



2020 Annual Wastewater Report

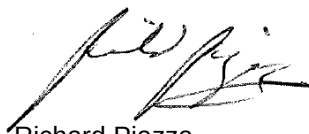


March 8, 2021 Version 1.0

2020 Annual Wastewater Report

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Reviewed by:



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8-Mar-2021

Date

Approved by:



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8-Mar-2021

Date

Introduction to the Annual Wastewater Report

Under Environmental Compliance Approval (ECA) agreements issued by the Ministry of Environment, Conservation & Parks (MECP), the City is required to report annually on the values/parameters indicated in the ECA and must make this report publicly available within 90 days of January 1st for the year preceding the current year. Specifically the annual report is to include:

- a) a summary and interpretation of all monitoring data and a comparison to the effluent limits outlined in conditions described in the Approval, including an overview of the success and adequacy of the Works;
- b) a description of any operating problems encountered and corrective actions taken;
- c) a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism or thing forming part of the Works;
- d) a summary of any effluent quality assurance or control measures undertaken in the reporting period;
- e) a summary of the calibration and maintenance carried out on all effluent monitoring equipment;
- f) a description of efforts made and results achieved in meeting the Effluent Objectives of the Approval;
- g) a tabulation of the volume of sludge generated in the reporting period, 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;
- h) a summary of any complaints received during the reporting period and any steps taken to address the complaints;
- i) a summary of all by-pass, plant overflow, overflow, spill or abnormal discharge events;
- j) any other information the Water Supervisor requires from time to time; and
- k) a copy of all Notices of Modification submitted to the Water Supervisor.

To address these requirements, this report contains the following sections;

- 1. **Operating Issues & Corrective Actions;** Measured values resulting in a non-compliance with respect to a parameter listed within an ECA and the corrective actions taken to resolve the issue.
- 2. **Maintenance & Capital Improvements;** All major maintenance, modifications and capital works completed at the facility within the reporting period.
- 3. **Calibrations & Maintenance:** Details on the calibration and maintenance carried out on all effluent monitoring equipment.
- 4. **Sludge Disposal;** The volume of sludge received and treated at the Sudbury Biosolids facility from the Sudbury WWTP, other wastewater treatment facilities and licensed septage haulers.
- 5. **Customer Complaints (ACR);** Any complaints received regarding Wastewater Treatment facilities through the City of greater Sudbury 311 (ACR) system during the reporting period and any steps taken to address the complaints.
- 6. **Plant Bypasses and Overflows;** A listing of all bypasses, spills and overflows at the facility during the reporting period.
- 7. **Effluent Quality & Control Measures;** A summary and interpretation of all monitoring data collected and a comparison to the parameters and limits given in the ECA for each facility.
- 8. **Individual Plant Annual Data Reports;** Tables showing all required reporting values and parameters for each wastewater treatment plant of which the City of Greater Sudbury is the owner, including a graphical representation of flows through the plant.

Definitions

- *Alkalinity*: a measurement of the ability of water to neutralize acid by absorbing hydrogen ions;
- *Average Concentration*: the mean of all Single Sample Results of the concentration of a contaminant in a given stream (influent/effluent) measured during a specified time period;
- *Average Flow*: the cumulative total influent or effluent flow measured during a defined time period (annual, monthly, etc.) divided by the number of days during that specified period;
- *Average Loading*: the value obtained by multiplying the Average Concentration of a contaminant in a given stream (influent/effluent) by the Average Flow for that stream;
- *BOD₅*: the five day biochemical oxygen demand measured in an unfiltered sample and includes carbonaceous and nitrogenous oxygen demands;
- *Bypass*: the diversion of sewage around one or more treatment processes, excluding Preliminary Treatment System, with the diverted sewage flows being returned to the Sewage Treatment Plant treatment train upstream of the Final Effluent sampling point(s) and discharged via the approved effluent disposal facilities;
- *CBOD₅*: the five day carbonaceous biochemical oxygen demand of biological organisms in the material, without the impact of oxygen depletion by nitrogenous bacteria;
- *E. coli*: coliform bacteria that possess the enzyme beta-glucuronidase and are capable of cleaving a fluorogenic or chromogenic substrate with the corresponding release of a fluorogen or chromogen, that produces fluorescence under long wavelength (366 nm) UV light, or color development, respectively. Data are reported as colony forming units (CFU) per 100 mL;
- *Event*: an action or occurrence, at a given location within the Works that causes a Bypass or Overflow. An Event ends when there is no recurrence of Bypass or Overflow in the 12-hour period following the start of the event;
- *Final Effluent*: effluent that is discharged to the environment through the approved effluent disposal facilities, including all Bypasses, that are required to meet the compliance limits stipulated in the Approval for the Sewage Treatment Plant at the Final Effluent sampling point(s);
- *Influent*: flows to the Sewage Treatment Plant from the collection system. Flows can fluctuate according to weather conditions and high flows are commonly due to Inflow and Infiltration, a condition that allows rain and/or snow melt to enter the sanitary sewer.;
- *Monthly Geometric Mean Density*: the mean of all Single Sample Results of E. coli measurement in the samples taken during a calendar month, calculated and reported as per the methodology specified by the MECP;
- *Nitrite*: the amount of nitrogen present in the effluent as the NO₂- anion;
- *Nitrate*: the amount of nitrogen present in the effluent as the NO₃- anion;
- *Overflow*: a discharge to the environment at location(s) other than the approved effluent discharge;
- *pH*: the potential of hydrogen measured on a 14 point scale where 0 represents highly acidic material, 14 represents highly basic material and 7 represents neutral material (such as water);
- *Rated Capacity*: the Annual Average Daily Influent Flow for which the facility is designed to process;
- *T Amm*: the total ammonia measured in the final effluent;
- *TKN*: Total Kjeldahl Nitrogen; the total concentration of organic nitrogen & ammonia in the effluent;
- *TP*: Total Phosphorous; the total amount of phosphorous measured in the final effluent;
- *TSS*: Total Suspended Solids; the total amount of residual solid matter in the final effluent;
- *Un-ionized Amm*: the calculated amount of un-ionized ammonia in the final effluent;
- *Sludge*: the residual material produced through the wastewater treatment process.
- *WSER*: Wastewater Systems Effluent Regulations, as defined in the *Fisheries Act*

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Revision History

Date	Description	Revision	Author
8-Mar-2021	Initial issue	1.0	Michael Loken

1. Operating Issues & Corrective Actions

Date	Facility	Parameter	Probable Cause	Corrective Actions Taken
Feb 2020	Lively WWTP	Total Phosphorus (TP)	Maintenance	Flows diverted to Walden
Feb 2020	Sudbury WWTP	E.coli	Treatment upset/dirty stilling wells	Process under control, stilling wells to be cleaned
Feb 2020	Azilda WWTP	Ammonia	Testing new blowers required shutdowns	Monitoring DO levels
Feb 2020	Azilda WWTP	Total Suspended Solids (TSS)	Recovering from plant shutdown	Wasting more adjusting air
Mar 2020	Azilda WWTP	Ammonia	Recovering from plant shutdown	Adjusted DO levels
Apr 2020	Chelmsford WPCP	Ammonia (Winter Season)	Plant switch overs	Stagger and controlled switch in house testing
Apr 2020	Azilda WWTP	Total Suspended Solids (TSS)	Blower issues & high flows	Cleaned Raw Channel adjusted poly feed &wasting
Apr 2020	Azilda WWTP	Ammonia	Altered C of C	C of C corrected
Jun 2020	Coniston WWTP	Total Suspended Solids (TSS)	Maintenance	Halted work on Oxidation Ditch. Monitor Cl2
Jul 2020	Coniston WWTP	Total Suspended Solids (TSS)	Maintenance	Continue to Monitor Plant
Aug 2020	Chelmsford WPCP	Total Phosphorus (TP)	Ferric Pump Breakdown	Replaced pump, increased Ferric
2020	Capreol Lagoons	Total Phosphorus (TP) – Annual	Lack of retention time in lagoon	Capital projects to address in 2021/2022
2020	Coniston WWTP	E. Coli – Annual average	Plant maintenance & high flows	Oxidation ditch dredged

