

Deep River Wastewater System

Waterworks # 120000612

Annual Report

Prepared For: Town of Deep River

Reporting Period of January 1st – December 31st, 2022

Issued: Mar 15, 2023

Revision: 1

Operating Authority:



This report has been prepared to meet the requirements set out in the facility Environmental Compliance Approval (ECA) #1655-7P8SPE issued February 26, 2009.

Table of Contents

Operations and Compliance Reliability Indices	1
Treatment Flows	2
Raw Flow (m3/d)	2
Effluent Flow (m3/d).....	2
Annual Comparison (m3).....	3
Raw Sewage Quality.....	3
CBOD5(mg/L).....	3
Total Suspended Solids (mg/L)	3
Total Phosphorus (mg/L)	4
Total Kjeldahl Nitrogen (mg/L)	4
Effluent Quality Assurance and Control Measures Taken	4
Effluent Quality	5
CBOD5.....	5
Total Suspended Solids.....	6
Total Phosphorus.....	7
Total Ammonia Nitrogen	8
E-coli	9
pH.....	9
Temperature.....	10
Un-Ionized Ammonia.....	10
Acute Lethality	11
Operating Issues.....	11
Maintenance	11
Major Maintenance Summary (Capital)	12
Calibration Reports.....	12
Proposed Alterations, Extensions, or Replacement to Works	12
Sludge Generation.....	13

Sludge Disposal Summary – NASM Land Applications	13
Annual Comparison (m3/year)	13
Summary of Complaints	14
Summary of By-Pass, Overflows, Spill or Abnormal Discharge Events	14
Appendixes	
A - Performance Assessment Report.....	15
B - Calibration Reports.....	16

Operations and Compliance Reliability Indices

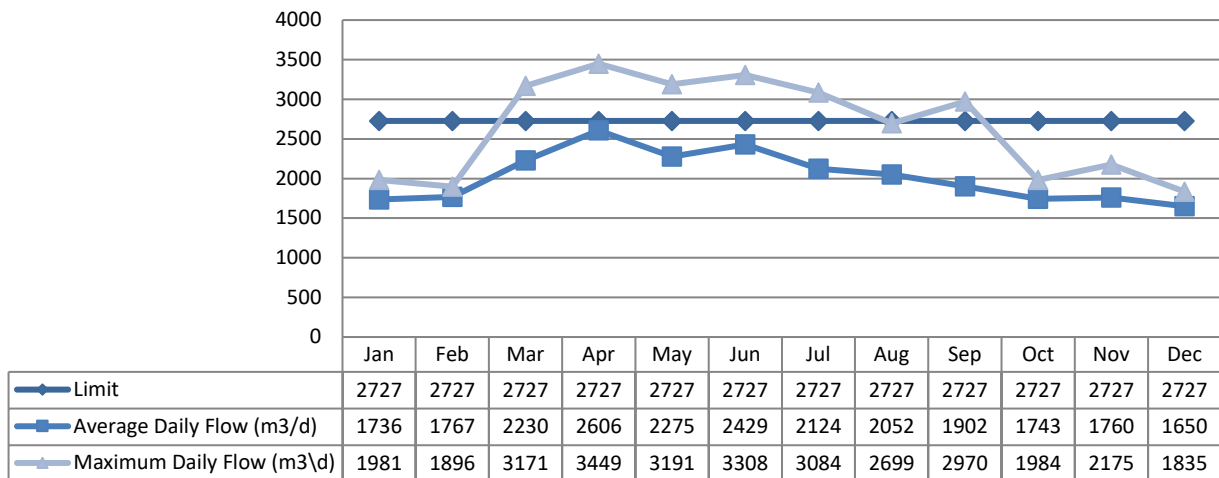
Compliance Event	# of Events
Ministry of the Environment, Conservation and Parks (MECP) Inspections	There were no inspections during this reporting period.
Ministry of Labour Inspections	There were no inspections during this reporting period.
Non-Compliances to MECP/EC	There were non-compliances during this reporting period.
Community Complaints	There were no complaints during this reporting period.
Spills	There were no spills reported during this reporting period.
By-Pass/Overflows	There were no by-pass/overflows during this reporting period.

Treatment Flows

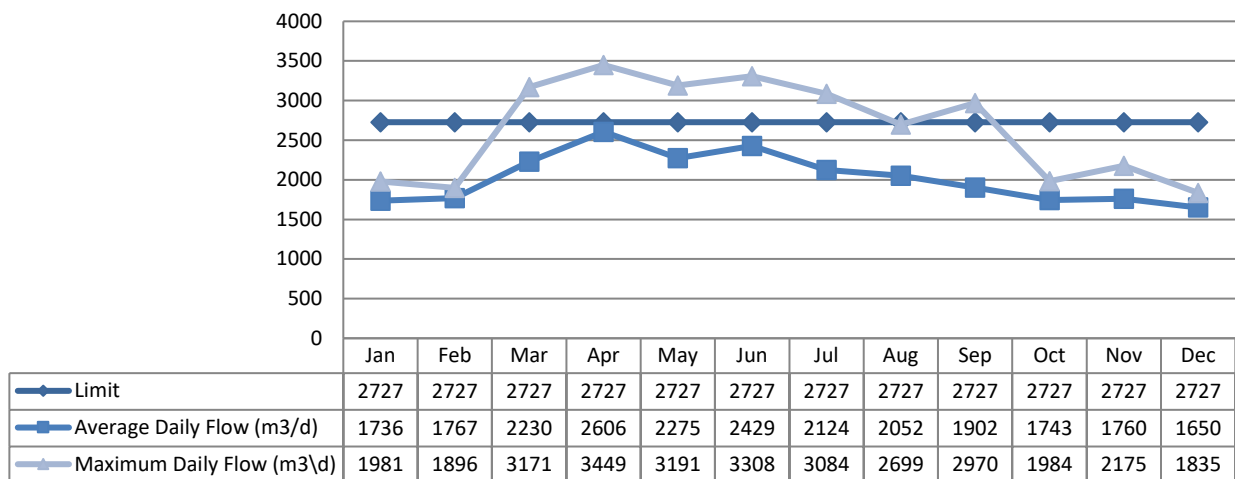
Raw Flows (m3/d)

In 2022, the average daily raw flow was approx. 74.2% of the current design capacity. This has decreased from 93.0% in 2021.

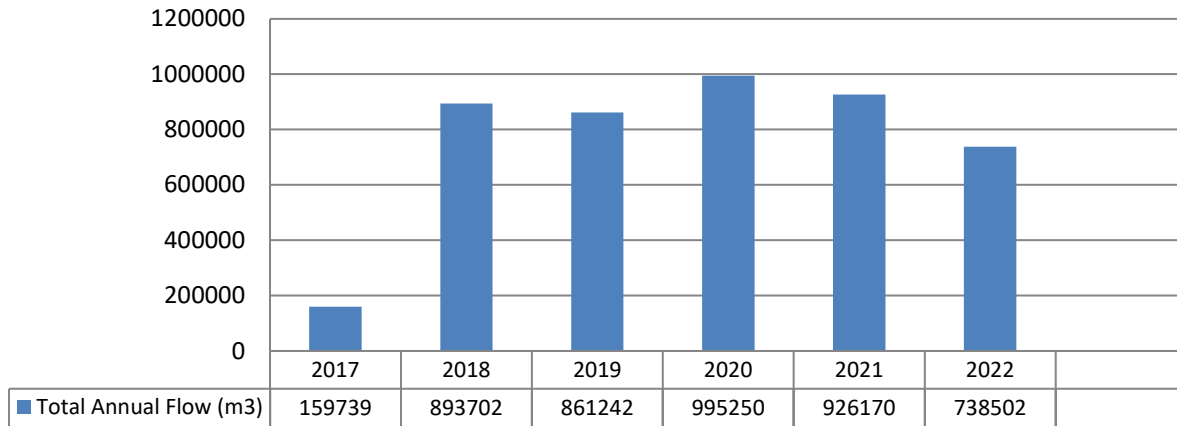
Infiltration & Inflow (I&I) have been identified as the contributing factor to the high flow volumes, within the collection system. Recommendations for I&I flow reductions are being addressed by the system owner. This is part of a long-term strategy involving above ground run-off and the sub drain to target ongoing water table issues were present.



