930	2,040	2,990	666	2,100	1,360	2,245
TSS (mg/L)	no data	no data	no data	5,270	no data	7,500	11,500	5,200	22,000	280	22,000	9,200	9,334
TP (mg/L)	no data	no data	no data	33.8	no data	379	412	386	173	32.90	331	104	231
TKN (mg/L)	no data	no data	no data	310	no data	3,920	920	3,340	909	121	1,360	356	1,404

Attachment C – Influent Trending Data


Influent Analysis Parameters: CBOD5
400
350
300
250
200
150
100
50
0
mg/L
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
2015
2016
2017
2018
2019


Influent Analysis Parameters: TSS
800
700
600
500
400
300
200
100
0
mg/L
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
2015
2016
2017
2018
2019


Influent Analysis Parameters: TKN
60.00
55.00
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
mg/L
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
2015
2016
2017
2018
2019


Influent Analysis Parameters: TP
15.00
13.00
11.00
9.00
7.00
5.00
3.00
1.00
-1.00
mg/L
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
2015
2016
2017
2018
2019

Attachment D – 2020 Sampling Schedule

2020 Sampling Program

Sample Location	Parameters	Sample Type	Minimum Sampling Frequency	2020 Sample Collection Schedule
Influent Sewage	BOD5 TSS TP TKN	24-hour Composite	Monthly	First Wednesday of each month
Imported Sewage	BOD5 TSS TP TKN	Grab	Monthly	First Wednesday of each month
Final Effluent	CBOD5 TSS	24-hour Composite	Monthly	Every Wednesday (weekly)
	TP TAN	24-hour Composite	Weekly	Every Wednesday (weekly)
	E.coli	Grab	Weekly	Every Wednesday (weekly)
	pH Temperature	Grab	3 times/week	Monday, Tuesday, Wednesday, Thursday, Friday (excluding stat holidays)
Sludge/Biosolids	TS TP TAN Nitrate as Nitrogen Metals Scan	Grab	Bi-weekly	First sample collected Thursday January 2, 2020, and subsequent samples to be collected every other Wednesday starting January 15, 2020.
Leachate	Boron Cobalt Magnesium Manganese Potassium Strontium Bis (2-ethylhexyl) Phthalate	Grab	Quarterly	February 18, 2020 May 5, 2020 August 11, 2020 November 10, 2020

Attachment E – Calibration Records

V. Nowik Controls and Instrumentation Service

June 22 2019

To: Glen Price

Summary: Annual Meter Certification June 2019 at Collingwood WWTP

Summary of findings is as follows;

All meters were accurate within Manufacturers specifications.

V. Nowik

Vic Nowik

51 Fourth St., Angus, Ontario L0M 1B3
Cell: (705) 440-7331 E-Mail: vnowik@rogers.com

V.Nowik Instrumentation & Controls	**Calibration Report for Collingwood WWTP 2019**	51 Fourth St. Angus, ON L0M 1B3 Tel: (705) 440-7331

Location	**Collingwood WWTP**	**Manufacturer**	ENDRESS & HAUSER
Process	Influent SP3/SP1	**Model:**	93WA2-AA2A2ORC82A2
Calibration Date:	June 17 2019	**Serial #**	4S 12A791000
Technician	V.Nowik	**Tag:**	INF-FIT-1/INF-FIT-3

Input			**Output**	**(Signal)**	**(Process)**
Type:	SIMULATOR %	L/S	**Type or EGU:**	mA	L/S
Min:	0.00	0.00	**Min:**	4.00	0.00
Max:	100.00	450.00	**Max:**	20.00	450.00
Meter Size (mm)	415				
Range Unit	L/S				
Cal. Factor	0.9521				

			Before Calibration		**After Calibration**	
Cal. Input (%)	**Input %**	**Calc. O/P (mA)**	**Output (mA)**	**%Error**	**Output (mA)**	**%Error**
0.00	0.00%	4.00	4.00	0.00%	4.00	0.00%
25.00	25.00%	8.00	8.00	0.00%	8.00	0.00%
50.00	50.00%	12.00	12.00	0.00%	12.00	0.00%
75.00	75.00%	16.00	16.00	0.00%	16.00	0.00%
100.00	100.00%	20.00	20.01	-0.06%	20.01	-0.06%