2. Maintenance & Capital Improvements

Facility	Maintenance Completed	Capital Improvements Completed
Azilda WWTP	- No major maintenance required	- Effluent dechlorination system installed - Two new (refurbished) aeration blowers installed
Chelmsford WPCP	- Ferric Chloride addition lines repaired and storage tank cleaned out	- UV disinfection system commissioned
Capreol Lagoons	- Sampling well repaired	- No major capital work completed
Coniston WWTP	- Oxidation ditch cleaned (dredged) - Leak in chlorine system repaired - Potable water system repaired	- Effluent dechlorination system installed
Dowling WWTP	- Aeration tanks cleaned - Potable water system repaired	- Effluent dechlorination system installed
Falconbridge WWTP	- Diversion chambers cleaned out (spring & fall)	- No major capital work completed
Levack WWTP	- Aeration tanks cleaned	- Effluent dechlorination system installed
Lively WWTP	- Clarifier weir repaired	- Effluent dechlorination system installed
Sudbury WWTP	- #1, #3 and #6 Clarifiers repaired - Septage receiving station cleaning brushes repaired & replaced - 202 diverter valve cleaned out - Aeration line in #1 tank repaired - Polymer system cleaned	- Variable frequency drives installed on 2A and 2B inlet pumps
Valley East WWTP	- Raw wastewater pump repaired - Concrete repairs completed on clarifiers	- No major capital work completed
Wahnapitae Lagoons	- No major maintenance required	- No major capital work completed
Walden WWTP	- Broken aeration line repaired - Aeration tank discharge baffles installed - Influent chamber cleaned out	- Effluent dechlorination system installed

3. Calibrations & Maintenance

All analyzers at all plants are calibrated as per manufacturer's recommendations, a minimum of once per year. Calibration Certificates are submitted and retained electronically for each unit.

All major plant equipment is maintained as per manufacturer's recommendations, with regular preventive maintenance checks completed as per established schedules.

4. Sludge Disposal

Sludge produced and removed from all Wastewater Treatment Plants in the City of Greater Sudbury, along with hauled liquid waste from other sources, is processed at the Sudbury Biosolids facility. Hauled liquid waste is any domestic sewage collected & transported by licensed haulers that is suitable for treatment, including:

- Waste removed from cesspools, septic tanks, privy pits, chemical toilets, portable toilets or sewage holding tanks and grey water from residential activities;
- Sewage from on-board holding tanks (e.g. RVs, tour buses, boats, etc.), and;
- Sludge from wastewater treatment facilities in neighbouring municipalities (for example, Espanola).

This Biosolids facility, operated under a Public Private Partnership by Walker Industries and located on the grounds of the Sudbury Wastewater Treatment Plant, produces a soil amendment by mixing dewatered septage & sludge with cement kiln dust and/or quicklime, to attain pathogen pasteurization. The product is a granular material, which is applied to agricultural soils for nutrient and pH enhancement.

In 2020, the Sudbury Biosolids facility treated a total of 120,413 m³ of material, containing approximately 3,619 tonnes of solids. Of this total, approximately 16,392 m³ was from septic tanks, 42,708 m³ was sludge from other CGS facilities and 4,351 m³ was sludge received from the Espanola Wastewater Treatment Plant.

5. Customer Complaints (ACR)

Date	Case ID	Location	Issue	Resolution
01/16/20	957113	Walford Lift Station	Safety concern	Safety concern immediately addressed by contractor.
01/19/20	957495	Dufferin Lift Station	Snow removal	Snow removed to address concern.
01/31/20	961537	Azilda WWTP	Snow removal	Snow removed to address concern.
03/30/20	976082	Helene Lift Station	Possible vandalism	Door on generator secured and locked.
04/21/20	985657	Nickel Lift Station	Concern about lift station	Repairs completed to address concern.
04/27/20	988460	First Ave., Lively	Sewer Odour	Operator added additional chemicals to address concern and Vector scheduled to clean out built up material.
05/25/20	1000861	Jacob Lift Station	Lift station not secured	Gates closed and secured by operator.

Date	Case ID	Location	Issue	Resolution
05/27/20	1002207	First Ave., Lively	Odour complaint	Material discharged in Lively caused a severe disruption in plant operation. Operators working to resolve the issue.
05/27/20	1002811	Main Street, Lively	Odour complaint	Material discharged in Lively caused a severe disruption in plant operation. Operators working to resolve the issue.
05/29/20	1003758	Anderson Lift Station	Lift station not secured	Doors closed by lift station crew.
06/15/20	1010159	Falconbridge WWTP	CALL BACK REQUESTED - Fencing	Fencing to be installed in 2021. Project delayed due to COVID-19.
06/22/20	1012725	Sudbury WWTP	Odour complaint	Odour most likely a result of warm, stagnant conditions. Resident said smell dissipated shortly after calling.
06/22/20	1012927	Brenda Lift Station	Winter sand not removed	Material cleaned up.
06/22/20	1013216	Laurier Lift Station	Odour complaint	Project ongoing with Infrastructure Capital Planning to address odour issues.
07/02/20	1017174	Laurier Lift Station	Odour complaint	Project ongoing with Infrastructure Capital Planning to address odour issues.
07/07/20	1019598	Moonlight Lift Station	Noise Complaint	Exhaust fan left on when not required. Fan turned off to eliminate noise issue.
07/20/20	1024137	Laurier Lift Station	Odour complaint	Project ongoing with Infrastructure Capital Planning to address odour issues.
07/23/20	1025457	Loach's Rd. Lift Station	Noise Complaint	Lift station crew attended site and determined that #2 pump was plugged. Pump was cleared and put back in operation.
07/27/20	1026470	Loach's Rd. Lift Station	Noise Complaint	Pump #2 found to be damaged. Removed and replaced with new pump.
08/06/20	1030283	O'Neil Lift Station	Odour complaint	Lift station flushed, odour control chemicals added and Vactor scheduled to clean wet well.
08/10/20	1031108	Helene Lift Station	Landscaping complaint	Work completed to address concern.
08/12/20	1032336	Ramsay Lift Station	Greater Sudbury Utilities access request	Work scheduled with GSU to allow site access.
08/14/20	1033225	Garson Lagoons	Wastewater Lagoon Seeping into Stream	Investigation by Environmental Compliance Officers determined the Lagoon was not discharging any material.
08/17/20	1033676	Valley East WWTP	RV Dumping Concern	Investigation by Manager & Supervisor determined that complaint was unfounded.
08/19/20	1034505	Chelmsford Lagoon	RV Dumping Concern	Resident informed that the Chelmsford Lagoon could not be used for RV dumping.

Date	Case ID	Location	Issue	Resolution
08/31/20	1037984	Landry Lift Station	Property access issues	Portable generator relocated to allow resident access to his property.
08/31/20	1038448	Laurier Lift Station	Exterior lights left on	Lights turned off.
10/05/20	1050713	Walden WWTP	Netting concerns	Netting observed in trees around Walden WWTP removed.
10/14/20	1053129	Sudbury WWTP	RV Dumping Concern	Hose and faucet at Sudbury WWTP RV dump replaced.
11/03/20	1059565	Capreol Lagoons	Concerns with sign placement	Lagoon warning signs moved to more appropriate location. Testing done to confirm liquid observed was rain water.
11/23/20	1065126	Principale Lift Station	Hydro Transformer Failure	Electrician dispatched and repairs completed by Hydro One.
11/27/20	1066430	Sudbury WWTP	Odour complaint	Inspection completed by duty operator, and no odour issues identified. Odour caused by a different source.