Effluent Flow (m3/d)



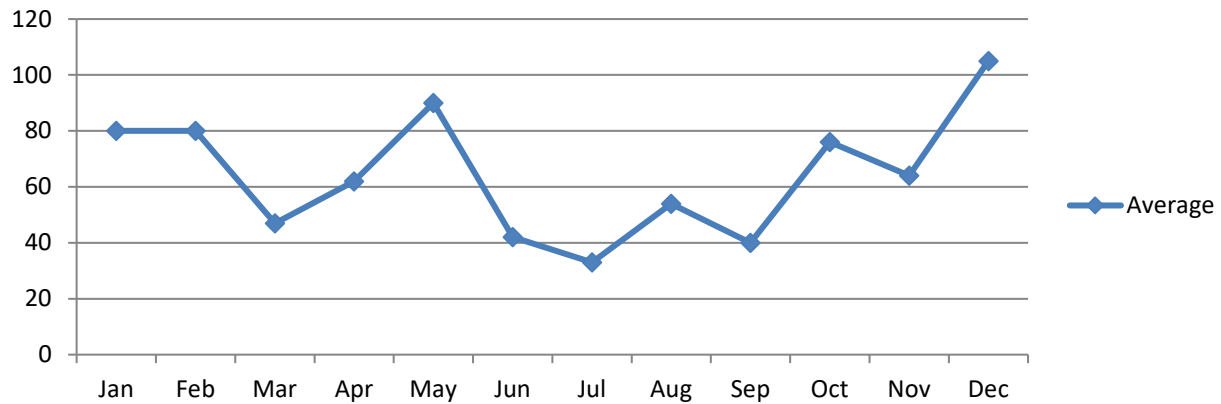
Annual Comparison (m3)



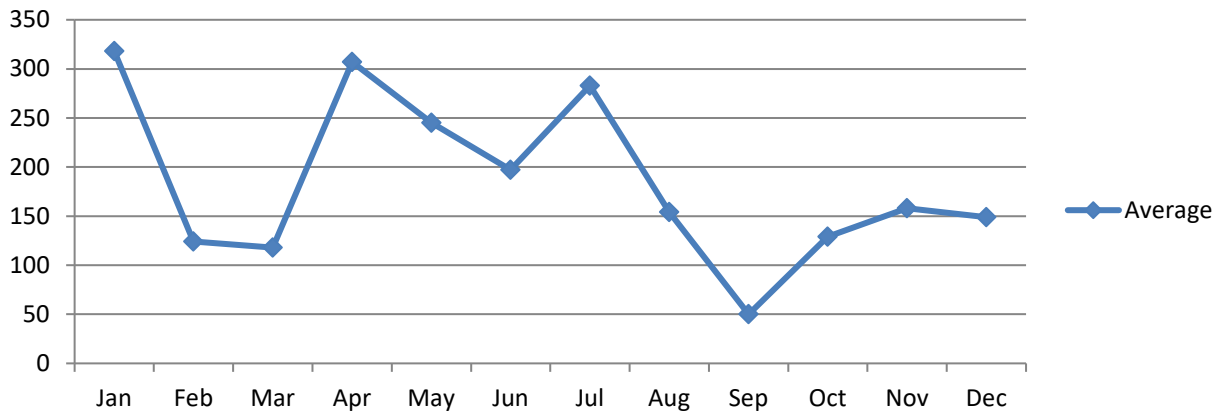
Raw Sewage Quality

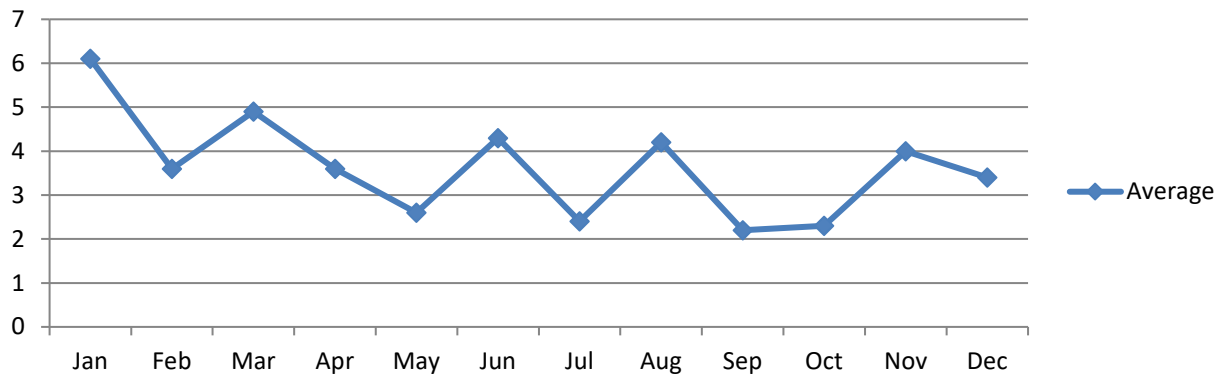
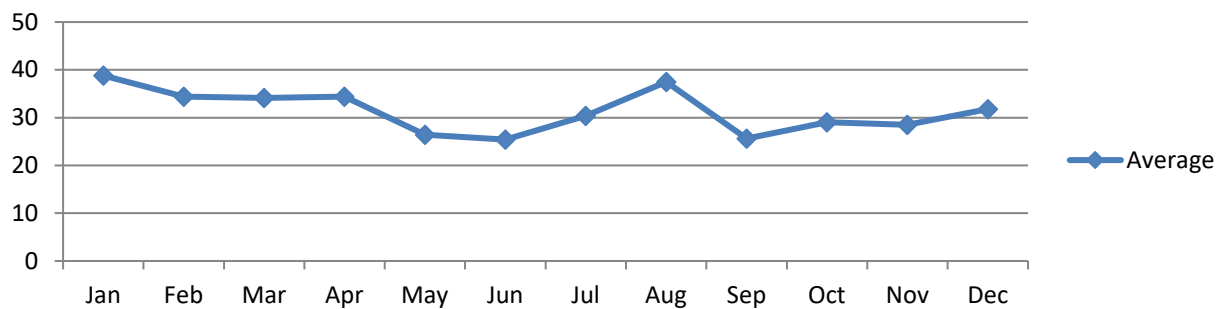
Further details are included in the Performance Report (PAR) in Appendix A.

CBOD5 (mg/L)



Total Suspended Solids (mg/L)



Total Phosphorus (mg/L)**Total Kjeldahl Nitrogen (mg/L)****Effluent Quality Assurance and Control Measures Taken**

Effluent control measures include in-house sampling and testing for operational parameters such as suspended solids, phosphorus, and dissolved oxygen. In-house testing provides real time results which are then used to enhance process and operational performance. All in-house sampling and analysis are performed by certified operations staff utilizing approved methods and protocols for sampling, analysis and recording as specified in the Ministry's Procedure F-10-1, "Procedures for Sampling and Analysis Requirements for Municipal and Private Sewage Treatment Works", the Ministry's publication, "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater" and the publication, "Standard Methods for the Examination of Water and Wastewater".

All final effluent samples collected during the reporting period to meet ECA sampling requirements were submitted to Eurofins laboratory in Ottawa for analysis. Eurofins has been deemed accredited by the Canadian Association for Laboratory Accreditation (CALA), meeting strict provincial guidelines including an extensive quality assurance/quality control program. By choosing this laboratory, the Ontario Clean Water Agency is ensuring appropriate control measures are undertaken during sample analysis. The pH and temperature parameters were analyzed in the field at the time of sample collection by certified operators, to ensure accuracy and precision of the results obtained. The unionized ammonia was calculated using the total ammonia nitrogen concentration, pH and temperature, as required by the facility ECA. The Deep River STP uses AquaTox Testing & Consulting Inc. for the testing of Acute Lethality. It's laboratory in Puslinch, ON is also accredited under CALA.

Effluent Quality

Further details are included in the Performance Report (PAR) in Appendix A.

