

Chesterville Wastewater System

Sewage Works # 110000114

Annual Report

Prepared for: Township of North Dundas

Reporting Period of January 1st – December 31st 2020

Issued: March 30, 2021

Revision: 0

Operating Authority:



This report has been prepared to meet the requirements of ECA # 0632-9L6P6S and ECA # 6657-BPYPVL

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Operations and Compliance Reliability Indices

Compliance Event	# of Events
Environment Canada Inspections	0
Ministry of Environment Inspections	0
Ministry of Labour Inspections	0
Non-Compliance	1
Spills/Overflows/Bypasses	0
Sewer Main Blockages	0

System Process Description

Chesterville's wastewater system consists of a gravity fed sanitary sewage collection system with three pumping stations and a wastewater treatment lagoon. The main pumping station is located on Water Street and discharges directly to the lagoon. There is also a pumping station located on Lori Lane which was constructed in the early 1990's to service the Thompson subdivision. A third pumping station is located at the lagoon and services the industrial site located at 171 Main Street North. This pumping station is currently offline.

Chesterville's sewage treatment system was originally constructed in the 1970's and included only one lagoon cell until a second cell was added in 1981. Substantial upgrades to the system took place between 2014 and 2015. A second wet well was added at the main pumping station, increasing the pumping capacity to 145 l/s, and a continuous chemical feed system for phosphorus removal was added along a new forcemain from the pumping station to the lagoons. The lagoon system was expanded by incorporating the former Nestle lagoon cells, creating a five cell system, and the existing municipal lagoon cells were converted to polishing/effluent storage ponds with the addition of aeration to both cells.

The lagoon system's design capacity was increased from 1046 m³/d to 1660 m³/d following the upgrades. However, the Ministry required that testing be undertaken to confirm the lagoon would be able to perform to the required effluent criteria when the facility reached the new rated capacity. The testing took place and a report was submitted, but not deemed by the Ministry to provide enough evidence that the lagoon would be able to meet all necessary requirements when operating at full capacity. Rather than extend the timeline to continue the testing, the Ministry removed the performance testing requirement from the ECA and replaced it with a requirement in the annual report to review performance as flows increase. The amended ECA # 6657-BPYPVL was issued June 1, 2020.

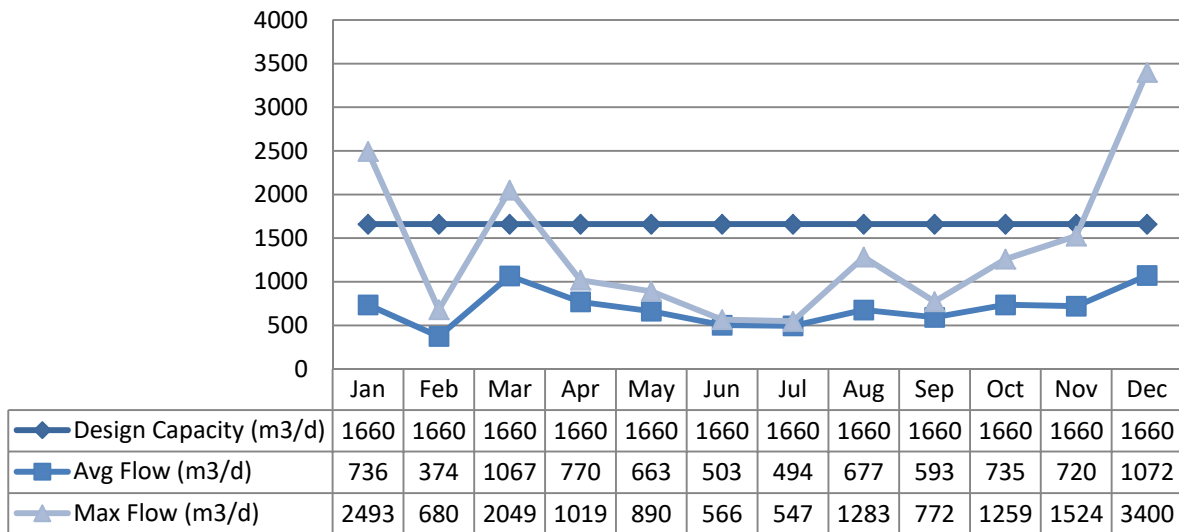
Effluent from the lagoons is discharged in the spring and in the fall via a 600 mm diameter pipe which extends from the treatment facility to an outlet in the South Nation River.

Wastewater System Flows

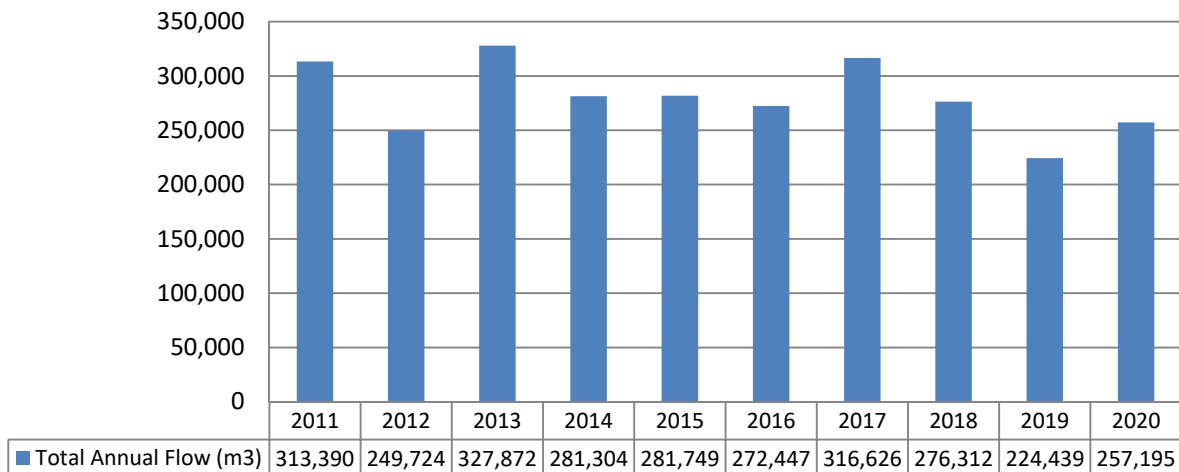
The hydraulic flows reaching the sewage lagoons in 2020 averaged 700 m³/day which represents 42% of the 1,660 m³/day design capacity.

Raw Flows

2020 Raw Flows:



Annual Raw Flow Comparison:



Effluent Flow

A total of 218,311 m³ of effluent was discharged from Chesterville’s sewage lagoons in 2020 with 173,130 m³ discharged in the spring and 45,181 m³ discharged in the fall.