6. Plant Bypasses and Overflows

Date	Time (24 H Clock)	Duration (hrs.)	Location	Type of Occurrence
23-Feb-20	15:30	34.0	Coniston WWTP	Plant operating over design capacity
09-Mar-20	20:45	12.0	Coniston WWTP	Plant operating over design capacity
13-Mar-20	5:00	11.0	Coniston WWTP	Plant operating over design capacity
17-Mar-20	3:55	2.1	Chelmsford WPCP	Plant operating over design capacity
20-Mar-20	1:45	17.0	Coniston WWTP	Plant operating over design capacity
25-Mar-20	12:35	188.5	Coniston WWTP	Plant operating over design capacity
27-Mar-20	5:00	3.5	Sudbury WWTP	Plant bypass
27-Mar-20	0:30	7.0	Sudbury WWTP	Plant operating over design capacity
29-Mar-20	10:20	215.4	Azilda WWTP	Plant operating over design capacity
29-Mar-20	11:50	157.0	Coniston WWTP	Plant bypass
29-Mar-20	14:20	116.0	Sudbury WWTP	Plant bypass
04-Apr-20	0:01	144.0	Valley East WWTP	Plant operating over design capacity
29-Apr-20	20:00	36.0	Coniston WWTP	Plant bypass
29-Apr-20	20:57	6.3	Walden WWTP	Plant operating over design capacity
30-Apr-20	8:32	38.9	Azilda WWTP	Plant operating over design capacity
30-Apr-20	13:01	10.6	Chelmsford WPCP	Plant operating over design capacity
30-Apr-20	19:00	5.0	Sudbury WWTP	Plant operating over design capacity
30-Apr-20	11:00	48.0	Valley East WWTP	Plant operating over design capacity
30-Apr-20	15:00	5.0	Walden WWTP	Plant bypass
01-May-20	9:45	0.8	Coniston WWTP	Plant operating over design capacity
01-May-20	0:10	5.5	Sudbury WWTP	Plant bypass
24-May-20	16:25	6.0	Coniston WWTP	Plant operating over design capacity

Date	Time (24 H Clock)	Duration	Location	Type of Occurrence
02-Jun-20	13:00	384.0	Coniston WWTP	Plant operating over design capacity
24-Jun-20	10:00	26.5	Coniston WWTP	Plant operating over design capacity
07-Jul-20	10:30	0.5	Moonlight Beach LS	Lift station overflow
07-Jul-20	18:30	4.0	Vermillion River LS	Lift station overflow
19-Jul-20	16:00	0.3	Sudbury WWTP	Sludge overflow, contained on site
02-Aug-20	15:39	2.0	Lively WWTP	Plant operating over design capacity
02-Aug-20	16:25	2.0	Walden WWTP	Plant operating over design capacity
29-Aug-20	5:40	10.0	Coniston WWTP	Plant operating over design capacity
07-Sep-20	1:43	18.5	Coniston WWTP	Plant operating over design capacity
07-Sep-20	2:16	4.0	Walden WWTP	Plant operating over design capacity
10-Sep-20	5:25	16.5	Coniston WWTP	Plant operating over design capacity
15-Sep-20	14:27	30.3	Azilda WWTP	Plant operating over design capacity
15-Sep-20	12:15	0.3	Vermillion River LS	Lift station overflow
21-Sep-20	10:45	72.1	Chelmsford WPCP	Plant bypass
23-Oct-20	3:28	46.3	Azilda WWTP	Plant operating over design capacity
23-Oct-20	3:04	66.5	Chelmsford WPCP	Plant operating over design capacity
23-Oct-20	4:15	28.3	Coniston WWTP	Plant bypass
23-Oct-20	1:16	4.5	Levack WWTP	Plant operating over design capacity
23-Oct-20	3:15	10.0	Lively WWTP	Plant bypass
23-Oct-20	5:49	28.0	Sudbury WWTP	Plant bypass
23-Oct-20	2:30	5.5	Walden WWTP	Plant operating over design capacity
24-Oct-20	12:00	29.0	Coniston WWTP	Plant operating over design capacity
01-Nov-20	8:24	14.0	Coniston WWTP	Plant operating over design capacity
15-Nov-20	16:52	6.5	Azilda WWTP	Plant operating over design capacity
15-Nov-20	16:10	15.0	Coniston WWTP	Plant bypass
15-Nov-20	11:53	20.2	Coniston WWTP	Plant operating over design capacity
15-Nov-20	20:18	2.3	Lively WWTP	Plant bypass
16-Nov-20	0:10	5.0	Sudbury WWTP	Plant operating over design capacity
16-Nov-20	10:15	218.0	Wahnapitae Lagoon	Overflow from cell #1
24-Dec-20	9:20	4.3	Coniston WWTP	Plant operating over design capacity
24-Dec-20	4:45	2.0	Levack WWTP	Plant operating over design capacity

7. Effluent Quality & Control Measures

Data for each treatment facility within the City of Greater Sudbury is shown below. Values for average loading and material removed were calculated using laboratory results and plant influent flow data.

Azilda Wastewater Treatment Plant

Influent Flow				
		Design Capacity:	3,300 m ³ /day	
		Average Daily Flow:	2,125 m ³ /day	

CBOD ₅		Value		ECA Limit
Annual Average Daily Loading	Influent	186.4	kg/day	< 33 kg/day < 10 mg/L
	Effluent	5.91	kg/day	
Monthly Effluent Concentration	Average	2.56	mg/L	
	Minimum	1.50	mg/L	
	Maximum	4.10	mg/L	
Plant Removal		180.5	kg/day	
		96.94	%	

TSS – Total Suspended Solids		Value		ECA Limit
Annual Average Daily Loading	Influent	200.3	kg/day	< 33 kg/day < 10 mg/L
	Effluent	18.82	kg/day	
Monthly Effluent Concentration	Average	8.04	mg/L	
	Minimum	3.50	mg/L	
	Maximum	15.70	mg/L	
Plant Removal		181.5	kg/day	
		91.67	%	

TP – Total Phosphorous		Value		ECA Limit
Annual Average Daily Loading	Influent	5.71	kg/day	< 2.0 kg/day < 0.6 mg/L
	Effluent	0.64	kg/day	
Monthly Effluent Concentration	Average	0.28	mg/L	
	Minimum	0.13	mg/L	
	Maximum	0.48	mg/L	
Plant Removal		5.07	kg/day	
		90.06	%	

Total Ammonia (as Nitrogen)		Value		ECA Limit
Annual Average Daily Loading	Influent	37.37	kg/day	< 16.5 kg/day < 5 mg/L
	Effluent	4.04	kg/day	
Monthly Effluent Concentration	Average	1.68	mg/L	
	Minimum	0.02	mg/L	
	Maximum	6.65	mg/L	
Plant Removal		33.33	kg/day	
		90.99	%	

pH		Value		ECA Limit
Influent Measurements	Average	7.66		6.0 to 9.5 at all times
Effluent Measurements	Average	7.00		
	Minimum	6.70		
	Maximum	7.36		

E. Coli		Value		ECA Limit
Monthly Geometric Mean Density	Average	22	CFU/100mL	< 200 CFU/100mL
	Minimum	1	CFU/100mL	< 200 CFU/100mL
	Maximum	79	CFU/100mL	< 200 CFU/100mL

Capreol Lagoon

Influent Flow	
Design Capacity:	5,500 m ³ /day
Average Daily Flow:	3,007 m ³ /day

BOD ₅		Value	ECA Limit
Annual Average Daily Loading	Influent	318.8 kg/day	< 30 mg/L
	Effluent	78.17 kg/day	
Monthly Effluent Concentration	Average	26.97 mg/L	
	Minimum	12.00 mg/L	
	Maximum	46.00 mg/L	
Plant Removal		240.6 kg/day	
		71.26 %	

TSS – Total Suspended Solids		Value	ECA Limit
Annual Average Daily Loading	Influent	209.4 kg/day	< 40 mg/L
	Effluent	68.95 kg/day	
Monthly Effluent Concentration	Average	23.41 mg/L	
	Minimum	12.00 mg/L	
	Maximum	44.00 mg/L	
Plant Removal		140.4 kg/day	
		58.90 %	

TP – Total Phosphorous		Value	ECA Limit
Annual Average Daily Loading	Influent	5.49 kg/day	< 1.38 mg/L
	Effluent	4.50 kg/day	
Monthly Effluent Concentration	Average	1.58 mg/L	
	Minimum	0.87 mg/L	
	Maximum	2.58 mg/L	
Plant Removal		0.99 kg/day	
		16.44 %	

Chelmsford Water Pollution Control Plant

The ECA for the Chelmsford WPCP details different effluent limits based on two seasonal discharge periods; one from April 30th to November 1st and the other from May 1st to October 31st.