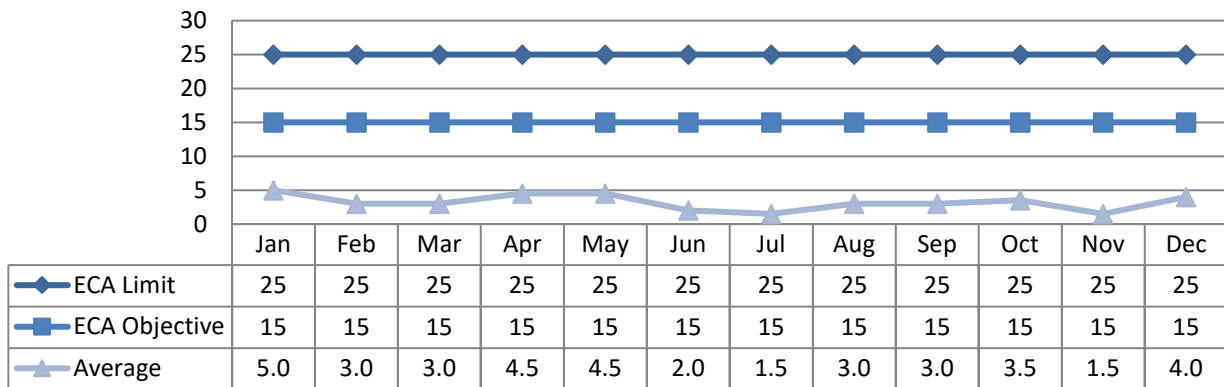
CBOD5

Compliance

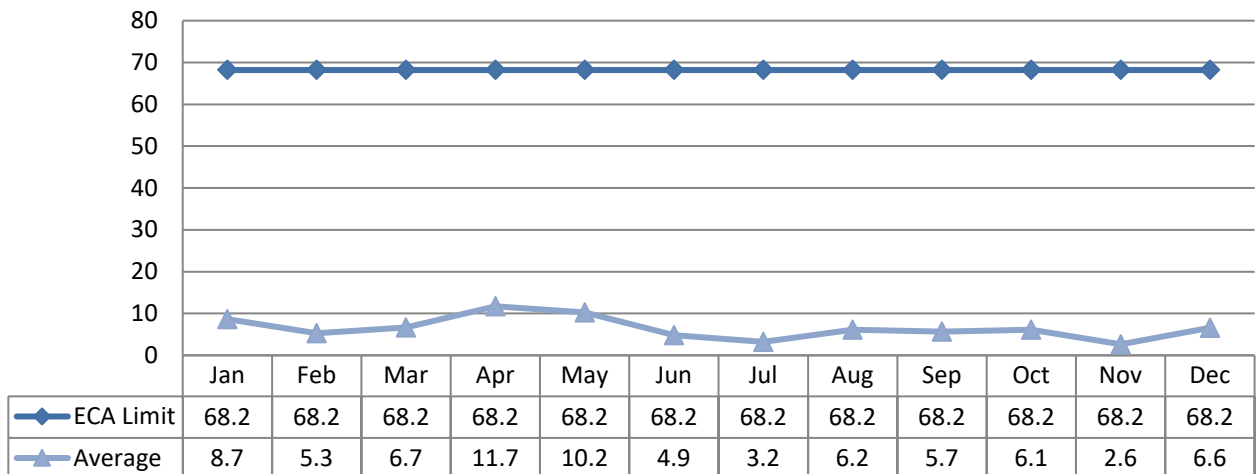
Compliance is based on an Annual Average Concentration and Annual Average Loading.

	Limit	Annual Average	Met Compliance
Concentration (Obj.)	25.0 mg/L	3.2 mg/L	Met
Loading (Limit)	68.2 kg/d	6.5 kg/d	Met

Concentration (mg/L)



Loading (kg/d)



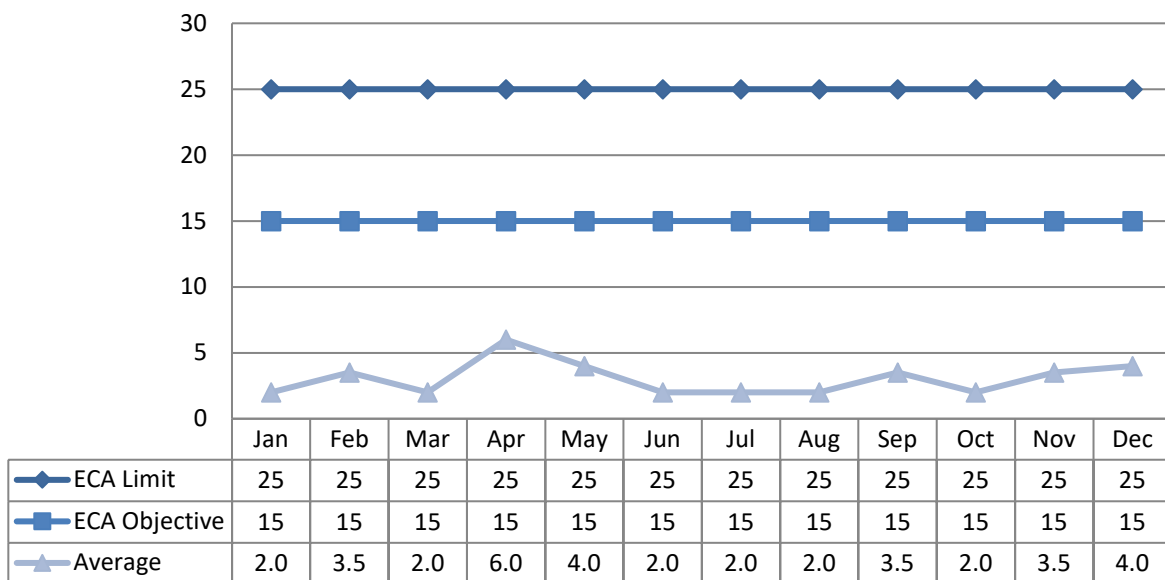
Total Suspended Solids

Compliance

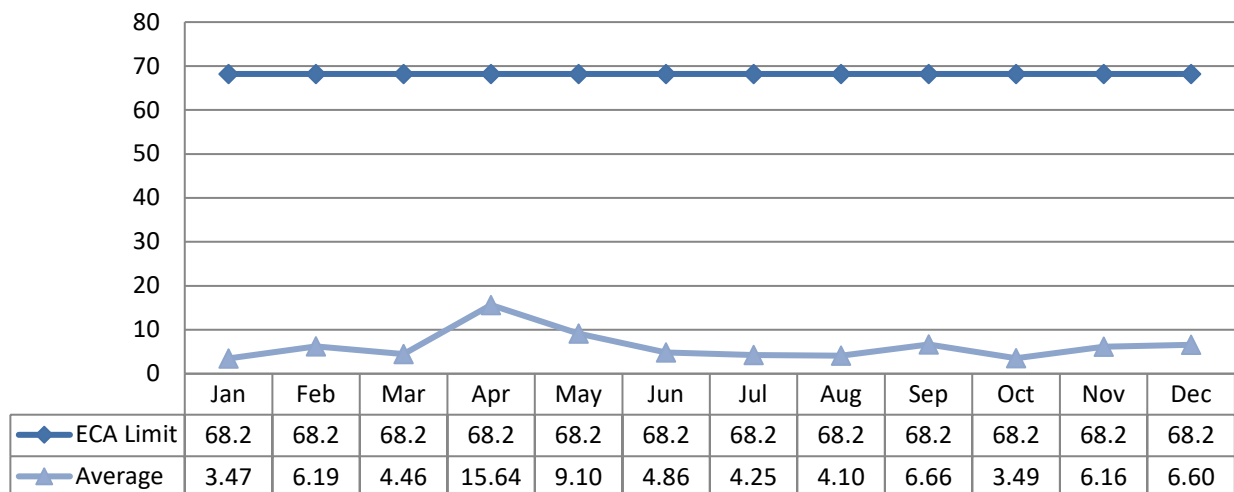
Compliance is based on an Annual Average Concentration and Annual Average Loading.