Calibration Equipment			
Type:	Output Simulation	DMM	**Calibration performed as per manufacturers recommended procedure.**
Manufacturer:	Endress & Hauser	Fluke Processmeter	
Model:		789	
Serial No.:		25430033	**Calibration Passed**
Last Cal. Date:		Mar. 2019	V. Nowik

Comments:

MC 4586
AC0093

V.Nowik Instrumentation & Controls	**Calibration Report for Collingwood WWTP 2019**	51 Fourth St. Angus, ON L0M 1B3 Tel: (705) 440-7331

Location	**Collingwood WWTP**	**Manufacturer**	ENDRESS & HAUSER
Process	Influent SP2	**Model:**	PROMAG 30FH4H-MD1ED1F31B
Calibration Date:	June 17 2019	**Serial #**	4S F94337
Technician	V.Nowik	**Tag:**	INF-FIT-2

Input			**Output**	**(Signal)**	**(Process)**
Type:	SIMULATOR %	L/S	**Type or EGU:**	mA	L/S
Min:	0.00	0.00	**Min:**	4.00	0.00
Max:	100.00	450.00	**Max:**	20.00	450.00
Meter Size (mm)	400				
Range Unit	L/S				
Cal. Factor	1.0776				

			Before Calibration		**After Calibration**	
Cal. Input (%)	**Input %**	**Calc. O/P (mA)**	**Output (mA)**	**%Error**	**Output (mA)**	**%Error**
0.00	0.00%	4.00	4.07	-0.44%	4.07	-0.44%
25.00	25.00%	8.00	8.08	-0.50%	8.08	-0.50%
50.00	50.00%	12.00	12.09	-0.56%	12.09	-0.56%
75.00	75.00%	16.00	16.12	-0.75%	16.12	-0.75%
100.00	100.00%	20.00	20.15	-0.94%	20.15	-0.94%

Calibration Equipment			
Type:	E&H FLOWJACK SIMULATOR	DMM	**Calibration performed as per manufacturers recommended procedure.**
Manufacturer:	ENDRESS & HAUSER	Fluke Processmeter	
Model:	ZX6000	789	
Serial No.:	402467	25430033	**Calibration Passed**
Last Cal. Date:	NA	Mar. 2019	O. Nowik

Comments:

V.Nowik Instrumentation & Controls	**Calibration Report for Collingwood WWTP 2019**	51 Fourth St. Angus, ON L0M 1B3 Tel: (705) 440-7331

Location	**Collingwood WWTP**	**Manufacturer**	ENDRESS & HAUSER
Process	Sludge Loading	**Model:**	Disco Mag-VarioMag
Calibration Date:	June 17 2019	**Serial #**	20558G
Technician	V.Nowik	**Tag:**	Sludge Loading

Input		**Output**	**(Signal)**	**(Process)**
Type:	SIMULATOR %	**Type or EGU:**	mA	L/sec
Min:	0.00	**Min:**	4.00	0.00
Max:	100.00	**Max:**	20.00	17.33
Meter Size (mm)	100			
Range Unit	L/S			
Cal. Factor	1.017			

			Before Calibration		**After Calibration**	
Cal. Input (%)	**Input %**	**Calc. O/P (mA)**	**Output (mA)**	**%Error**	**Output (mA)**	**%Error**
0.00	0.00%	4.00	4.01	-0.06%	4.01	-0.06%
25.00	25.00%	8.00	7.97	0.19%	7.97	0.19%
50.00	50.00%	12.00	11.96	0.25%	11.96	0.25%
75.00	75.00%	16.00	15.92	0.50%	15.92	0.50%
100.00	100.00%	20.00	19.89	0.69%	19.89	0.69%

Calibration Equipment			
Type:	E&H FLOWJACK SIMULATOR	DMM	**Calibration performed as per manufacturers recommended procedure.**
Manufacturer:	ENDRESS & HAUSER	Fluke Processmeter	
Model:	ZX6000	789	
Serial No.:	402467	25430033	**Calibration Passed**
Last Cal. Date:	NA	Mar. 2019	O. Nowik

Comments:

V.Nowik Instrumentation & Controls	**Calibration Report for Collingwood WWTP 2019**	51 Fourth St. Angus, ON L0M 1B3 Tel: (705) 440-7331