Effluent Quality Assurance or Control Measures

Effluent control measures include pre-discharge sampling and testing of lagoon cell contents prior to seasonal discharges. The samples are collected by OCWA's competent and licensed staff using approved methods and protocols for sampling including those 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 effluent samples collected during the reporting period were submitted to Caduceon in Ottawa for analysis, with the exception of pH, temperature and unionized ammonia. Caduceon is accredited by the Canadian Association for Laboratory Accreditation (CALA). Accredited labs must meet strict provincial guidelines including an extensive quality assurance/quality control program. By choosing these laboratories, OCWA 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. Un-ionized ammonia was calculated using the total ammonia nitrogen concentration, pH and temperature as required by the facility's ECA.

Effluent Quality

The average concentrations of carbonaceous biochemical oxygen demand (CBOD₅), total phosphorus (TP) and total ammonia nitrogen (TAN) remained below the effluent objectives and limits outlined in the facility's ECA during both the spring and fall lagoon discharges.

Effluent pH remained within the objective and limit specified in the ECA during the spring discharge however, six out of nine samples slightly exceeded the objective. Effluent pH remained below the effluent limit, but exceeded the objective specified in the ECA during the fall discharge with four out of six out samples exceeding the objective. Please refer to the 'Operating Issues' section of this report for details. The objective level of non-detectable was exceeded for undissociated hydrogen sulphide (H₂S) during both discharge periods, although the measured concentration remained quite low.

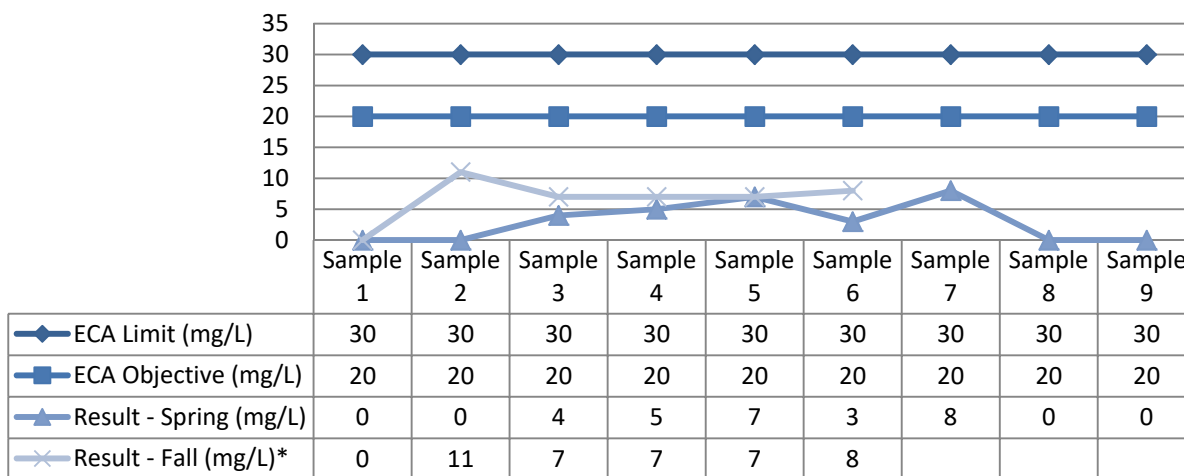
The average concentration of total suspended solids (TSS) exceeded the compliance limit during the spring discharge in 2020, and the objective for TSS was exceeded in the fall. Please refer to the non-compliance correspondence submitted to the Ministry for more information (Appendix C) and the 'Operating Issues' section of this report for details.

The results from the spring and fall discharge periods are tabulated below. Please refer to the Performance Assessment Reports in Appendix A for details.

Carbonaceous Biochemical Oxygen Demand (5-Day)

Discharge Period	Seasonal Average (mg/L)	Objective (mg/L)	Limit (mg/L)	Exceedance
Spring	3.7	20	30	No
Fall	7.2	20	30	No

Effluent CBOD₅ Results:



* A total of six samples were collected during the fall discharge

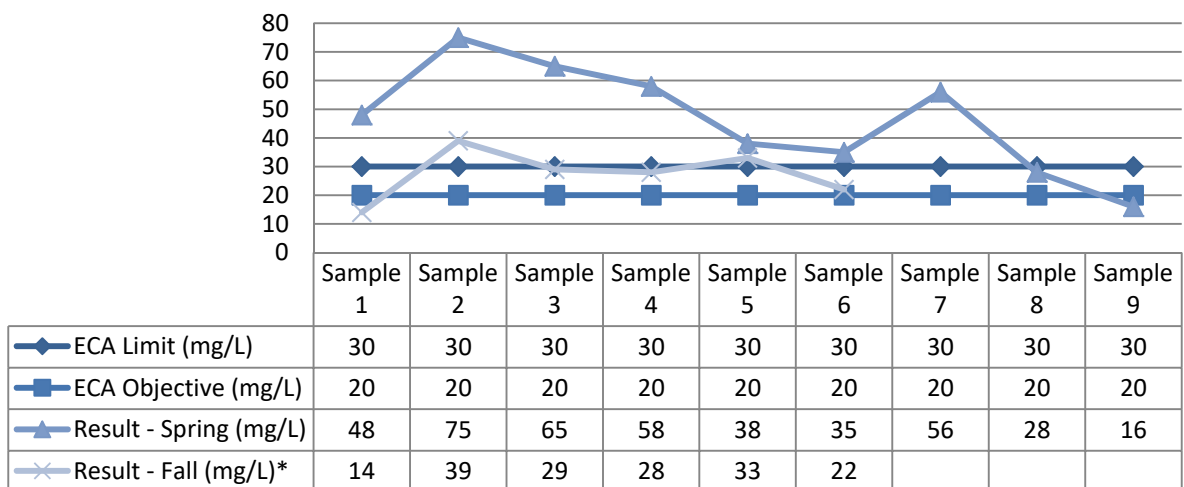
Total Suspended Solids

Discharge Period	Seasonal Average (mg/L)	Objective (mg/L)	Limit (mg/L)	Exceedance
Spring	46.6	20	30	Yes*
Fall	27.5	20	30	Yes – Objective**

*Please see the non-compliance correspondence to the Ministry attached in Appendix C.