	Limit	Annual Average	Met Compliance
Concentration	25.0 mg/L	3.0 mg/L	Met
Loading	68.2 kg/d	6.25 kg/d	Met

Concentration (mg/L)



Loading (kg/d)



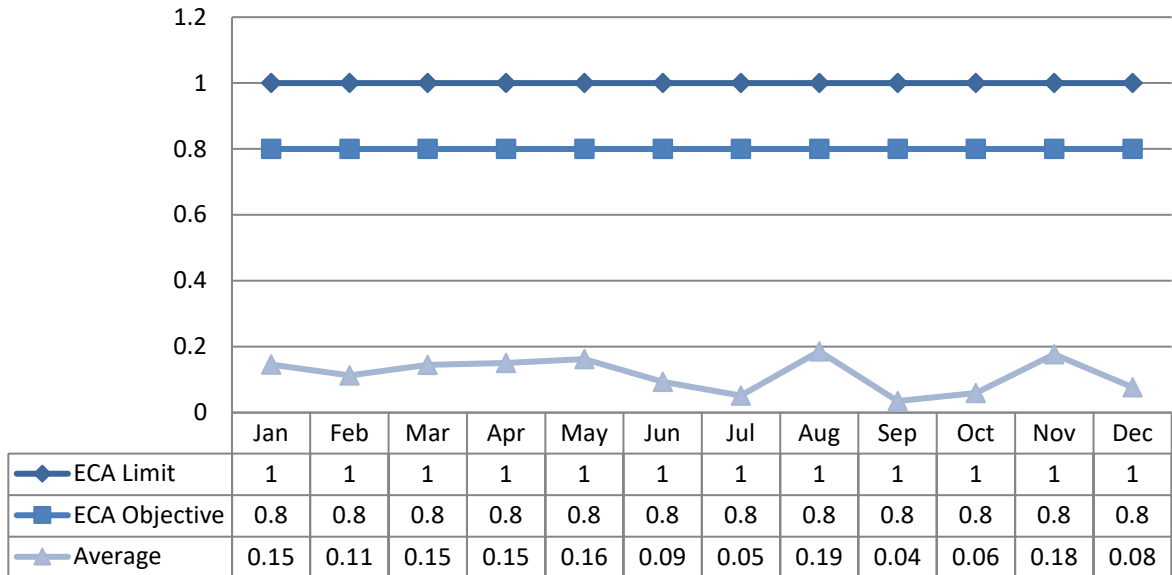
Total Phosphorus

Compliance

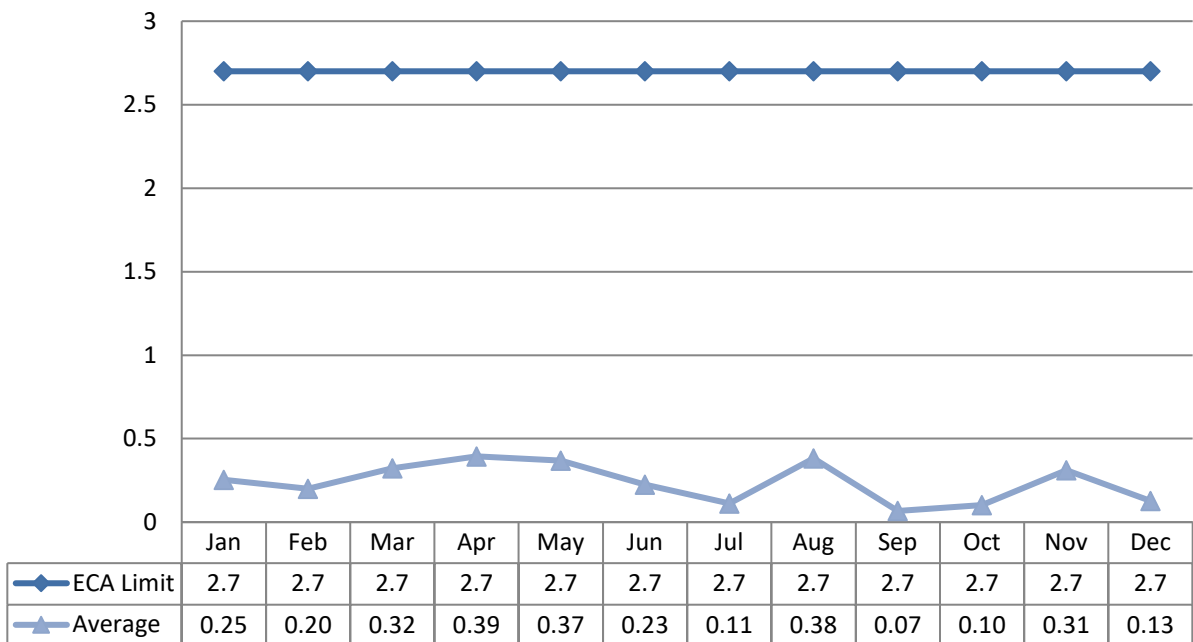
Compliance is based on a Monthly Average Concentration and Monthly Average Loading.

	Limit	Monthly Average	Met Compliance
Concentration	1.0 mg/L	0.12 mg/L	Met
Loading	2.7 kg/d	0.24 kg/d	Met

Concentration (mg/L)



Loading (kg/d)



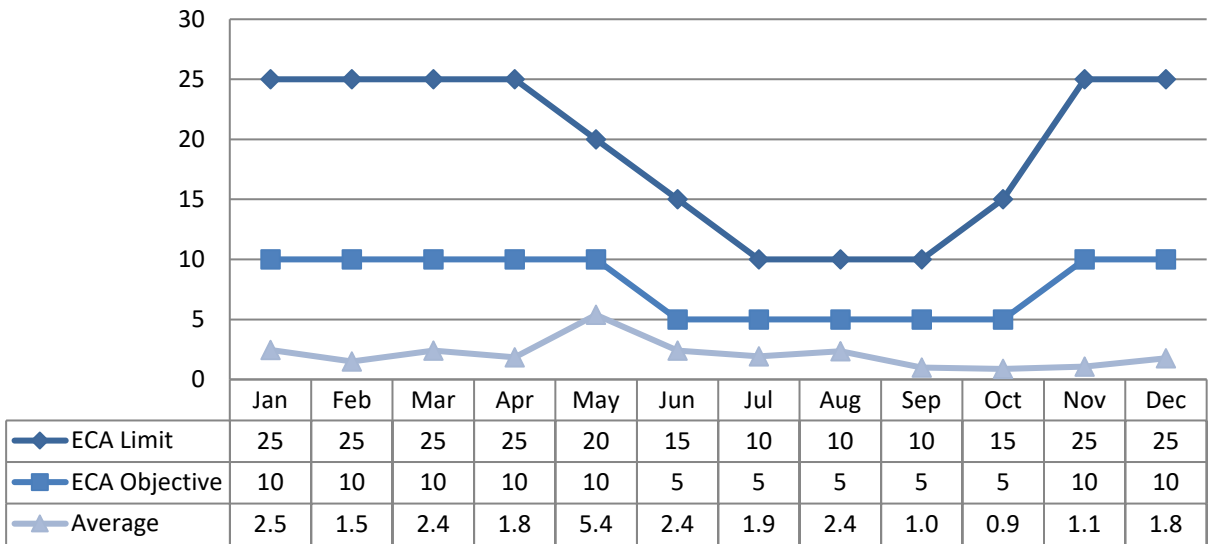
Total Ammonia Nitrogen

Compliance

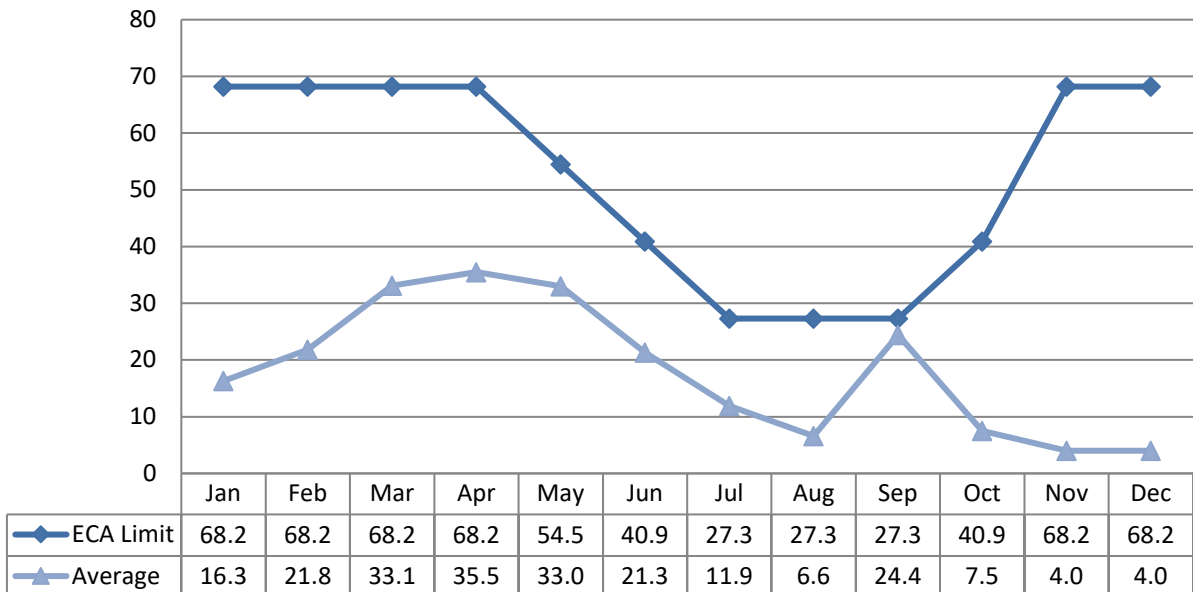
Compliance is based on a various Monthly Average Concentrations and various Monthly Average Loadings.