Disinfection of the final effluent and reporting of sample results for E. Coli is only required in the summer discharge period from May 1st to October 31st. The ECA limits for effluent pH are the same in both discharge periods.

Influent Flow	
Design Capacity:	7,100 m ³ /day
Average Daily Flow:	5,344 m ³ /day

CBOD₅				
Seasonal Discharge – November 1 to April 30		Value		ECA Limit
Annual Average Daily Loading	Influent	597.6	kg/day	< 106.5 kg/day < 15 mg/L
	Effluent	26.34	kg/day	
Monthly Effluent Concentration	Average	4.75	mg/L	
	Minimum	2.90	mg/L	
	Maximum	6.30	mg/L	
Plant Removal		571.2	kg/day	
		95.59	%	
Seasonal Discharge – May 1 to October 31		Value		ECA Limit
Annual Average Daily Loading	Influent	455.1	kg/day	< 49.7 kg/day < 7 mg/L
	Effluent	14.62	kg/day	
Monthly Effluent Concentration	Average	3.03	mg/L	
	Minimum	2.00	mg/L	
	Maximum	6.30	mg/L	
Plant Removal		440.5	kg/day	
		96.79	%	

TSS – Total Suspended Solids				
Seasonal Discharge – November 1 to April 30		Value		ECA Limit
Annual Average Daily Loading	Influent	1185	kg/day	< 106.5 kg/day < 15 mg/L
	Effluent	40.28	kg/day	
Monthly Effluent Concentration	Average	6.95	mg/L	
	Minimum	5.80	mg/L	
	Maximum	8.20	mg/L	
Plant Removal		1145	kg/day	
		96.60	%	
Seasonal Discharge – May 1 to October 31		Value		ECA Limit
Annual Average Daily Loading	Influent	1099	kg/day	< 49.7 kg/day < 7 mg/L
	Effluent	27.55	kg/day	
Monthly Effluent Concentration	Average	5.40	mg/L	
	Minimum	4.10	mg/L	
	Maximum	6.70	mg/L	
Plant Removal		1072	kg/day	
		97.49	%	

TP – Total Phosphorous			
Seasonal Discharge – November 1 to April 30		Value	ECA Limit
Annual Average Daily Loading	Influent	17.33 kg/day	< 3.55 kg/day < 0.5 mg/L
	Effluent	1.20 kg/day	
Monthly Effluent Concentration	Average	0.23 mg/L	
	Minimum	0.16 mg/L	
	Maximum	0.40 mg/L	
Plant Removal		16.13 kg/day 93.08 %	
Seasonal Discharge – May 1 to October 31		Value	ECA Limit
Annual Average Daily Loading	Influent	14.21 kg/day	< 2.13 kg/day < 0.3 mg/L
	Effluent	1.16 kg/day	
Monthly Effluent Concentration	Average	0.24 mg/L	
	Minimum	0.19 mg/L	
	Maximum	0.33 mg/L	
Plant Removal		13.05 kg/day 91.85 %	

Total Ammonia (as Nitrogen)			
Seasonal Discharge – November 1 to April 30		Value	ECA Limit
Annual Average Daily Loading	Influent	101.2 kg/day	< 28.4 kg/day < 4 mg/L
	Effluent	40.10 kg/day	
Monthly Effluent Concentration	Average	8.00 mg/L	
	Minimum	0.16 mg/L	
	Maximum	16.90 mg/L	
Plant Removal		61.11 kg/day 60.38 %	
Seasonal Discharge – November 1 to April 30		Value	ECA Limit
Annual Average Daily Loading	Influent	81.96 kg/day	< 14.2 kg/day < 2 mg/L
	Effluent	7.80 kg/day	
Monthly Effluent Concentration	Average	1.79 mg/L	
	Minimum	0.19 mg/L	
	Maximum	7.30 mg/L	
Plant Removal		74.16 kg/day 90.49 %	

pH			
Both Seasonal Discharge Periods		Value	ECA Limit
Influent Measurements	Average	7.70	6.0 to 9.5 at all times
Effluent Measurements	Average	7.35	
	Minimum	6.90	
	Maximum	7.72	

E. Coli			
Summer Discharge Period Only – May 1 to October 31		Value	ECA Limit
Monthly Geometric Mean Density	Average	40.83 CFU/100mL	< 200 CFU/100mL
	Minimum	7.00 CFU/100mL	< 200 CFU/100mL
	Maximum	62.00 CFU/100mL	< 200 CFU/100mL

Coniston Wastewater Treatment Plant

Influent Flow	
Design Capacity: 3,000 m ³ /day	
Average Daily Flow: 1,692 m ³ /day	

BOD₅		Value		ECA Limit
Annual Average Daily Loading	Influent	116.0	kg/day	< 35 kg/day
	Effluent	27.27	kg/day	
Monthly Effluent Concentration	Average	17.50	mg/L	< 20 mg/L
	Minimum	1.00	mg/L	
	Maximum	64.20	mg/L	
Plant Removal		88.71	kg/day	
		76.49	%	

TSS – Total Suspended Solids		Value		ECA Limit
Annual Average Daily Loading	Influent	111.9	kg/day	< 35 kg/day
	Effluent	22.79	kg/day	
Monthly Effluent Concentration	Average	15.79	mg/L	< 20 mg/L
	Minimum	4.30	mg/L	
	Maximum	33.00	mg/L	
Plant Removal		89.16	kg/day	
		79.64	%	

pH		Value		ECA Limit
Influent Measurements	Average	7.10		6.0 to 9.5 at all times
Effluent Measurements	Average	7.18		
	Minimum	6.90		
	Maximum	7.50		

E. Coli		Value		ECA Limit
Monthly Geometric Mean Density	Average	802	CFU/100mL	< 200 CFU/100mL
	Minimum	7	CFU/100mL	< 200 CFU/100mL
	Maximum	83,000	CFU/100mL	< 200 CFU/100mL

Dowling Wastewater Treatment Plant

Influent Flow	
Design Capacity: 3,200 m ³ /day	
Average Daily Flow: 1,825 m ³ /day	

CBOD₅		Value		ECA Limit
Annual Average Daily Loading	Influent	68.07	kg/day	< 80 kg/day
	Effluent	10.21	kg/day	
Monthly Effluent Concentration	Average	5.42	mg/L	< 25 mg/L
	Minimum	3.20	mg/L	
	Maximum	9.20	mg/L	
Plant Removal		57.86	kg/day	
		85.00	%	

TSS – Total Suspended Solids		Value		ECA Limit
Annual Average Daily Loading	Influent	79.81	kg/day	< 80 kg/day
	Effluent	9.47	kg/day	
Monthly Effluent Concentration	Average	5.28	mg/L	< 25 mg/L
	Minimum	3.60	mg/L	
	Maximum	7.20	mg/L	
Plant Removal		70.35	kg/day	
		87.14	%	