**Please refer to the 'Operating Issues' section of this report for details.

Effluent TSS Results:



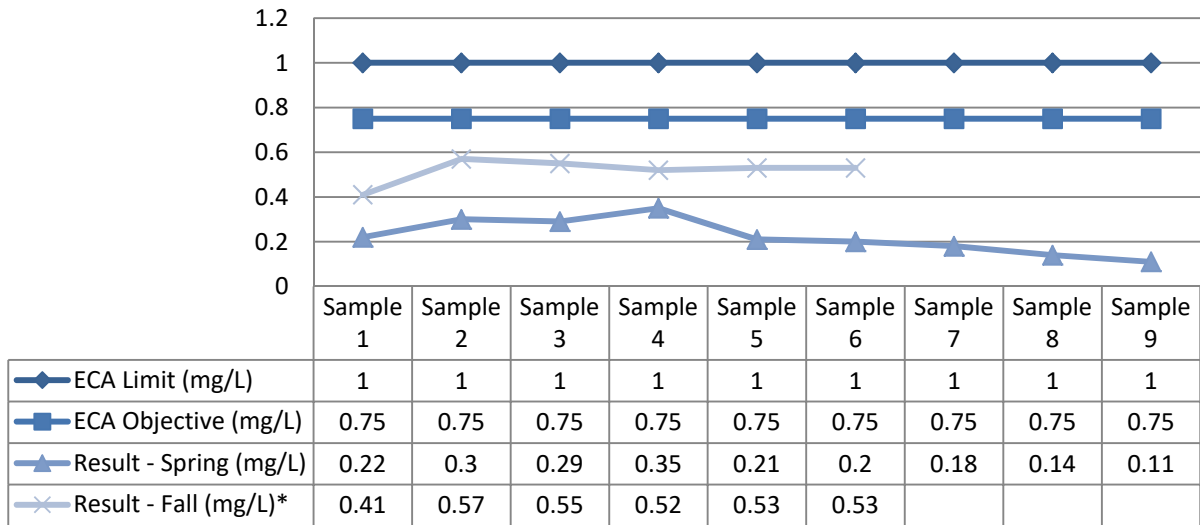
* A total of six samples were collected during the fall discharge

Total Phosphorus

Discharge Period	Seasonal Average (mg/L)	Objective (mg/L)	Limit (mg/L)	Exceedance
Spring	0.22	0.75	1.0	No
Fall	0.50	0.75	1.0	No

Discharge Period	Annual Average (mg/L)	Limit (kg/d)	Exceedance
2020	1.24	1.66	No

Effluent TP Results:



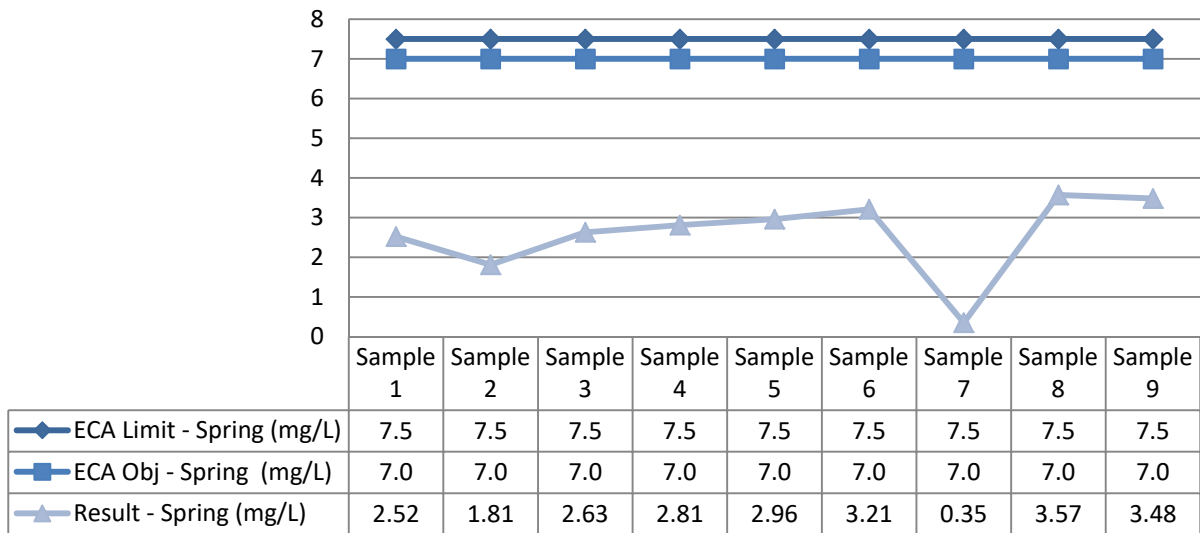
* A total of six samples were collected during the fall discharge

Total Ammonia Nitrogen

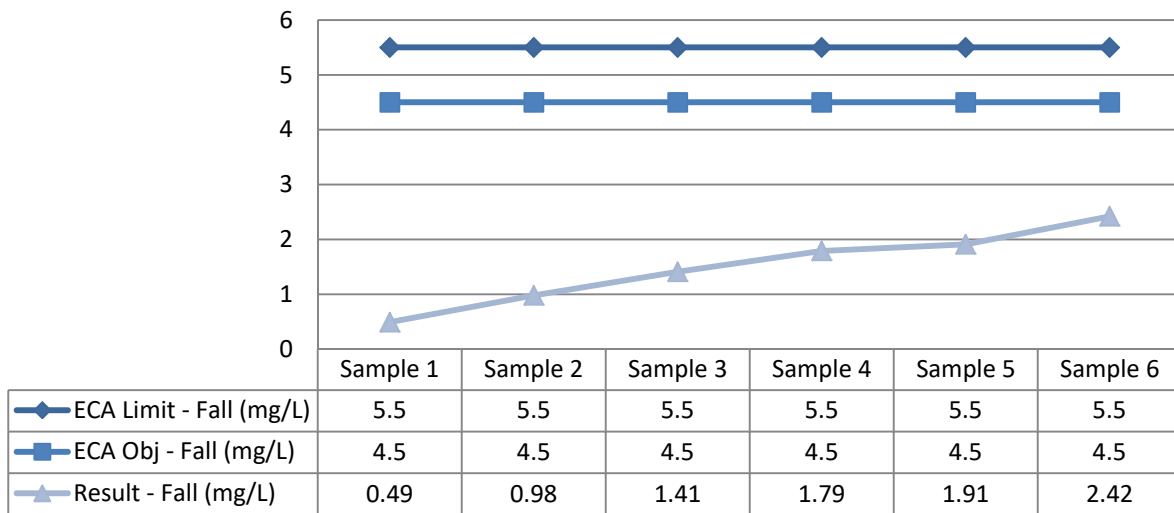
Discharge Period	Seasonal Average (mg/L)	Objective (mg/L)	Limit (mg/L)	Exceedance
Spring (Mar. 1 – Mar. 31)	N/A	9.0	11.0	No
Spring (Apr. 1 – Apr. 30)*	2.6	7.0	7.5	No
Fall (Nov. 1 – Dec. 16)	1.5	4.5	5.5	No