	Limit	Monthly Average	Met Compliance
Concentration	Varies by month	6.9 mg/L	Met
Loading	Varies by month	2.08 kg/d	Met

Concentration (mg/L)



Loading (kg/d)

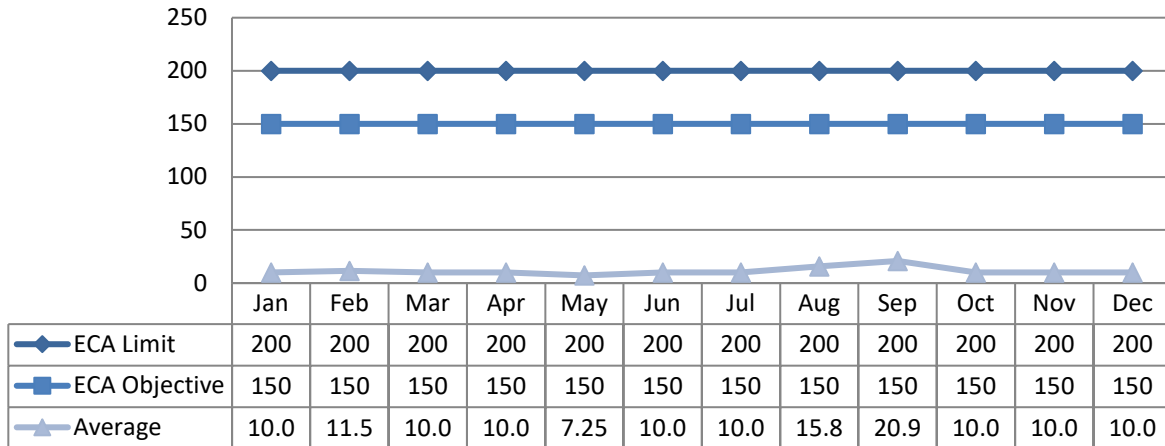


E-coli

Compliance

Date	Exceedance of	Limit	Value	Corrective Action
There were no Non-Compliance events during the reporting period.				

Geometric Mean (cfu/100mL)

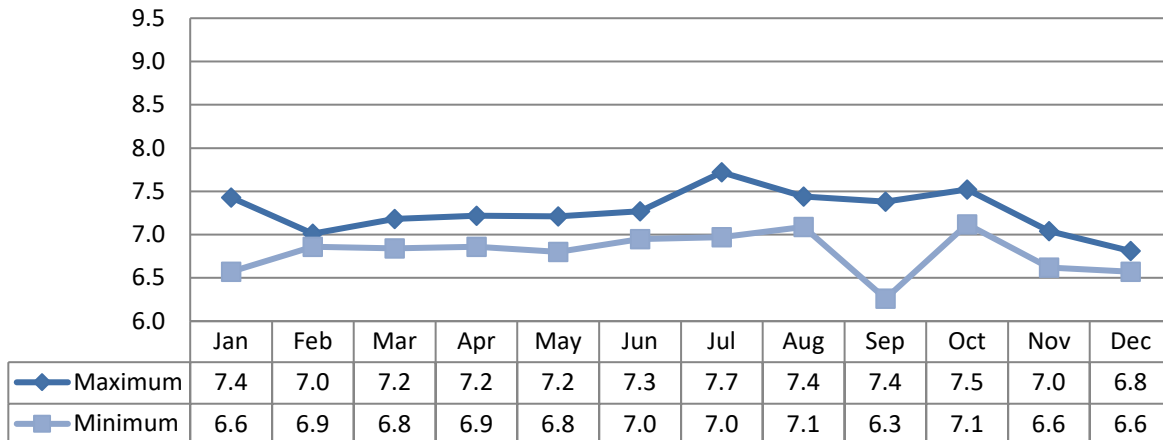


pH

Compliance

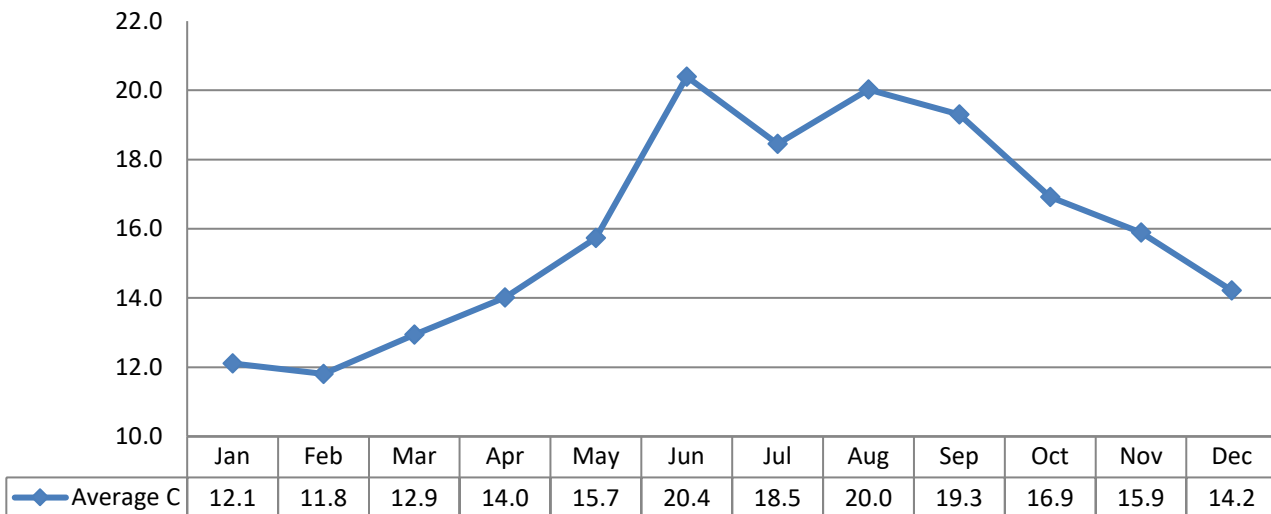
Date	Exceedance of	Limit	Value	Corrective Action
There were no Non-Compliance events during the reporting period.				

pH is to remain in the range of 6.0 - 9.5. Each instance the pH is outside of this range, it is reported as a non-compliance. The objective is 6.5 - 9.0, inclusively.



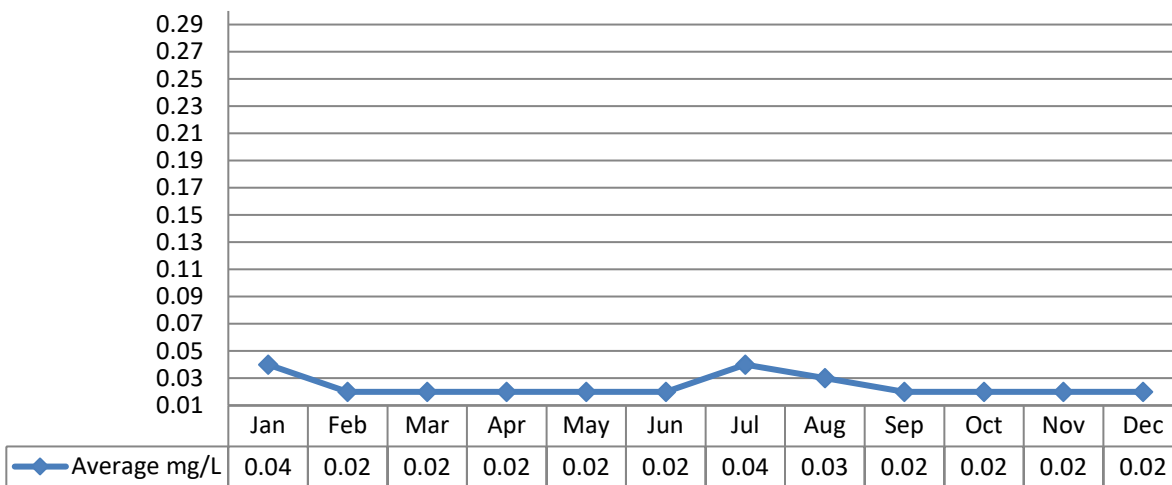
Temperature

Temperature is required to be tested, but there are no compliance limits for this parameter.