TP – Total Phosphorous		Value		ECA Limit
Annual Average Daily Loading	Influent	1.68	kg/day	< 3.2 kg/day
	Effluent	0.85	kg/day	
Monthly Effluent Concentration	Average	0.48	mg/L	< 1.0 mg/L
	Minimum	0.36	mg/L	
	Maximum	0.69	mg/L	
Plant Removal		0.83	kg/day	
		49.31	%	

pH		Value		ECA Limit
Influent Measurements	Average	6.77		6.0 to 9.5 at all times
Effluent Measurements	Average	6.77		
	Minimum	6.50		
	Maximum	7.20		

E. Coli		Value		ECA Limit
Monthly Geometric Mean Density	Average	24	CFU/100mL	< 200 CFU/100mL
	Minimum	3	CFU/100mL	< 200 CFU/100mL
	Maximum	89	CFU/100mL	< 200 CFU/100mL

Falconbridge Wastewater Treatment Plant

Influent Flow	
Design Capacity: 909 m ³ /day	
Average Daily Flow: 316 m ³ /day	

BOD₅		Value		ECA Limit
Annual Average Daily Loading	Influent	52.23	kg/day	< 46 kg/day
	Effluent	0.49	kg/day	
Monthly Effluent Concentration	Average	1.62	mg/L	< 15 mg/L
	Minimum	0.60	mg/L	
	Maximum	3.80	mg/L	
Plant Removal		51.74	kg/day	
		99.06	%	

TSS – Total Suspended Solids		Value		ECA Limit
Annual Average Daily Loading	Influent	4.65	kg/day	< 46 kg/day
	Effluent	0.91	kg/day	
Monthly Effluent Concentration	Average	2.92	mg/L	< 15 mg/L
	Minimum	2.10	mg/L	
	Maximum	4.00	mg/L	
Plant Removal		3.73	kg/day	
		80.36	%	

Levack Wastewater Treatment Plant

Influent Flow	
Design Capacity: 2,270 m ³ /day	
Average Daily Flow: 1,073 m ³ /day	

CBOD₅		Value	ECA Limit
Annual Average Daily Loading	Influent	113.4 kg/day	< 56.75 kg/day < 25 mg/L
	Effluent	3.18 kg/day	
Monthly Effluent Concentration	Average	3.04 mg/L	
	Minimum	1.30 mg/L	
	Maximum	4.40 mg/L	
Plant Removal		110.2 kg/day 97.19 %	

TSS – Total Suspended Solids		Value	ECA Limit
Annual Average Daily Loading	Influent	154.1 kg/day	< 56.75 kg/day < 25 mg/L
	Effluent	7.45 kg/day	
Monthly Effluent Concentration	Average	6.96 mg/L	
	Minimum	4.90 mg/L	
	Maximum	10.50 mg/L	
Plant Removal		146.6 kg/day 95.17 %	

TP – Total Phosphorous		Value	ECA Limit
Annual Average Daily Loading	Influent	3.88 kg/day	< 3.1 kg/day < 1.0 mg/L
	Effluent	0.49 kg/day	
Monthly Effluent Concentration	Average	0.46 mg/L	
	Minimum	0.40 mg/L	
	Maximum	0.57 mg/L	
Plant Removal		3.39 kg/day 87.33 %	

pH		Value	ECA Limit
Influent Measurements	Average	7.09	6.0 to 9.5 at all times
Effluent Measurements	Average	6.78	
	Minimum	6.60	
	Maximum	7.10	

E. Coli		Value	ECA Limit
Monthly Geometric Mean Density	Average	8 CFU/100mL	< 200 CFU/100mL
	Minimum	2 CFU/100mL	< 200 CFU/100mL
	Maximum	31 CFU/100mL	< 200 CFU/100mL

Lively Wastewater Treatment Plant

Influent Flow	
Design Capacity: 1,600 m ³ /day	
Average Daily Flow: 832 m ³ /day	

CBOD₅		Value	ECA Limit
Annual Average Daily Loading	Influent	48.11 kg/day	< 40 kg/day
	Effluent	2.73 kg/day	
Monthly Effluent Concentration	Average	4.66 mg/L	< 25 mg/L
	Minimum	0.60 mg/L	
	Maximum	27.00 mg/L	
Plant Removal		45.38 kg/day	
		94.10 %	

TSS – Total Suspended Solids		Value	ECA Limit
Annual Average Daily Loading	Influent	128.5 kg/day	< 40 kg/day
	Effluent	8.07 kg/day	
Monthly Effluent Concentration	Average	10.72 mg/L	< 25 mg/L
	Minimum	2.80 mg/L	
	Maximum	35.64 mg/L	
Plant Removal		120.4 kg/day	
		90.10 %	

TP – Total Phosphorous		Value	ECA Limit
Annual Average Daily Loading	Influent	5.14 kg/day	< 1.6 kg/day
	Effluent	0.53 kg/day	
Monthly Effluent Concentration	Average	0.73 mg/L	< 1.0 mg/L
	Minimum	0.38 mg/L	
	Maximum	2.48 mg/L	
Plant Removal		4.62 kg/day	
		86.22 %	

pH		Value	ECA Limit
Influent Measurements	Average	7.09	6.0 to 9.5 at all times
Effluent Measurements	Average	7.09	
	Minimum	6.90	
	Maximum	7.21	

E. Coli		Value	ECA Limit
Monthly Geometric Mean Density	Average	28 CFU/100mL	< 200 CFU/100mL
	Minimum	3 CFU/100mL	< 200 CFU/100mL
	Maximum	155 CFU/100mL	< 200 CFU/100mL

Sudbury Wastewater Treatment Plant

The Sudbury WWTP is subject to seasonal discharge limits for Total Phosphorous and is required to completely de-chlorinate the effluent discharged into the receiving stream, Junction Creek.

Influent Flow				
		Design Capacity:	79,625 m ³ /day	
		Average Daily Flow:	58,778 m ³ /day	

CBOD₅		Value		ECA Limit
Annual Average Daily Loading	Influent	6,388	kg/day	< 1990.6 kg/day
	Effluent	334.8	kg/day	
Monthly Effluent Concentration	Average	5.46	mg/L	< 25 mg/L
	Minimum	2.90	mg/L	
	Maximum	9.70	mg/L	
Plant Removal		6,054	kg/day	
		94.76	%	

TSS – Total Suspended Solids		Value		ECA Limit
Annual Average Daily Loading	Influent	9,678	kg/day	< 1990.6 kg/day
	Effluent	658.2	kg/day	
Monthly Effluent Concentration	Average	11.09	mg/L	< 25 mg/L
	Minimum	7.40	mg/L	
	Maximum	20.00	mg/L	
Plant Removal		9,020	kg/day	
		93.23	%	

TP – Total Phosphorous				
Seasonal Discharge – October 1 to May 31		Value		ECA Limit
Annual Average Daily Loading	Influent	153.1	kg/day	< 79.6 kg/day
	Effluent	26.37	kg/day	
Monthly Effluent Concentration	Average	0.42	mg/L	< 1.0 mg/L
	Minimum	0.22	mg/L	
	Maximum	0.50	mg/L	
Plant Removal		126.8	kg/day	
		82.57	%	
Seasonal Discharge – June 1 to September 30		Value		ECA Limit
Annual Average Daily Loading	Influent	116.0	kg/day	< 49.7 kg/day
	Effluent	16.96	kg/day	
Monthly Effluent Concentration	Average	0.30	mg/L	< 0.5 mg/L
	Minimum	0.20	mg/L	
	Maximum	0.49	mg/L	
Plant Removal		99.08	kg/day	
		85.37	%	

pH		Value		ECA Limit
Influent Measurements	Average	7.04		6.0 to 9.5 at all times
Effluent Measurements	Average	6.91		
	Minimum	6.70		
	Maximum	7.07		

E. Coli		Value		ECA Limit
Monthly Geometric Mean Density	Average	47	CFU/100mL	< 200 CFU/100mL
	Minimum	2	CFU/100mL	< 200 CFU/100mL
	Maximum	377	CFU/100mL	< 200 CFU/100mL