* The spring discharge began April 2, 2020

Effluent TAN Results for Spring Discharge Period:



Effluent TAN Results for Fall Discharge Period:



Hydrogen Sulphide

Discharge Period	Seasonal Average (mg/L)	Objective (mg/L)	Limit (mg/L)	Exceedance
Spring	0.0039	Non-Detectable	0.02	Yes - Objective
Fall	0.0030	Non-Detectable	0.02	Yes - Objective

Effluent Undissociated H₂S Results for Spring Discharge Period:

	02-Apr	06-Apr	08-Apr	14-Apr	17-Apr	20-Apr	23-Apr	27-Apr	30-Apr	Average
S ²⁻ (mg/L)	0.05	0.10	0.09	0.12	0.07	0.07	0.07	0.05	0.05	0.07
pH	8.71	8.71	8.55	8.62	8.56	8.58	8.41	8.31	8.03	8.50
Temp	6.6	10.2	8.2	7.7	3.7	5.6	6.2	8.5	11.2	N/A
% Undissociated H ₂ S (from table)	3.37	2.99	4.97	5.06	5.97	4.366	6.627	7.537	13.007	N/A
Undissociated H ₂ S (mg/L)	0.0017	0.0030	0.0045	0.0061	0.0042	0.0031	0.0046	0.0038	0.0065	0.0039

Effluent Undissociated H₂S Results for Fall Discharge Period:

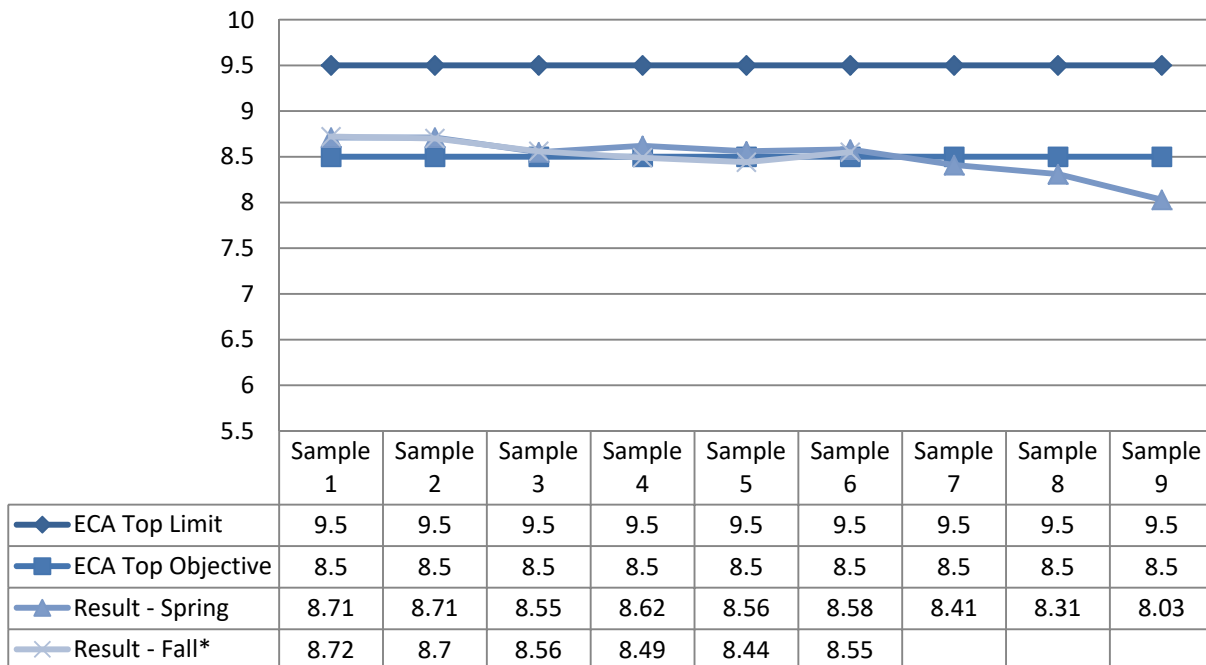
	16-Nov	25-Nov	30-Nov	02-Dec	04-Dec	07-Dec	Average
S ²⁻ (mg/L)	0.02	0.06	0.06	0.06	0.03	0.06	0.05
pH	8.72	8.7	8.56	8.49	8.44	8.55	8.58
Temp	2.7	0.0	3.7	1.2	2.4	1.1	N/A
% Undissociated H ₂ S (from table)	3.91	4.42	4.67	6.54	7.58	5.25	N/A
Undissociated H ₂ S (mg/L)	0.0008	0.0027	0.0028	0.0039	0.0023	0.0032	0.003

pH

Discharge Period	Seasonal Average	Limit	Objective	Exceedance
Spring	8.50	6.0 – 9.5	6.5 – 8.5	No
Fall	8.58	6.0 – 9.5	6.5 – 8.5	Yes* <i>Objective</i>

*Please refer to the 'Operating Issues' section of this report for details.

Effluent pH Results:



* A total of six samples were collected during the fall discharge

Acute Lethality

There were two samples collected in 2020 and tested for acute lethality to Rainbow Trout and Daphnia Magna. In accordance with the ECA, sampling has been reduced to once annually (alternating spring and fall) after four consecutive discharges indicated the effluent was not lethal. Results are displayed as % mortality. An adverse result is a >50% mortality rate.

Sample Period	Rainbow Trout	Daphnia Magna
Fall Discharge - Start	0 %	0 %
Fall Discharge - End	0 %	0 %

Operating Issues

The ECA limit for total suspended solids (TSS) was exceeded during the spring discharge in 2020, and the objective was exceeded during the fall discharge. The elevated TSS detected in the samples was caused by algae growth in the polishing cells. The action plan submitted to the Ministry on October 1, 2018 by OCWA to address the ongoing TSS issues remains in effect. In accordance with the plan, effluent was discharged at a slower rate, over a longer period of time during the spring discharge. In addition, sludge removal from the west polishing cell took place in 2019. OCWA is continuing to investigate and implement methods to reduce total suspended solids in the lagoon effluent.

The pH objective of 8.5 was slightly exceeded in the fall, with an average effluent pH of 8.58.