Un-ionized Ammonia

Un-ionized is required to be tested, but there are no compliance limits for this parameter.



Acute Lethality

There was one (1) sample collected in 2022 and tested for acute lethality for both Rainbow Trout and *Daphnia magna*. This sampling is required annually, both provincially and federally. Results are displayed as % mortality. An adverse result is a > 50% mortality rate.

Date	Rainbow Trout	Daphnia Magna
Jul 26, 2022	0	0

Operating Issues

There were no major operating issues during 2022.

Maintenance

The Deep River STP uses a Workplace Management System (WMS) called Maximo. This is a comprehensive computerized maintenance tracking system. The system creates work orders for scheduled maintenance on an annual, semi-annual, monthly, quarterly and weekly basis. The service work is recorded in the work order history. This ensures routine and preventive maintenance is performed. Emergency and capital repair maintenance is completed and added to the system.

During the 2022 calendar year, a total of 295 Work Orders were completed at the Deep River Sewage Treatment Plant. A breakdown of this total is listed below:

Maintenance Type	# Completed in 2022
Corrective Work Orders	58
Emergency Work Orders	0
Preventative Work Orders	153
Operational Work Orders	66
Capital Work Orders	13
Call Back Work Orders	5

Major Maintenance Summary (Capital)

WO #	Description
2677397	Replacement of davit arm hoist system and self-retracting lifeline.
2772683	Repair of missing railings at SBR #3.
2677427	Replacement of the circuit board for the UV bank #2.
2434621	Door sweeps, sludge hauling hose, groove pulley, impact wrench, Stroma service call to add enable/disable for the digester float, gaskets, sight glass, hand cultivator to break up grit/sludge, manhole lid plugs and other hardware.
2777571	Shelves, 4" by 6" reducer, lumber to support digester blower, Custom Mechanical service call for A/C capacitor, voltmeter, motor for digester blower exhaust fan, electrical supplies, and other hardware.
2919913	Pool shock for EQ tank, material for furnace drain pipe, electrical supplies, tools, couplings for Imhoff transfer pump, pick handle, scrubber head for UV, hoses and camlock fittings, painting supplies, parts for trash pump, and other hardware.
3105650	Fuses for humidifier, ABS fittings for trash pump foot valve, hose couplings and clamps for holding tank clean out, Calgon foam brite condenser cleaner for A/C unit, check valve for sump pump, water core sampler, and insulation for sample pump to prevent freezing.
3107690	Holding tank clean out to inspect the blower sleeves, and grit quality. Repaired a few rubber sleeves. Removed sludge.
3147204	Purchase of new sump pump.
2639100	Replacement of the electric motor for the air compressor.
2724448	Purchase of a new portable pH meter and probe for daily lab work.
2637731	Replacement of X-Ripper inline grinder.
2871029	Clean out SBR #3 sump hole to install a plug valve and annual EQ tank cleanout.

Calibration Reports

Flow meter calibration reports are included in Appendix B.

Proposed Alterations, Extensions, or Replacement to Works

In 2022, a number of alternations and replacements were completed at the sewage plant including: a furnace repair, new sump pump, removal of the Imhoff sludge, total holding tank and EQ tank cleanouts, replacement of SBR #2 rising stem 6" mud valve, basement lighting was upgraded to LED, and the railings around SBR #3 were replaced and repaired.

Some alternations and replacement projects planned in 2023 include: two of three SBR's will be drained

and cleaned, flushing and CCTV of the collection system, obtaining quotes for an UV system upgrade, collection system remedial work, Imhoff tank roof replacement, installing roof ice guards, installing a sludge holding tank blower, and inspection of the outfall pipe.

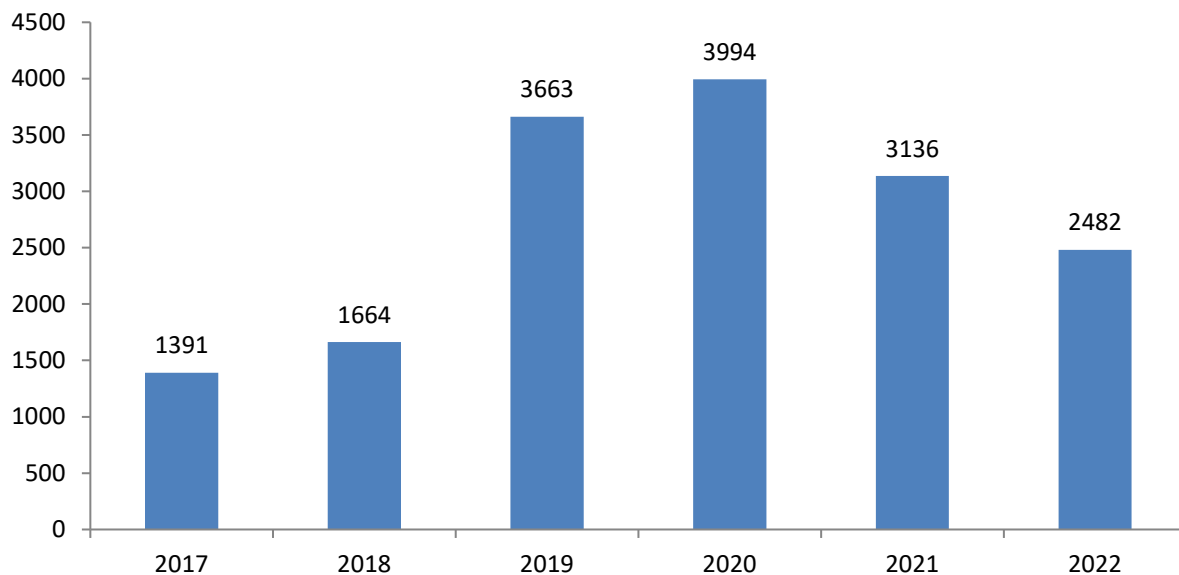
Sludge Generation

Sludge generated from the treatment plant is spread on agricultural land during the spreading season, as per the Nutrient Management Act, O. Reg. 267/03. OCWA contracted the sludge hauling in 2022 to Environland (formerly Bio-Ag). All NASM Plans are done under their authority.

Sludge Disposal Summary – NASM Land Applications

Date	Disposal Location	NASM Approval Number	Total Volume (m3)
May 18-20	Hales Creek Farm – West Farm	24584	1077.26
Sept 29-Oct 23	Yantha – TV Tower Farm	24041	1405
Total Sludge			2482.26

Annual Comparison (m3/year)



It is anticipated that sludge volumes will be similar in the 2023 season, as in 2022.

Summary of Complaints

Location	Date	Nature of Complaint	Actions Taken
There were no complaints received during this reporting period.			

Summary of By-Pass, Overflows, Spill or Abnormal Discharge Events

Date/Time	Duration	Cause	Details	Volume (m3)
There were no by-pass, overflows, spills or abnormal discharge events during this reporting period.				