Chlorine Residual		Value		WSER Limit
Annual Average Daily Loading	Effluent	0.11	kg/day	< 0.02 mg/L
Monthly Effluent Concentration	Average	0.00	mg/L	

Valley East Wastewater Treatment Plant

Influent Flow	
Design Capacity: 11,365 m ³ /day	
Average Daily Flow: 5,368 m ³ /day	

CBOD₅		Value	ECA Limit
Annual Average Daily Loading	Influent	612.7 kg/day	< 284 kg/day < 25 mg/L
	Effluent	31.81 kg/day	
Monthly Effluent Concentration	Average	5.71 mg/L	
	Minimum	2.70 mg/L	
	Maximum	9.30 mg/L	
Plant Removal		580.9 kg/day	
		94.51 %	

TSS – Total Suspended Solids		Value	ECA Limit
Annual Average Daily Loading	Influent	874.3 kg/day	< 284 kg/day < 25 mg/L
	Effluent	43.20 kg/day	
Monthly Effluent Concentration	Average	7.88 mg/L	
	Minimum	5.50 mg/L	
	Maximum	13.20 mg/L	
Plant Removal		831.1 kg/day	
		95.15 %	

TP – Total Phosphorous		Value	ECA Limit
Annual Average Daily Loading	Influent	15.73 kg/day	< 11.4 kg/day < 1.0 mg/L
	Effluent	2.84 kg/day	
Monthly Effluent Concentration	Average	0.54 mg/L	
	Minimum	0.39 mg/L	
	Maximum	0.81 mg/L	
Plant Removal		12.89 kg/day	
		81.94 %	

pH		Value	ECA Limit
Influent Measurements	Average	7.47	6.0 to 9.5 at all times
Effluent Measurements	Average	7.25	
	Minimum	7.00	
	Maximum	7.40	

E. Coli		Value	ECA Limit
Monthly Geometric Mean Density	Average	33 CFU/100mL	< 200 CFU/100mL
	Minimum	4.18 CFU/100mL	< 200 CFU/100mL
	Maximum	104 CFU/100mL	< 200 CFU/100mL

Wahnapiatae Lagoons

The Wahnapiatae Lagoons are subject to seasonal discharge requirements. The Fall discharge period is defined as any discharge with a minimum duration of 14 days starting not before November 1st and not after December 15th. The Spring discharge period is defined as any discharge with a minimum duration of 14 days starting not before March 15th and not after April 30th.

Due to the limited sampling performed at the Wahnapiatae Lagoons, plant removal values are calculated using the previous available raw (influent) sample when one is not present in the same month as an effluent sample.

Influent Flow	
Design Capacity:	1,246 m ³ /day
Average Daily Flow:	775 m ³ /day

CBOD ₅		Value		ECA Limit
Seasonal Discharge – Fall				
Annual Average Daily Loading	Influent	24.75	kg/day	< 30 mg/L
	Effluent	1.20	kg/day	
Monthly Effluent Concentration	Average	1.63	mg/L	
	Minimum	1.10	mg/L	
	Maximum	2.50	mg/L	
Plant Removal		23.55	kg/day	
		92.36	%	
Seasonal Discharge – Spring		Value		ECA Limit
Annual Average Daily Loading	Influent	27.02	kg/day	< 30 mg/L
	Effluent	2.10	kg/day	
Monthly Effluent Concentration	Average	2.95	mg/L	
	Minimum	1.67	mg/L	
	Maximum	3.70	mg/L	
Plant Removal		24.92	kg/day	
		92.45	%	

TSS – Total Suspended Solids		Value		ECA Limit
Seasonal Discharge – Fall				
Annual Average Daily Loading	Influent	978.3	kg/day	< 40 mg/L
	Effluent	3.04	kg/day	
Monthly Effluent Concentration	Average	4.48	mg/L	
	Minimum	1.20	mg/L	
	Maximum	6.70	mg/L	
Plant Removal		975.3	kg/day	
		97.92	%	
Seasonal Discharge – Spring		Value		ECA Limit
Annual Average Daily Loading	Influent	305.2	kg/day	< 40 mg/L
	Effluent	6.05	kg/day	
Monthly Effluent Concentration	Average	9.93	mg/L	
	Minimum	1.60	mg/L	
	Maximum	33.15	mg/L	
Plant Removal		299.1	kg/day	
		97.60	%	

pH		Value		ECA Limit
Effluent Measurements	Average	7.25		6.0 to 9.5 at all times
	Minimum	6.97		
	Maximum	7.97		

Walden Wastewater Treatment Plant

Influent Flow	
Design Capacity: 4,500 m ³ /day	
Average Daily Flow: 2,621 m ³ /day	

CBOD₅		Value	ECA Limit
Annual Average Daily Loading	Influent	204.4 kg/day	< 112.5 kg/day
	Effluent	5.91 kg/day	
Monthly Effluent Concentration	Average	2.15 mg/L	< 25 mg/L
	Minimum	0.65 mg/L	
	Maximum	6.80 mg/L	
Plant Removal		198.5 kg/day	
		97.29 %	

TSS – Total Suspended Solids		Value	ECA Limit
Annual Average Daily Loading	Influent	184.7 kg/day	< 112.5 kg/day
	Effluent	18.83 kg/day	
Monthly Effluent Concentration	Average	7.31 mg/L	< 25 mg/L
	Minimum	4.70 mg/L	
	Maximum	11.50 mg/L	
Plant Removal		165.9 kg/day	
		88.62 %	

TP – Total Phosphorous		Value	ECA Limit
Annual Average Daily Loading	Influent	7.11 kg/day	< 4.5 kg/day
	Effluent	0.90 kg/day	
Monthly Effluent Concentration	Average	0.34 mg/L	< 1.0 mg/L
	Minimum	0.23 mg/L	
	Maximum	0.59 mg/L	
Plant Removal		6.22 kg/day	
		87.22 %	

pH		Value	ECA Limit
Influent Measurements	Average	7.79	6.0 to 9.5 at all times
Effluent Measurements	Average	6.75	
	Minimum	6.40	
	Maximum	7.00	