Maintenance

Flow Meter Calibration and Maintenance

Copies of the flow meter calibration certificates for 2020 are attached in Appendix B.

Maintenance Summary

Description
<ul style="list-style-type: none"> - Performed routine sewer flushing and wet well cleaning - Repaired/upgraded manholes in collection system - Landscaping maintenance by Badger Excavating lagoon - Continued installation of equipment at Emma St. SPS

Notice of Modifications

Date	Process	Modification	Status
None to report.			

Sludge Generation

Sludge depth is monitored periodically, and plans for sludge removal are made as required for optimal operation of the lagoon system. Sludge levels in all ponds were measured in 2020. The measurements were as follows:

Lagoon Cell	Sludge Depth
Primary Cell No. 1	1 – 2"
Primary Cell No. 2	1 – 3"
Secondary Cell	0 – 1"
Polishing Cell (East)	0 – 4"
Polishing Cell (West)	0"

Approximately 6500 m³ of sludge was removed from the West polishing cell in 2019. Sludge removal from the East polishing cell is scheduled to take place in 2022.

Summary of Complaints

There were no complaints documented during the reporting period.

Summary of Abnormal Discharge Events

Bypass/Overflow/Spills

No bypasses, overflows, or spills occurred during the reporting period.

Appendix A

Performance Assessment Reports

ONTARIO CLEAN WATER AGENCY PERFORMANCE ASSESSMENT REPORT

MUNICIPALITY: **TOWNSHIP OF NORTH DUNDAS**
 PROJECT: **CHESTERVILLE WASTEWATER TREATMENT SYSTEM**
 PROJECT NUM.: **5677**
 WORKS NUM.: **110000114**
 DESCRIPTION: **THREE SEWAGE PUMPING STATIONS AND A FIVE CELL LAGOON SYSTEM**
INCLUDING TWO PRIMARY CELLS, ONE SECONDARY CELL, AND TWO POLISHING CELLS

YEAR: **2020**
 WATER COURSE: **SOUTH NATION RIVER**
 DESIGN CAPACITY: **1660 m³/day**

MONTH	FLOWS			EFFLUENT		BIOCHEMICAL O ₂ DEMAND			SUSPENDED SOLIDS			PHOSPHORUS			TKN
	Total Flow (m ³)	Avg Day Flow (m ³)	Max Day Flow (m ³)	Effluent Flow (m ³)	Discharge Duration (days)	Avg Raw BOD (mg/L)	Avg Eff CBOD (mg/L)	Percent Removal (%)	Avg Raw SS (mg/L)	Avg Eff SS (mg/L)	Percent Removal (%)	Avg Raw PHOS. (mg/L)	Avg Eff PHOS. (mg/L)	Percent Removal (%)	Avg Raw TKN (mg/L)
JAN	22,808	736	2,493			159			280			5.25			49.3
FEB	10,834	374	680			129			130			4.32			47.1
MAR	33,072	1,067	2,049			117			100			3.49			33.5
APR	23,095	770	1,019	173,130	29	97	3.7		105	46.6		2.24	0.22		25.0
MAY	20,564	663	890			150			140			5.47			56.8
JUN	15,085	503	566			177			170			6.81			56.9
JUL	15,316	494	547			174			170			6.94			61.4
AUG	20,994	677	1,283			192			95			6.16			42.4
SEPT	17,786	593	772			142			125			4.89			41.2
OCT	22,789	735	1,259			115			75			4.28			42.4
NOV	21,606	720	1,524	30,121	15	74	7.0		95	27.3		0.61	0.51		56.0
DEC	33,246	1,072	3,400	15,060	7	67	7.3		60	27.6		2.95	0.53		27.4
TOTAL	257,195			218,311	51										
AVG		700				133	4.97	96.3	129	38.9	69.8	4.5	0.34	92.4	45.0
MAX			3,400			192			280			6.94			
CRITERIA		1,660					30			30		1.0			

COMMENTS: **Percent removal based on 12 months of raw composite samples**

**ONTARIO CLEAN WATER AGENCY
LAGOON PERFORMANCE ASSESSMENT REPORT**

MUNICIPALITY: **TOWNSHIP OF NORTH DUNDAS**
 PROJECT: **CHESTERVILLE WASTEWATER TREATMENT LAGOONS**
 PROJECT NUM.: **5677**
 WORKS NUM.: **110000114**
 DESCRIPTION: **A FIVE CELL LAGOON SYSTEM INCLUDING TWO PRIMARY CELLS, ONE SECONDARY CELL, AND TWO POLISHING CELLS**

YEAR: **2020**
 WATER COURSE: **SOUTH NATION RIVER**
 DESIGN CAPACITY: **1660 m³/day**

SAMPLE RESULTS	SPRING										173,130 m ³		
	DATE	02-Apr	06-Apr	08-Apr	14-Apr	17-Apr	20-Apr	23-Apr	27-Apr	30-Apr	Average	ECA Objective	ECA Limit*
CBOD5 (mg/L)	<3	<3	4	5	7	3	8	<3	<3	3.7	20	30	
TSS (mg/L)	48	75	65	58	38	35	56	28	16	46.6	20	30	
TP (mg/L)	0.22	0.3	0.29	0.35	0.21	0.2	0.18	0.14	0.11	0.22	0.75	1.0	
**NH ₃ (mg/L)	2.52	1.81	2.63	2.81	2.96	3.21	0.35	3.57	3.48	2.6	7.0	7.5	
S ²⁻ (mg/L)	0.05	0.1	0.09	0.12	0.07	0.07	0.07	0.05	0.05				
TKN (mg/L)	4.8	5.1	6	7	6.8	6.4	6.4	6	5.3				
NO ₂ (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1				
NO ₃ (mg/L)	0.80	0.90	0.8	0.8	0.8	0.9	1	1.1	1.1				
E.coli (cfu/100mL)	2	10	84	108	122	104	34	20	54				

* ECA limit. Monthly average concentration shall not exceed the corresponding maximum concentration
 ** NH3 Objectives: March - 9.0 mg/L; April - 7.0 mg/L; NH3 Limits: March - 11.0 mg/L, Apr - 7.5 mg/L

Unionized NH3 calculations	On Site Temperature	6.6	10.2	8.2	7.7	3.7	5.6	6.2	8.5	11.2
	On Site pH	8.71	8.71	8.55	8.62	8.56	8.58	8.41	8.31	8.03
	NH3-N (lab)	2.52	1.81	2.63	2.81	2.96	3.21	0.35	3.57	3.48
	unionized NH3-N (calc)	0.171	0.160	0.142	0.170	0.116	0.152	0.012	0.116	0.074