Appendix A

Performance Assessment Report

5853 DEEP RIVER WASTEWATER TREATMENT FACILITY 120000612

	1 / 2022	2 / 2022	3 / 2022	4 / 2022	5 / 2022	6 / 2022	7 / 2022	8 / 2022	9 / 2022	10 / 2022	11 / 2022	12 / 2022	<--Total-->	<--Avg-->	<--Max-->	<-Criteria-->
Flows																
Raw Flow: Total - Raw Sewage m³/d	53,814.55	49,486.13	69,137.39	78,185.65	70,525.92	72,867.09	65,836.20	63,607.72	57,066.67	54,043.71	52,786.84	51,143.76	738,501.63			0.00
Raw Flow: Avg - Raw Sewage m³/d	1,735.95	1,767.36	2,230.24	2,606.19	2,275.03	2,428.90	2,123.75	2,051.86	1,902.22	1,743.35	1,759.56	1,649.80		0.00		
Raw Flow: Max - Raw Sewage m³/d	1,980.72	1,896.19	3,170.97	3,448.78	3,190.89	3,307.89	3,084.24	2,698.55	2,969.82	1,983.68	2,174.89	1,834.64			3,448.78	0.00
Eff. Flow: Total - Final Effluent m³/d	53,814.55	49,486.13	69,137.39	78,185.65	70,525.92	72,867.09	65,836.20	63,607.72	57,066.67	54,043.71	52,786.84	51,143.76	738,501.63			0.00
Eff. Flow: Avg - Final Effluent m³/d	1,735.95	1,767.36	2,230.24	2,606.19	2,275.03	2,428.90	2,123.75	2,051.86	1,902.22	1,743.35	1,759.56	1,649.80		2,023.29		
Eff. Flow: Max - Final Effluent m³/d	1,980.72	1,896.19	3,170.97	3,448.78	3,190.89	3,307.89	3,084.24	2,698.55	2,969.82	1,983.68	2,174.89	1,834.64			3,448.78	0.00
Eff Flow: Count - Final Effluent m³/d	31.00	28.00	31.00	30.00	31.00	30.00	31.00	31.00	30.00	31.00	30.00	31.00	365.00			0.00
Carbonaceous Biochemical Oxygen Demand: CBOD																
Raw: Avg cBOD5 - Raw Sewage mg/L	80.00	79.50	47.00	61.50	89.50	41.50	33.00	54.00	39.50	76.00	63.50	104.50		64.13	104.50	0.00
Raw: # of samples of cBOD5 - Raw Sewage	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	24.00			0.00
Eff: Avg cBOD5 - Final Effluent mg/L	5.00	3.00	3.00	4.50	4.50	2.00	< 1.50	3.00	3.00	3.50	1.50	4.00		3.21	5.00	25.00
Eff: # of samples of cBOD5 - Final Effluent	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	24.00			0.00
Loading: cBOD5 - Final Effluent kg/d	8.680	5.302	6.691	11.728	10.238	4.858	< 3.186	6.156	5.707	6.102	2.639	6.599		6.49	11.73	0.000
Total Suspended Solids: TSS																
Raw: Avg TSS - Raw Sewage mg/L	318.00	124.00	117.50	307.00	244.50	197.00	283.00	153.50	50.00	129.00	158.00	149.00		185.88	318.00	0.00
Raw: # of samples of TSS - Raw Sewage	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	24.00			0.00
Eff: Avg TSS - Final Effluent mg/L	< 2.00	3.50	< 2.00	6.00	4.00	< 2.00	< 2.00	< 2.00	3.50	< 2.00	3.50	4.00		< 3.04	< 6.00	25.00
Eff: # of samples of TSS - Final Effluent	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	24.00			0.00
Loading: TSS - Final Effluent kg/d	< 3.472	6.186	< 4.460	15.637	9.100	< 4.858	< 4.247	< 4.104	6.658	< 3.487	6.158	6.599		< 6.25	< 15.64	0.000
Percent Removal: TSS - Raw Sewage %	99.37	97.18	98.30	98.05	98.36	98.98	99.29	98.70	93.00	98.45	97.78	97.32			99.37	0.00
Total Phosphorus: TP																
Raw: Avg TP - Raw Sewage mg/L	6.10	3.57	4.89	3.64	2.61	4.31	2.41	4.19	2.20	2.33	4.02	3.38		3.64	6.10	0.00
Raw: # of samples of TP - Raw Sewage	4.00	4.00	5.00	4.00	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	52.00			0.00
Eff: Avg TP - Final Effluent mg/L	0.15	0.11	0.14	0.15	0.16	< 0.09	0.05	0.19	< 0.04	< 0.06	0.18	0.08		0.12	0.19	
Eff: # of samples of TP - Final Effluent	4.00	4.00	5.00	4.00	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	52.00			0.00

From 1/1/2022 to 12/31/2022

Loading: TP - Final Effluent kg/d	0.253	0.200	0.322	0.394	0.369	<	0.225	0.111	0.382	<	0.067	<	0.102	0.311	0.127		0.24	0.39	0.000	
Percent Removal: TP - Raw Sewage %	97.61	96.83	97.04	95.85	93.79		97.85	97.83	95.57		98.39		97.49	95.60	97.72			98.39	0.00	
Nitrogen Series																				
Raw: Avg TKN - Raw Sewage mg/L	38.83	34.40	34.10	34.38	26.42		25.35	30.40	37.50		25.55		28.95	28.50		31.75		31.34	38.83	0.00
Raw: # of samples of TKN - Raw Sewage	4.00	4.00	5.00	4.00	5.00		4.00	4.00	5.00		4.00		4.00	5.00		4.00	52.00			0.00
Eff: Avg TAN - Final Effluent mg/L	2.46	1.50	2.40	1.84	5.38		2.41	<	1.92	3.78	<	2.11	1.98	<	1.64	2.69		2.51	5.38	
Eff: # of samples of TAN - Final Effluent	4.00	4.00	5.00	4.00	5.00		4.00		4.00	5.00		4.00	4.00		5.00	4.00	52.00			0.00
Loading: TAN - Final Effluent kg/d	4.277	2.647	5.357	4.796	12.244		5.860	<	4.067	7.756	<	4.021	3.448	<	2.888	4.444		5.15	12.24	0.000
Disinfection																				
Eff: GMD E. Coli - Final Effluent cfu/100mL	10.00	11.49	10.00	10.00	7.25		10.00		10.00	15.85		20.88	10.00		10.00	10.00		11.29	20.88	200.00
Eff: # of samples of E. Coli - Final Effluent	4.00	5.00	5.00	4.00	5.00		4.00		4.00	5.00		4.00	4.00		5.00	4.00	53.00			0.00

Appendix B

Calibration Reports



FIELD SERVICE REPORT

Date: October 17, 2022

PAGES: 2

ACI Instrumentation Limited is pleased to provide you with our field service report for you as follows:

Table with 2 columns: Site Location / Date, ON Site- Krohne Magnetic Flow Meters 2022 VERIFICATION

Table with 3 columns: Customer (Jason Charette, Ontario Clean Water Agency), Telephone (613-584-3141), E-Mail Address (JCharette@ocwa.com)

Further to our site visit on September 27, 2022, we are pleased to confirm the Krohne Magnetic flowmeters all PASSED Verification using the GS8B simulator. The meters / converters settings as found and left after the verification process:

Size: 8 inch

Converter Model # IFC010

IFC010 - Settings as follows:

SIZE: 8 inch (200 mm)

GK: 9.0888

FIELD FREQUENCY: 1/6

Current Output: 4 - 20mA

MEASUREMENT: VOLUME FLOW

RANGE: 0 to 92.58 l/sec

Time Constant: 5 sec

Counter:

Counter: ON

Measurement: Volume

Volume: m3

Actual coil resistance

69 Ohms

Size: 8 inch

Converter Model # IFC010

IFC010 - Settings as follows:

SIZE: 8 inch (200 mm)

GK: 9.3463

FIELD FREQUENCY: 1/6

Current Output: 4 - 20mA

MEASUREMENT: VOLUME FLOW

RANGE: 0 to 333.3 m3/hr

Time Constant: 3 sec

Counter:

Counter: ON

Measurement: Volume

Volume: m3

Actual coil resistance

67.19 Ohms

Size: 8 inch

Converter Model # IFC010

IFC010 - Settings as follows:

SIZE: 8 inch (200 mm)

GK: 9.2750

FIELD FREQUENCY: 1/6

Current Output: 4 - 20mA

MEASUREMENT: VOLUME FLOW

RANGE: 0 to 333.3 m3/hr

Time Constant: 3 sec

Counter:

Counter: ON

Measurement: Volume

Volume: m3

Actual coil resistance

69.1 Ohms

Tag # Raw Sewage

Size: 10-inch

Converter Model # IFC100W

IFC100 - Settings as follows:

SIZE: 10-inch (250 mm)

GK: 4.3720

FIELD FREQUENCY: 1/6

Current Output: 4 - 20mA

MEASUREMENT: VOLUME FLOW

RANGE: 0 to 175 l/sec

Time Constant: 3 sec

Counter:

Counter: OFF

Measurement: Volume

Volume: m3

Actual coil resistance

104.1 Ohms

Tag # WAS

Size: 3 inch

Converter Model # IFC010

IFC010 - Settings as follows:

SIZE: 3 inch (80 mm)

GK: 2.5000

FIELD FREQUENCY: 1/6

Current Output: 4 - 20mA

MEASUREMENT: VOLUME FLOW

RANGE: 0 to 60 l/sec

Time Constant: 3 sec

Counter:

Counter: OFF

Measurement: Volume

Volume: m3

Actual coil resistance

105.7 Ohms

Site Visit Notes:

- All remaining configuration parameters at Krohne factory defaults.
- Hooked up GS8B simulator during site visit at the IFC100W and IFC010 converters. Simulated flows and documented results of flow rate indications at converter display.