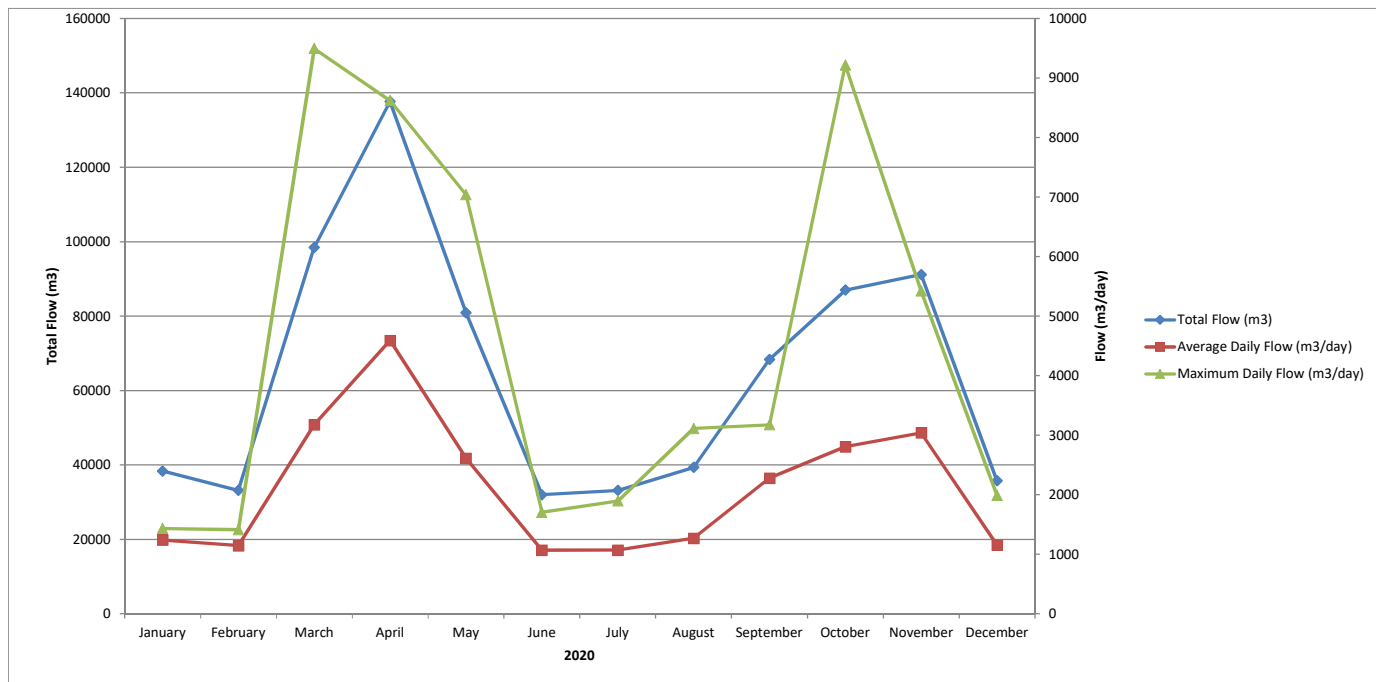
E. Coli		Value	ECA Limit
Monthly Geometric Mean Density	Average	7 CFU/100mL	< 200 CFU/100mL
	Minimum	0.4 CFU/100mL	< 200 CFU/100mL
	Maximum	48 CFU/100mL	< 200 CFU/100mL

8. Individual Plant Annual Data Reports



2020 Azilda Wastewater Treatment Plant Performance

Month	Flows			BOD ₅		CBOD				Total Suspended Solids				Total Phosphorus				Total Ammonia				Un-ionized		TKN		Nitrite	Nitrate	pH		Alkalinity		Sludge			Chlorine		E.Coli
	Total	Avg Day	Max Day	Raw	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Ammonia	Raw	Effluent	Effluent	Effluent	Raw	Effluent	Raw	Effluent	Total m ³	Conc.	Total	Total	Residual	Geomean		
	m ³	m ³ /d	m ³ /d	mg/L	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	µg/L	mg/L	mg/L	mg/L	mg/L	Raw	Effluent	mg/L	mg/L	Hauled	%	m ³	Kg	mg/L	# Col./100ml		
January	38377	1238	1433	174	140	3.6	4.46	97.4%	158	9.2	11.40	94.2%	3.2	0.44	0.54	86.3%	26.10	1.80	2.23	93.1%	1.80	31.7	2.45	1.04	23.9	7.6	6.8	292.0	91	240	2.7	6.5	210.0	0.63	13		
February	33172	1144	1411	150	140	3.4	3.89	97.6%	143	9.7	11.10	93.2%	4.4	0.38	0.43	91.4%	31.93	6.65	7.61	79.2%	7.92	38.1	7.05	0.80	21.0	7.6	6.8	295.0	108	160	2.2	3.5	153.9	0.89	1		
March	98500	3177	9496	114	90	3.6	11.44	96.0%	109	12.8	40.67	88.3%	2.9	0.48	1.53	83.6%	17.55	6.10	19.38	65.2%	8.18	19.8	6.23	0.44	11.6	7.6	6.9	263.0	151	160	3.3	5.3	187.1	0.67	22		
April	137731	4591	8622	72	56	4.1	18.82	92.7%	71	15.7	72.08	77.9%	2.0	0.44	2.02	78.0%	9.75	3.19	14.65	67.3%	7.54	12.9	4.74	0.29	7.8	7.7	7.1	283.0	213	200	5.6	11.2	248.9	0.85	79		
May	80887	2609	7040	118	101	1.9	4.96	98.1%	99	8.4	21.92	91.5%	2.5	0.27	0.70	89.2%	16.25	0.93	2.43	94.3%	1.45	19.4	2.03	0.39	13.4	7.5	6.9	301.3	186	280	2.8	7.8	184.8	0.73	16		
June	32018	1067	1703	212	174	1.5	1.60	99.1%	174	7.0	7.47	96.0%	4.3	0.21	0.22	95.1%	29.50	0.77	0.82	97.4%	1.29	34.0	0.70	5.27	21.1	7.6	6.7	350.9	109	240	2.6	6.2	141.0	0.90	8		
July	33169	1070	1895	184	121	2.2	2.35	98.2%	117	7.3	7.81	93.8%	4.4	0.17	0.18	96.1%	31.66	0.13	0.14	99.6%	0.39	37.8	0.96	0.13	28.1	7.9	6.9	288.1	70	0	0.0	165.4	0.63	5			
August	39367	1270	3113	218	149	1.5	1.90	99.0%	127	6.6	8.38	94.8%	3.8	0.25	0.32	93.4%	31.95	0.09	0.11	99.7%	0.25	32.0	0.20	0.05	26.8	7.7	6.9	266.9	71	240	0.0	173.2	0.70	5			
September	68358	2279	3174	86	69	3.0	6.84	95.7%	90	4.3	9.80	95.2%	2.4	0.13	0.30	94.6%	12.21	0.37	0.84	97.0%	3.05	17.0	0.28	0.10	11.7	7.8	7.4	284.0	145	320	3.6	11.5	230.9	0.65	10		
October	86995	2806	9221	59	46	2.1	5.89	95.4%	65	3.5	9.82	94.6%	2.0	0.18	0.51	91.0%	16.65	0.02	0.06	99.9%	15.04	19.0	0.30	0.05	14.2	7.9	7.2	304.8	187	320	2.9	9.3	265.6	0.58	64		
November	91198	3040	5421	57	48	2.3	6.99	95.2%	45	6.1	18.54	86.4%	1.7	0.21	0.64	87.6%	9.44	0.04	0.12	99.6%	0.99	11.8	0.78	0.05	10.9	7.6	7.2	300.4	209	280	2.5	7.0	253.8	0.70	38		
December	35755	1153	1988	132	139	1.5	1.73	98.9%	102	5.9	6.80	94.2%	3.6	0.20	0.23	94.4%	23.82	0.08	0.09	99.7%	0.22	29.1	1.06	0.05	18.26	7.4	7.2	276.4	116	360	2.1	7.6	174.9	0.70	6		
Total	775527							96.8%				90.6%				88.9%				89.2%									2800		75.9						
Average		2125		131	106	2.56	5.91	96.9%	108	8.04	18.82	91.7%	3.10	0.28	0.64	90.1%	21.40	1.68	4.0	91.0%	4.0	25.20	2.23	0.72	17.39	7.66	7.00	292	138		3.03			0.72	22		



Plant Type: Extended Aeration

Design Capacity: 3300 m³/day

Population Served: 4,105

Compliance Parameters:

	Concentration	Loading
CBOD	10 mg/L	33 kg/day
TSS	10 mg/L	33 kg/day
Total Phosphorus	0.6 mg/L	2.0 kg/day
Total Ammonia (as N)	5 mg/L	16.5 kg/day
pH	6.0 to 9.5 inclusive, at all times	
E.Coli	200 col/100 mL	