Undissociated H2S Calculations	S ²⁻ (mg/L)	0.05	0.10	0.09	0.12	0.07	0.07	0.07	0.05	0.05	0.07	N/A	N/A
	pH	8.71	8.71	8.55	8.62	8.56	8.58	8.41	8.31	8.03	8.50	6.5 - 8.5	6.0 - 9.5
	Temp	6.6	10.2	8.2	7.7	3.7	5.6	6.2	8.5	11.2	N/A	N/A	N/A
	% Undissociated H2S	3.37	2.99	4.97	5.06	5.97	4.366	6.627	7.537	13.01	N/A	N/A	N/A
	Undissociated H ₂ S	0.0017	0.0030	0.0045	0.0061	0.0042	0.0031	0.0046	0.0038	0.0065	0.0039	ND	0.02
	Average												

TOTAL LOADING	
CBOD5 (kg)	635
SS (kg)	8,060
TP (kg)	38
NH ₃ (kg)	449

Acute Lethality	Start	End
Rainbow Trout	n/a	n/a
Daphnia Magna	n/a	n/a

* After 4 consecutive discharge seasons not indicating acute lethality testing can be reduced to once annually at end of discharge alternating spring and fall.

PRE-DISCHARGE RESULTS	25-Mar-20	East	West
	CBOD5 (mg/L)	4	<3
	TSS (mg/L)	26	7
	TP (mg/L)	0.38	0.17
	NH3	2.90	3.38
	H2S	0.05	0.01
E. Coli	0	2	

SAMPLE RESULTS	FALL							45,181 m ³		
	DATE	16-Nov	25-Nov	30-Nov	02-Dec	04-Dec	07-Dec	Average	ECA Objective	ECA Limit*
CBOD5 (mg/L)	< 3	11	7	7	7	8	7.2	20	30	
TSS (mg/L)	14	39	29	28	33	22	27.5	20	30	
TP (mg/L)	0.41	0.57	0.55	0.52	0.53	0.53	0.5	0.75	1.0	
**NH ₃ (mg/L)	0.49	0.98	1.41	1.79	1.91	2.42	1.5	4.5	5.5	
S ²⁻ (mg/L)	0.02	0.06	0.06	0.06	0.03	0.06				
TKN (mg/L)	4.2	5.5	5.8	5.9	6	7.6				
NO ₂ (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1				
NO ₃ (mg/L)	0.20	0.20	0.20	0.20	0.20	0.2				
E.coli (cfu/100mL)	38	102	232	10	60	80				

* ECA limit. Seasonal average concentration shall not exceed the corresponding maximum concentration
 ** NH3 Objective Nov 1 - Dec 16: 4.5 mg/L; NH3 Limit Nov 1 - Dec 16: 5.5 mg/L

Unionized NH3 calculations	On Site Temperature	2.7	0.0	3.7	1.2	2.4	1.1
	On Site pH	8.72	8.7	8.56	8.49	8.44	8.55
	NH3-N (lab)	0.49	0.98	1.41	1.79	1.91	2.42
	unionized NH3-N (calc)	0.025	0.039	0.055	0.002	0.001	0.002

Undissociated H2S Calculations	S ²⁻ (mg/L)	0.02	0.06	0.06	0.06	0.03	0.06	0.05	N/A	N/A
	pH	8.72	8.7	8.56	8.49	8.44	8.55	8.58	6.5 - 8.5	6.0 - 9.5
	Temp	2.7	0.0	3.7	1.2	2.4	1.1	N/A	N/A	N/A
	% Undissociated H2S	3.91	4.42	4.67	6.54	7.58	5.25	N/A	N/A	N/A
	Undissociated H ₂ S	0.0008	0.0027	0.0028	0.0039	0.0023	0.0032	0.003	ND	0.02
	Average									

TOTAL LOADING	
CBOD5 (kg)	324
SS (kg)	1,242
TP (kg)	23
NH ₃ (kg)	68

Acute Lethality	Start	End
Rainbow Trout	0%	0%
Daphnia Magna	0%	0%

* After 4 consecutive discharge seasons not indicating acute lethality testing can be reduced to once annually at end of discharge alternating spring and fall.

PRE-DISCHARGE RESULTS	East	West	
	CBOD5 (mg/L)	<3	<3
	SS (mg/L)	5	5
	TP (mg/L)	0.06	0.42
	NH3	1.20	1.90
	H2S	<0.01	<0.01
E. Coli	39	2	

ANNUAL LOADING TP (KG/D)	kg/day
	1.21
ECA LIMIT	1.66

**ONTARIO CLEAN WATER AGENCY
CHESTERVILLE SEWAGE LAGOON 2020**

DETERMINATION OF UN-IONIZED AMMONIA (NH₃) IN WASTEWATER EFFLUENT

Sample Date	Sample Temperature (°C)	Degrees Kelvin	Dissociation Constant pKa	Sample pH on-site	Fraction of Un-ionized Ammonia	Total Ammonia (mg/L) (NH ₃ +NH ₄ +as N)	Un-ionized Ammonia (mg/L)
02-Apr	6.6	279.75	9.85	8.71	0.0678	2.52	0.171
06-Apr	10.2	283.35	9.72	8.71	0.0882	1.81	0.160
08-Apr	8.2	281.35	9.79	8.55	0.0540	2.63	0.142
14-Apr	7.7	280.85	9.81	8.62	0.0606	2.81	0.170
17-Apr	3.7	276.85	9.95	8.56	0.0391	2.96	0.116
20-Apr	5.6	278.75	9.88	8.58	0.0473	3.21	0.152
23-Apr	6.2	279.35	9.86	8.41	0.0341	0.35	0.012
27-Apr	8.5	281.65	9.78	8.31	0.0326	3.57	0.116
30-Apr	11.2	284.35	9.69	8.03	0.0214	3.48	0.074

Sample Date	Sample Temperature (°C)	Degrees Kelvin	Dissociation Constant pKa	Sample pH on-site	Fraction of Un-ionized Ammonia	Total Ammonia (mg/L) (NH ₃ +NH ₄ +as N)	Un-ionized Ammonia (mg/L)
19-Nov	2.7	275.85	9.99	8.72	0.0513	0.49	0.025
25-Nov	0.0	273.17	10.08	8.7	0.0397	0.98	0.039
30-Nov	3.7	276.85	9.95	8.56	0.0391	1.41	0.055
02-Dec	1.2	274.35	10.04	8.49	0.0274	0.06	0.002
04-Dec	2.4	275.55	10.00	8.44	0.0270	0.03	0.001
07-Dec	1.1	274.25	10.04	8.55	0.0310	0.06	0.002