Note: See copies of GS8B simulation report attached for all the Flow Meter.

Should additional information be required, please feel free to contact us.

Best regards,

Angelo Valente
ACI Instrumentation Limited

GS 8 B On-Site Verification Record

GS 8 B STANDARD SETTINGS

This spreadsheet is protected, thus entry is only allowed in accessible fields, drop-down boxes & bright green cells. To use this calculator, you will only need to input requested information in the bright green cells from your data tags. The Converter type, engineering units, diameter and frequency have drop down boxes, allowing the user to simply choose from the list. This spreadsheet will automatically choose inch or metric (depending upon the converter), and state which GK(L) to use. Printing of the programming results is allowed by simply choosing "Print" through your File menu.

Important: If there is a flowrate value present at the GS8 B zero flow setting, you must compensate to obtain proper evaluation values. Either manually set converter zero value entry(record original for restoration) or zero converter (zero calibration to be redone for reconnect with primary head). If unable to manually set zero value entry or redo zero calibration after reconnecting, then use the offset-compensated tables on second sheet of this spreadsheet (Calculator + Zero Compensation). Be aware for possible low flow cutoff setting effects.

Date Recorded: September 27, 2022

Serial #: 00541726

Tag #: Actiflow 1

Flow Tube Model #: Enviromag

Commission #:

Tested by: A. Valente

INPUT VARIABLES	
Converter	= IFC 010
Q Fullscale	= 92.58 liters/sec
Select Meter Dia.	= Inch mm
DN	= 200 mm
Diameter	= 8 Inch (ref only)
I _{6%}	= 4 mA
I _{100%}	= 20 mA
P _{100%} (Hz)	= Hz
GK	= <do not use>
GKL	= 9.0888 <use GKL>
K	= Value automatically chosen from K value table

$$X = \frac{Q_{100\%} * K * F}{GK(L) * DN^2} = \frac{773467.9597}{363552} = 2.128$$

$$Y_{MAX} = \frac{Output Current}{Max Knob Setting} = \frac{19.041 \text{ mA}}{C} = 87.03 \text{ liters/sec}$$

GS 8 B Knob Setting	Calculated Current Output (mA)	Calculated Frequency Hz	Calculated Flowrate (liters/sec)	Observed Selected I/O		Deviation Evaluation Flow Rate
				Flow Rate		
0	4.000	-	0.00	0.000		0.000
A	7.760	-	21.76	21.800		0.19%
B	11.520	-	43.52	43.580		0.15%
C	19.041	-	87.03	87.110		0.09%
D						
E						

Version: Rev 1.3.4.1-USA

PASSED VERIFICATION

GS 8 B STANDARD SETTINGS

This spreadsheet is protected, thus entry is only allowed in accessible fields, drop-down boxes & bright green cells. To use this calculator, you will only need to input requested information in the bright green cells from your data tags. The Converter type, engineering units, diameter and frequency have drop down boxes, allowing the user to simply choose from the list. This spreadsheet will automatically choose inch or metric (depending upon the converter), and state which GK(L) to use. Printing of the programming results is allowed by simply choosing "Print" through your File menu.

Important: If there is a flowrate value present at the GS8 B zero flow setting, you must compensate to obtain proper evaluation values. Either manually set converter zero value entry(record original for restoration) or zero converter (zero calibration to be redone for reconnect with primary head). If unable to manually set zero value entry or redo zero calibration after reconnecting, then use the offset-compensated tables on second sheet of this spreadsheet (Calculator + Zero Compensation). Be aware for possible low flow cutoff setting effects.

Date Recorded: September 27, 2022

Serial #: 00541738

Tag #: Actiflow 2

Flow Tube Model #: Enviromag

Commission #:

Tested by: A. Valente

INPUT VARIABLES		DATA INPUT AREAS (in green)
Converter	=	IFC 010
Q Fullscale	=	333.3 m3/hr
Select Meter Dia.	=	Inch mm
DN	=	8 / 200
Diameter	=	200 mm
I _{40%}	=	8 inch (ref only)
I _{100%}	=	4 mA
P _{100%} (Hz)	=	20 mA
GK	=	Hz
GKL	=	do not use
K	=	9.3463 <use GKL
		Value automatically chosen from K value table

$$X = \frac{Q_{100\%} * K * F}{GK(L) * DN^2} = \frac{773495.8083}{373852} = 2.069$$

$$Y_{MAX} = \frac{2.0}{C}$$

Output Current	=	19.466 mA
Output Frequency	=	
Output Flow Rate	=	322.186 m3/hr

GS 8 B Knob Setting	Calculated Current Output (mA)	Calculated Frequency Hz	Calculated Flowrate (m3/hr)	Observed Selected I/O		Deviation Evaluation Flow Rate
				Flow Rate		
0	4.000	-	0.00	0.000		0.000
A	7.867	-	80.55	80.400		-0.18%
B	11.733	-	161.09	160.630		-0.29%
C	19.466	-	322.19	321.250		-0.29%
D						
E						

PASSED VERIFICATION

Version: Rev 1.3.4.1-USA

GS 8 B STANDARD SETTINGS

This spreadsheet is protected, thus entry is only allowed in accessible fields, drop-down boxes & bright green cells. To use this calculator, you will only need to input requested information in the bright green cells from your data tags. The Converter type, engineering units, diameter and frequency have drop down boxes, allowing the user to simply choose from the list. This spreadsheet will automatically choose inch or metric (depending upon the converter), and state which GK(L) to use. Printing of the programming results is allowed by simply choosing "Print" through your File menu.

Important: If there is a flowrate value present at the GS8 B zero flow setting, you must compensate to obtain proper evaluation values. Either manually set converter zero value entry/(record original for restoration) or zero converter (zero calibration to be redone for reconnect with primary head). If unable to manually set zero value entry or redo zero calibration after reconnecting, then use the offset-compensated tables on second sheet of this spreadsheet (Calculator + Zero Compensation). Be aware for possible low flow cutoff setting effects.

Date Recorded: September 27, 2022

Serial #: 00601047

Tag #: Actiflow 3

Flow Tube Model #: Enviromag

Commission #:

Tested by: A. Valente

INPUT VARIABLES	
Converter	= IFC 010
Q Fullscale	= 333.3 m3/hr
Select Meter Dia.	= Inch mm
DN	= 200 mm
Diameter	= 8 inch (ref only)
I _{0%}	= 4 mA
I _{100%}	= 20 mA
P _{100%} (Hz)	= Hz
GK	= <do not use
GKL	= 9,2750 <use GKL
K	= Value automatically chosen from K value table

$$X = \frac{Q_{100\%} * K * F}{GK(L) * DN^2} = \frac{773495.8083}{371000} = 2.085$$

$$Y_{MAX} = \frac{Output Current}{Max Knob Setting} = \frac{19.348 \text{ mA}}{C} = 319.728 \text{ m3/hr}$$

LoopMax	=	19.348 mA
FreqMax	=	
Q _{Max}	=	319.728 m3/hr

GS 8 B Knob Setting	Calculated Current Output (mA)	Calculated Frequency Hz	Calculated Flowrate (m3/hr)	Observed Selected I/O		Deviation Evaluation Flow Rate
				Flow Rate		
0	4.000	-	0.00	0.000		0.000
A	7.837	-	79.93	79.850		-0.10%
B	11.674	-	159.86	159.720		-0.09%
C	19.348	-	319.73	319.350		-0.12%
D						
E						

PASSED VERIFICATION

Version: Rev 1.3.4.1-USA