Location	**Collingwood WWTP**	**Manufacturer**	Endress & Hauser
Process	TWAS	**Model:**	50W1H-VLOB1RC1B2AA
Calibration Date:	June 17 2019	**Serial #**	AC013A16000
Technician	V.Nowik	**Tag:**	TWAS-FIT-1

See Following pages for E&H Fieldcheck Verificator Report

Calibration Equipment				
Type:	FieldCheck	Simubox		**Calibration performed as per manufacturers recommended procedure.**
Manufacturer:	Endress&Hauser	Endress&Hauser		
Model:	550205	8728647		
Serial No.:	V1.07 07	V1.00 01		**Calibration Passed**
Last Cal. Date:	9/18	9/18		O. Nowik

Comments:

Flowmeter Verification Certificate Transmitter

Collingwood WWTP	Collingwood WTTP
Customer	Plant
	TWAS
Order code	Tag Name
PROMAG 53 W DN100	1.2439 - 1.2439
Device type	K-Factor
AC013A16000	0
Serial number	Zero point
V2.01.02	V1.05.02
Software Version Transmitter	Software Version I/O-Module
17.06.2019	14:03
Verification date	Verification time

Verification result Transmitter: Passed

Test item	Result	Applied Limits
Amplifier	Passed	Basis: 0.55 %
Current Output 1	Passed	0.05 mA
Pulse Output 1	Passed	1 P
Test Sensor	Passed	

FieldCheck Details	**Simubox Details**
73991	8737370
Production number	Production number
1.07.08	1.00.01
Software Version	Software Version
09/2018	09/2018
Last Calibration Date	Last Calibration Date

Date Operator's Sign Inspector's Sign

Overall results:

The achieved test results show that the instrumment is completely functional, and the measuring results lie within +/- 1% of the original calibration. [1)]

The calibration of the Fieldcheck test system is fully traceable to national standards.

1) Prerequisite is an additional proof of electrode integrity with a high voltage test.

Endress+Hauser

People for Process Automation

FieldCheck - Result Tab Transmitter

Customer	**Collingwood WWTP**
Order code	
Device type	**PROMAG 53 W DN100**
Serial number	**AC013A16000**
Software Version Transmitter	**V2.01.02**
Verification date	**17.06.2019**

Plant	**Collingwood WTTP**
Tag Name	**TWAS**
K-Factor	**1.2439 - 1.2439**
Zero point	**0**
Software Version I/O-Module	**V1.05.02**
Verification time	**14:03**

Verification Flow end value (100 %): 2714.336 m3/d
Flow speed 4.00 m/s

Passed / Failed	Test item	Simul. Signal	Limit Value	Deviation
	Test Transmitter			
✓	Amplifier	135.718 m3/d (5%)	1.50 %	-0.47 %
✓		271.435 m3/d (10.0%)	1.00 %	-0.60 %
✓		1357.169 m3/d (50.0%)	0.60 %	-0.06 %
✓		2714.337 m3/d (100%)	0.55 %	0.01 %
✓	Current Output 1	4.000 mA (0%)	0.05 mA	-0.001 mA
✓		4.800 mA (5%)	0.05 mA	-0.001 mA
✓		5.600 mA (10.0%)	0.05 mA	-0.014 mA
✓		12.000 mA (50.0%)	0.05 mA	-0.005 mA
✓		20.000 mA (100%)	0.05 mA	-0.005 mA
✓	Pulse Output 1	125 P	1 P	0 P
		Start value	**Limits range**	**Measured value**
	Test Sensor			
✓	Coil Curr. Rise	5.000 ms	0.000..14.250 ms	6.602 ms
✓	Coil Curr. Stability		---	---
✓	Electrode Integrity	mV	0.0..300.001 mV	3.261 mV

Legend of symbols

✓	X	—	?	!
Passed	Failed	not tested	not testable	Attention

FieldCheck: Parameters Transmitter

Customer	**Collingwood WWTP**
Order code	
Device type	**PROMAG 53 W DN100**
Serial number	**AC013A16000**
Software Version Transmitter	**V2.01.02**
Verification date	**17.06.2019**