Appendix B

Flow Meter Calibration Reports

Work Order #	1661659	Meter Flow Verification (1y) 5677	Status COMP
Job Plan #	METFLO01-A	METER FLOW ANNUAL GENERIC	
Project	NORDUY5677-M100		
Type	PM		Scheduled Start Date 03-Mar-20
Criticality	3		
Class	Calibration		

Location	5677, Chesterville WWT Lagoon & CS, Process, Headworks, Pumping
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Asset	0000168525	METER FLOW RAW SEWAGE	Status OPERATING
Building	PUMPING STATION BUILDING		
Level	G		
Qualifier	CHESTERVILLE WWTP. SPS DIESEL ROOM RAW SEWAG		
Manufacturer	TOSHIBA		
Model	LF654NM1BNCAAF		
Serial Number	1865030004		
Warranty Expiration			
Install Date	01-Oct-19		Purchase Price \$ 13,000.00
Asset Comments	PIPE SIZE: 12" WELL DIAMETER: 2.743M PIPE MATERIAL: DUCTILE IRON WALL THICKNESS: 0.34" O.D.: 13.2" I.D: 12.52 WELL RADIUS: 137.16 PLANT METER MAKE: DANFOSS TYPE: MAGNETIC MODEL: 3100173F3001IP67 SERIAL: 3100-122905T433 CALIBRATED RANGE: 0-100% OUTPUT: 4-20 mAdc PERCENT OF ACCURACY - RANGE - CLASS - CALIBRATION RANGE - DATE CODE - OUTPUT AMPERAGE - 4-20MAOUTPUT TYPE (PULSE/MILLIAMPS) - MILLAMPDESIGN PRESSURE - SCADA TAG # - CAPACITY/RATING - M3TYPE/ FORM - MAGLAYING LENGTH - CATALOG NUMBER -		

Reported By	MAXADMIN
Lead	
Crew Work Group	1225 Meter Flow Verification Team 2 Chesterville

Sequence	Asset	Location	Inspected
1	0000261009 METER FLOW EFFLUENT GREYLINE	5677-WLCH-P- PC 5677, Chesterville WWT Lagoon & CS, Process, Process Control & Monitoring	<input checked="" type="checkbox"/>
2	0000168525 METER FLOW RAW SEWAGE	5677-WLCH-P- HW-PUMP 5677, Chesterville WWT Lagoon & CS, Process, Headworks, Pumping	<input checked="" type="checkbox"/>

Asset #	Meter	Last Reading	Date	Current Reading	Date
0000168525					
0000261009	AS LEFT	AS LEFT ASSET CONDITION			

Safety Message

This Work Order (and accompanying Maintenance Procedure) have been developed to aid field personnel in the care and maintenance of the specified equipment. However, maintenance personnel are expected to look for and correct any defects which are not anticipated in the procedure. This document may not provide all the technical information that may be required, and it may be necessary to refer to the manufacturer's manual for further details.

The "As Found" and "As Left" readings, as well as any abnormalities found and any repairs carried out, are to be recorded in the Maximo WMS System.

Isolate and de-energize equipment in accordance with the lock-out procedure.

Take time to identify hazards and plan how each hazard will be eliminated or controlled. Work practices must be in accordance with the Occupational Health & Safety Act and the Ontario Clean Water Agency safety manual.

Ensure direct supervisor or their designate have been notified of entry into the site. This notification should provide approximate time and duration. On completion of duties notification is to be given that site has been vacated and secured.

Task	Description
10	<p>RUNNING CHECKS</p> <ol style="list-style-type: none"> 1) Verify calibration parameters and programming parameters where applicable. 2) Ensure proper connections and grounding. 3) Check display for any alarm or error codes.
20	<p>HAVE QUALIFIED TECHNICIAN CALIBRATE UNIT</p> <ol style="list-style-type: none"> 1. Have a qualified technician calibrate the unit, using actual flow method or flow simulator. 2. Calibration records must be kept for a period of five years. 3. Records shall include the level of accuracy of the equipment as found and as left. 4. Calibration test equipment shall be certified annually and certification dates recorded on the calibration record. Some test equipment may not require calibration
30	<p>RECORD ADJUSTMENTS AND VERIFY OUTPUTS</p> <ol style="list-style-type: none"> 1. Record any adjustments, modifications or replacements made to the equipment during the calibration. 2. Verify accuracy of electronic outputs to the end device as required based on theoretical versus actual values . {Chart recorders, SCADA, Outpost 5}. 3. Ensure all nameplate data is recorded and entered in WMS.
40	<p>COMPLETE A VERIFICATION SHEET FOR EACH FLOW METER, POST IT AND ATTACH TO WORK ORDER</p> <p>Note: Calibration sheet must be signed and original kept on site in the SOP binder.</p>

For Field-Use Only - Completion Elements:



Work Log:

Annual Inspection and Calibration of Flow Meters

Labour

Date	Reg/Prem.	Hours	Memo

Completed By

Please Print Name

Stephane Barbarie

Signature

Date

March 27, 2020

Appendix C

Ministry Correspondence

May 15, 2020

Mr. Charlie Primeau
Supervisor, Ministry of the Environment, Conservation and Parks
charlie.primeau@ontario.ca

Subject: Chesterville Sewage Lagoon - Notification of Non-Compliance with TSS Limit

This letter provides notification of non-compliance with the effluent concentration limit for total suspended solids (TSS) specified in section 7(3) of ECA No. 0632-9L6P6S during the spring discharge of Chesterville's Sewage Lagoon. This written notice confirms the verbal notification of non-compliance provided by OCWA to the Ontario Ministry of the Environment, Conservation and Parks' Spills Action Centre on May 13, 2020 (Reference # 6553-BPKHH5).

The following effluent parameter was exceeded:

Parameter	Type of Limit	Type of Sample	Result	ECA Limit
Total Suspended Solids	Monthly Average Concentration	Grab	46.6 mg/L	30.0 mg/L

The spring discharge of Chesterville's sewage lagoons began on April 2, 2020 and ended on April 30, 2020. Nine sets of samples were collected over the course of the discharge. The elevated TSS detected in the samples was caused by algae growth in the polishing cells. The action plan submitted to the Ministry on October 1, 2018 by OCWA to address the ongoing TSS issues remains in effect. In accordance with the plan, effluent was discharged at a slower rate, over a longer period of time during the spring discharge. In addition, sludge removal from the west polishing cell took place in 2019. OCWA is continuing to investigate and implement methods to reduce total suspended solids in the lagoon effluent.