Plant	**Collingwood WTTP**
Tag Name	**TWAS**
K-Factor	**1.2439 - 1.2439**
Zero point	**0**
Software Version I/O-Module	**V1.05.02**
Verification time	**14:03**

Curent Output	**Assign**	**Current Range**	**Value 0_4mA**	**Value 20 mA**		
Terminal 26/27	**VOLUME FLOW**	**4-20 mA activ**	**0.0 m3/d**	**1008.01 m3/d**		
Pulse Output	**Assign**	**Pulse Value**	**Output signal**	**Pulse width**		
Terminal 24/25	VOLUME FLOW	0.001 m3/P	Passive/Negative	100.01 ms		

Actual System Ident. 121.0

V.Nowik Instrumentation & Controls	**Calibration Report for Collingwood WWTP 2019**	51 Fourth St. Angus, ON L0M 1B3 Tel: (705) 440-7331

Location	**Collingwood WWTP**	**Manufacturer**	Milltronics
Process	Final Effluent	**Model:**	OCM III
Calibration Date:	June 17 2019	**Serial #**	PBD/B4111061
Technician	V.Nowik	**Tag:**	FEFF-FIT-1

Input			**Output**	**(Signal)**	**(Process)**	
Type:	Head (m)		**Type or EGU:**	mA	L/Sec	
Min:	0.0000		**Min:**	4.00	0.00	
Max: (P7)	0.326		**Max:**	20.00	1041.64	(P6)
exponent (U0)	1.5					
E.D (P46)	1.13851		**Before Calibration**		**After Calibration**	
Input (m)	**Calc flow (L/Sec)**	**Calc. O/P (mA)**	**Output (mA)**	**%Error**	**Output (mA)**	**%Error**
0.00000	0.000	4.00	3.94	-0.38%	3.94	-0.38%
0.08000	126.90	5.95	5.93	-0.13%	5.93	-0.13%
0.16200	365.68	9.62	9.60	-0.12%	9.60	-0.12%
0.24400	675.95	14.38	14.38	0.00%	14.38	0.00%
0.32553	1041.64	20.00	20.01	0.06%	20.01	0.06%

Calibration Equipment			
Type:	Emulation Mode F1 and P28	DMM	**Calibration performed as per manufacturers recommended procedure.**
Manufacturer:	Miltronics	Fluke Processmeter	
Model:		789	
Serial No.:		25430033	**Calibration Passed**
Last Cal. Date:		Mar. 2019	V. Nowik

Comments:

Attachment F – Sludge Disposal Records

Contaminar	Arsenic	Cadmium	Cobalt	Chromium	Copper	Mercury	Molybdenum	Nickel	Lead	Selenium	Zinc	Ammonia	Nitrate	Nitrite	Kjeldahl-N	Phosphorus	Potassium	Total Solids	E-Coli	Volatile Solids
Sampling	As	Cd	Co	Cr	Cu	Hg	Mo	Ni	Pb	Se	Zn	NH3	NO3	NO2	TKN	TP	K	TS		VS
Date	mg / L	mg / L	mg / L	mg / L	mg / L	mg / L	mg / L	mg / L	mg / L	mg / L	mg / L	mg / L	mg / L	mg / L	mg / L	mg / L	mg / L	%	cfu/g	%
2-Jan-19	0.11	0.0278	0.1	0.6	18.5	0.0119	0.229	0.44	1.15	0.08	18.2	1060	0.4	0.2	2500	633	118	2.36	270	61.3
16-Jan-19	0.02	0.002	0.1	0.1	0.2	0.001	0.01	0.1	0.02	0.01	0.6	995	0.4	0.2	1560	102	93	1.04	301	62.8
30-Jan-19	0.104	0.0251	0.1	0.7	19.2	0.0225	0.212	0.44	1.06	0.071	15	1060	0.4	0.2	2720	749	124	2.47	535	61.6
13-Feb-19	0.041	0.008	0.1	0.2	5.44	0.0029	0.073	0.13	0.302	0.025	4.03	996	0.4	0.2	1500	413	134	1.24	1420	65.1
27-Feb-19	0.096	0.0217	0.1	0.5	16.1	0.011	0.194	0.33	0.797	0.062	10.8	1150	0.4	0.2	2300	436	184	1.4	587	65.8
12-Mar-19	0.067	0.0127	0.1	0.4	11.3	0.0058	0.143	0.24	0.534	0.05	8.32	1180	0.4	0.2	1950	604	136	1.52	921	64.1
27-Mar-19	0.048	0.0079	0.1	0.2	7.77	0.011	0.1	0.16	0.37	0.031	4.82	1340	0.4	0.2	2370	500	133	1.37	355	65.9
10-Apr-19	0.032	0.0043	0.1	0.2	4.96	0.0043	0.063	0.17	0.233	0.026	3.51	1390	0.4	0.2	3160	505	130	1.54	339	65.5
23-Apr-19	0.071	0.0118	0.1	0.4	12.9	0.0226	0.158	0.24	0.575	0.048	8.08	1310	0.4	0.2	1900	571	165	1.37	141	73.9
8-May-19	0.1	0.03	0.05	0.9	20	0.009	0.27	0.62	1.4	0.1	12.1	1260	1	1	2630	688	172	1.92	20000	1.22
16-May-19	0.1	0.03	0.04	0.4	8.95	0.006	0.26	0.22	0.9	0.1	6.65	91	0.1	39.6	1520	450	87.5	1.7	40000	1
5-Jun-19	0.1	0.03	0.06	0.6	14.1	0.004	0.2	0.33	1.3	0.1	11.2	1090	0.1	1	1650	547	165	1.87	30000	56.7
19-Jun-19	0.1	0.03	0.03	0.5	13.2	0.006	0.05	0.3	1.2	0.1	12.1	1450	0.1	70.3	2240	558	145	1.74	10000	62
3-Jul-19	0.1	0.03	0.06	0.6	15.1	0.007	0.26	0.41	1.7	0.1	12.8	1100	0.1	0.6	1740	806	146	2.1	50000	65.7
17-Jul-19	0.1	0.03	0.04	0.4	12	0.007	0.2	0.34	1.1	0.1	9.9	1260	0.1	0.1	1680	480	178	1.74	40000	60.3
31-Jul-19	0.1	0.03	0.08	0.6	20.5	0.009	0.31	0.43	1.8	0.1	15.6	1180	5.6	0.1	2600	861	179	2.44	55000	63
15-Aug-19	0.1	0.03	0.06	0.6	17.1	0.01	0.3	0.57	1.9	0.1	15.8	1240	0.1	0.1	2440	818	172	2.32	na	62.5
10-Sep-19	0.09	0.03	0.05	0.7	19	0.01	0.28	0.37	1.9	0.1	16	1250	5.2	0.1	1960	670	173	2.35	70000	62.6
25-Sep-19	0.1	0.03	0.04	0.6	18.7	0.01	0.25	0.41	1.7	0.1	15.5	1460	4.5	0.1	1620	617	137	2.43	10000	59.7
9-Oct-19	0.1	0.03	0.05	0.6	13.6	0.007	0.21	0.41	1.4	0.1	12.3	870	4.1	0.1	1770	603	112	2.03	270000	63.6
23-Oct-19	0.1	0.03	0.07	0.9	18.9	0.009	0.28	0.58	1.8	0.1	16.1	1080	1	1	1670	570	152	2.36	80000	58.9
6-Nov-19	0.1	0.03	0.05	0.9	18.4	0.008	0.26	0.61	1.9	0.1	16.1	1200	1.6	0.1	2060	714	154	2.15	60000	59.1
20-Nov-19	0.1	0.03	0.06	0.5	12.9	0.006	0.2	0.45	1.5	0.1	11.8	950	0.1	0.1	1670	524	159	2.13	100000	58.2
4-Dec-19	0.13	0.04	0.09	0.8	19.4	0.011	0.28	0.53	2.5	0.1	18.1	1530	1.2	1	2770	940	149	3.14	60000	60.8
18-Dec-19	0.1	0.03	0.09	0.7	15.7	0.013	0.23	0.97	1.7	0.1	13.6	1070	1.3	1	2390	660	140	2.51	150000	55.8
30-Dec-19	0.1	0.03	0.1	2.1	22.6	0.013	0.46	1.67	2.4	0.1	17.4	1200	0.1	0.1	3290	923	163	3	10000	59.7