It should be noted that all other parameters remained well below the ECA limits throughout the discharge. A complete listing of all sample results obtained during the spring discharge can be found in the Lagoon Discharge PAR, attached.

If you have any questions or concerns, please don't hesitate to contact me at (613) 448-3098.

Sincerely,



Dawn Crump
Process & Compliance Technician
Seaway Valley Cluster

Cc: Angela Rutley, CAO, Township of North Dundas
Dan Belleau, Director of Public Works, Township of North Dundas
Stephane Barbarie, Senior Operations Manager, OCWA
Pat Lalonde, Provincial Officer, MECP

**ONTARIO CLEAN WATER AGENCY
LAGOON PERFORMANCE ASSESSMENT REPORT**

MUNICIPALITY: **TOWNSHIP OF NORTH DUNDAS**
 PROJECT: **CHESTERVILLE WASTEWATER TREATMENT LAGOONS**
 PROJECT NUM.: **5677**
 WORKS NUM.: **110000114**
 DESCRIPTION: **A FIVE CELL LAGOON SYSTEM INCLUDING TWO PRIMARY CELLS, ONE SECONDARY CELL, AND TWO POLISHING CELLS**

YEAR: **2020**
 WATER COURSE: **SOUTH NATION RIVER**
 DESIGN CAPACITY: ***1046 m³/day
(1660 m³/day upon verification by Performance Testing)**

SAMPLE RESULTS	SPRING										173,129 m ³		
	DATE	02-Apr	06-Apr	08-Apr	14-Apr	17-Apr	20-Apr	23-Apr	27-Apr	30-Apr	Average	ECA Objective	ECA Limit*
CBOD5 (mg/L)	<3	<3	4	5	7	3	8	<3	<3	3.7	20	30	
TSS (mg/L)	48	75	65	58	36	35	56	28	16	46.6	20	30	
TP (mg/L)	0.22	0.3	0.29	0.35	0.21	0.2	0.18	0.14	0.11	0.22	0.75	1.0	
**NH ₃ (mg/L)	2.52	1.81	2.63	2.81	2.96	3.21	0.35	3.57	3.48	2.6	7.0	7.5	
S ²⁻ (mg/L)	0.05	0.1	0.09	0.12	0.07	0.07	0.07	0.05	0.05				
TKN (mg/L)	4.8	5.1	6	7	6.8	6.4	6.4	6	5.3				
NO ₂ (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1				
NO ₃ (mg/L)	0.80	0.90	0.8	0.8	0.8	0.9	1	1.1	1.1				
E.coli (cfu/100mL)	2	10	84	108	122	104	34	20	54				

* ECA limit. Monthly average concentration shall not exceed the corresponding maximum concentration
 ** NH3 Objectives: March - 9.0 mg/L, April - 7.0 mg/L; NH3 Limits: March - 11.0 mg/L, Apr - 7.5 mg/L

SAMPLE RESULTS	FALL										m ³		
	DATE										Average	ECA Objective	ECA Limit
CBOD5 (mg/L)												20	30
TSS (mg/L)												20	30
TP (mg/L)												0.75	1.0
**NH ₃ (mg/L)												4.5	5.5
S ²⁻ (mg/L)													
TKN (mg/L)													
NO ₂ (mg/L)													
NO ₃ (mg/L)													
E.coli (cfu/100mL)													

* ECA limit. Seasonal average concentration shall not exceed the corresponding maximum concentration
 ** NH3 Objective Nov 1 - Dec 16: 4.5 mg/L; NH3 Limit Nov 1 - Dec 16: 5.5 mg/L

Unionized NH3 calculations	On Site Temperature	6.6	10.2	8.2	7.7	3.7	5.6	6.2	8.5	11.2
	On Site pH	8.71	8.71	8.55	8.62	8.56	8.58	8.41	8.31	8.03
	NH3-N (lab)	2.52	1.81	2.63	2.81	2.96	3.21	0.35	3.57	3.48
	unionized NH3-N (calc)	0.171	0.160	0.142	0.170	0.116	0.152	0.012	0.116	0.074

Unionized NH3 calculations	On Site Temperature									
	On Site pH									
	NH3-N (lab)									
	unionized NH3-N (calc)									

Undissociated H2S Calculations	S ²⁻ (mg/L)	0.05	0.10	0.09	0.12	0.07	0.07	0.05	0.05	Average	Objective	Limit	
	pH	8.71	8.71	8.55	8.62	8.56	8.58	8.41	8.31	8.03	8.50	6.5 - 8.5	6.0 - 9.5
	Temp	6.6	10.2	8.2	7.7	3.7	5.6	6.2	8.5	11.2	N/A	N/A	N/A
	% Undissociated H2S	3.37	2.99	4.97	5.06	5.97	4.366	6.627	7.537	13.007	N/A	N/A	N/A
	Undissociated H ₂ S	0.0017	0.0030	0.0045	0.0061	0.0042	0.0031	0.0046	0.0038	0.0065	0.0039	ND	0.02

Undissociated H2S Calculations	S ²⁻ (mg/L)											
	pH											
	Temp											
	% Undissociated H2S											
	Undissociated H ₂ S	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TOTAL LOADING	
CBOD5 (kg)	635
SS (kg)	8,060
TP (kg)	38
NH ₃ (kg)	449

Acute Lethality	Start	End
Rainbow Trout	n/a	n/a
Daphnia Magna	n/a	n/a

* After 4 consecutive discharge seasons not indicating acute lethality testing can be reduced to once annually at end of discharge alternating spring and fall.

TOTAL LOADING	
CBOD5 (kg)	0
SS (kg)	0
TP (kg)	0
NH ₃ (kg)	0

Acute Lethality	Start	End
Rainbow Trout		n/a
Daphnia Magna		n/a

* After 4 consecutive discharge seasons not indicating acute lethality testing can be reduced to once annually at end of discharge alternating spring and fall.

PRE-DISCHARGE RESULTS	25-Mar-20	East	West
	CBOD5 (mg/L)	4	<3
	TSS (mg/L)	26	7
	TP (mg/L)	0.38	0.17
	NH3	2.90	3.38
	H2S	0.05	0.01
E. Coli	0	2	

PRE-DISCHARGE RESULTS	East	
	CBOD5 (mg/L)	
	SS (mg/L)	
	TP (mg/L)	
	NH3	
	H2S	
E. Coli		

ANNUAL LOADING TP (KG/D)		kg/day
ECA LIMIT		1.66