} *Monthly Avg (Concentration)
*Annual Avg (Loading)
Monthly Geometric Mean



2020 Azilda Wastewater Treatment Plant Waste Sludge Analysis

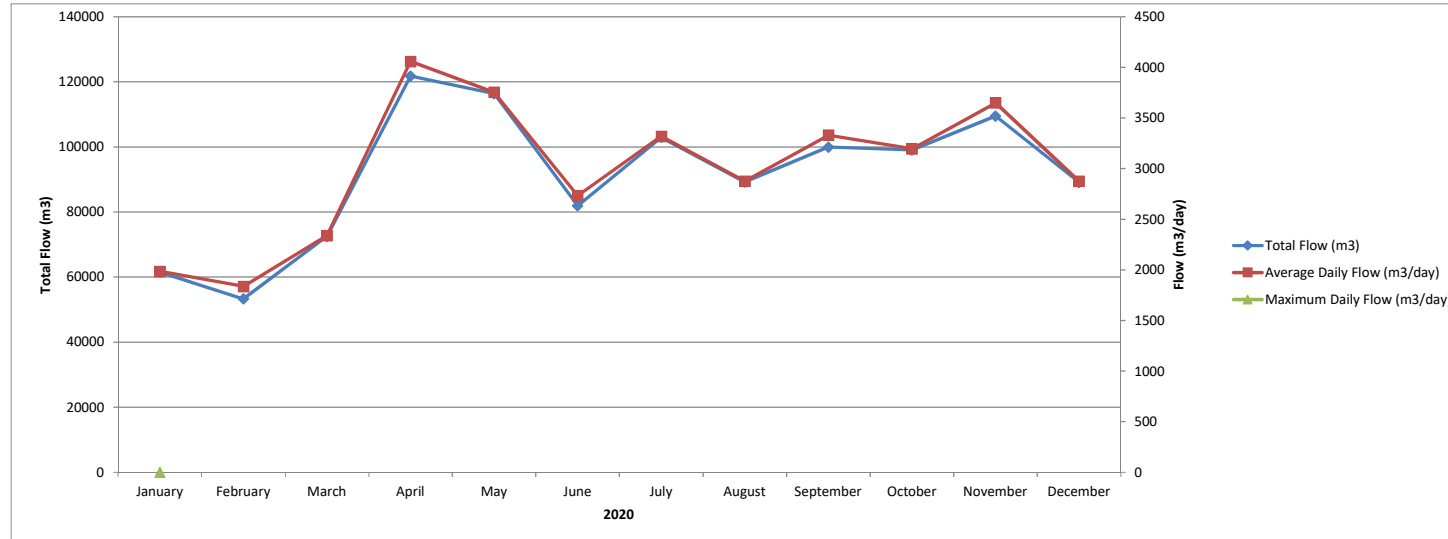
Parameter (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December	Average
Ammonia (as N)	165	116	195	151	115	162	138	125	187	118	102	180	146.17
Nitrate (as N)	0.05	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2.7	0.5	0.5	0.5	0.65
Nitrite (as N)	1.94	0.5	0.5	1.8	0.5	4.7	0.5	0.5	0.5	1.7	0.5	0.5	1.18
Potassium	90	50	87	47	48	40	30	34	52	38	36	35	48.92
TKN	1920	1320	2550	1580	1840	1740	1200	1440	1810	1000	1420	2520	1695
Total Phosphorus	568	425	725	446	457	527	434	606	630	396	480	620	526
Total Solids	28100	21100	37400	31000	29500	33400	20300	26500	28900	18900	22700	22800	26717
Arsenic	0.13	0.04	0.15	0.06	0.10	0.07	0.04	0.05	0.08	0.04	0.05	0.07	0.0733
Cadmium	0.0186	0.0094	0.0520	0.0102	0.0106	0.011	0.0095	0.0108	0.0151	0.0058	0.0053	0.0079	0.0139
Chromium	0.34	0.14	0.53	0.19	0.19	0.19	0.14	0.15	0.26	0.10	0.10	0.14	0.2058
Cobalt	0.177	0.055	0.183	0.063	0.069	0.091	0.095	0.167	0.258	0.102	0.108	0.138	0.1255
Copper	11	4.5	10.5	5.3	4.9	4.4	3.6	4.8	4.2	3.0	2.8	4.1	5.26
Lead	0.193	0.108	0.301	0.102	0.098	0.098	0.080	0.122	0.161	0.080	0.063	0.090	0.1247
Mercury	0.002	0.002	0.006	0.001	0.003	0.001	0.001	0.002	0.002	0.001	0.001	0.001	0.0019
Molybdenum	0.090	0.040	0.140	0.004	0.04	0.05	0.04	0.04	0.06	0.04	0.03	0.05	0.0520
Nickel	1.08	0.330	1.16	1.10	1.03	0.63	0.37	0.01	0.75	0.42	0.52	0.65	0.671
Selenium	0.080	0.040	0.090	0.044	0.057	0.047	0.030	0.011	0.064	0.036	0.011	0.056	0.0472
Zinc	0.10	3.61	9.70	4.20	4.71	4.55	3.65	6.05	4.20	3.40	2.90	3.70	4.23
Sample Date	Jan.8/20	Feb.12/20	Mar.11/20	Apr.1/20	May.6/20	Jun.3/20	July.2/20	Aug.26/20	Sep.3/20	Oct.7/20	Nov.4/20	Dec.2/20	#DIV/0!

Work order



2020 Capreol Wastewater Treatment Lagoon Performance

Month	Flows		BOD5						Total Suspended Solids						Total Phosphorus						Total Ammonia						Un-ionized	TKN	
	Total	Avg Day	Raw	Effluent	Loading	Raw Loading	Removed	Plant	Raw	Effluent	Loading	Raw Loading	Removed	Plant	Raw	Effluent	Loading	Raw Loading	Removed	Plant	Raw	Effluent	Loading	Raw Loading	Removed	Plant	Ammonia	Raw	Effluent
	m ³	m ³ /d	mg/L	mg/L	kg/d	kg/day	kg/day	Efficiency	mg/L	mg/L	kg/d	kg/day	kg/day	Efficiency	mg/L	mg/L	kg/d	kg/day	kg/day	Efficiency	mg/L	mg/L	kg/d	kg/day	kg/day	Efficiency	µg/L	mg/L	mg/L
January	61563	1986	87	40.0	79.44	173	93	54.0%	83	22.7	45.08	165	120	92.7%	2.6	2.37	4.71	5.08	0.38	7.4%	15.90	15.80	31.38	31.58	0.20	0.6%	15.69	17.5	14.6
February	53317	1839	96	37.8	69.50	176	107	60.6%	84	24.0	44.12	154	110	71.4%	2.3	2.55	4.69	4.30	-0.39	-9.0%	13.20	16.90	31.07	24.27	-6.80	-28.0%	13.33	16.2	18.2
March	72517	2339	89	40.3	94.27	208	114	54.7%	186	22.7	53.10	435	382	87.8%	3.0	2.58	6.04	7.02	0.98	14.0%	13.20	18.50	43.28	30.88	-12.40	-40.2%	17.92	18.8	18.1
April	121794	4060	83	46.0	186.75	337	150	44.6%	66	19.0	77.14	268	191	71.2%	1.6	2.12	8.61	6.50	-2.11	-32.5%	14.50	8.10	32.88	58.87	25.98	44.1%	5.37	13.5	13.7
May	116407	3755	93	24.0	90.12	349	259	74.2%	43	32.7	122.79	161	39	24.0%	1.5	0.91	3.42	5.63	2.22	39.3%	5.89	2.60	9.76	22.12	12.35	55.9%	5.41	11.4	8.2
June	81944	2731	80	22.0	60.09	219	158	72.5%	62	42.0	114.72	169	55	32.3%	1.7	1.42	3.88	4.64	0.76	16.5%	9.29	2.33	6.36	25.38	19.01	74.9%	10.37	10.5	7.0
July	102948	3321	110	21.5	71.40	365	294	80.5%	154	16.0	53.13	511	458	89.6%	2.6	1.37	4.55	8.63	4.08	47.3%	9.66	4.37	14.51	32.08	17.57	54.8%	27.00	14.1	6.9
August	89226	2878	170	30.0	86.35	489	403	82.4%	48	44.0	126.64	138	12	8.3%	1.9	1.54	4.43	5.53	1.09	19.8%	12.10	2.96	8.52	34.83	26.31	75.5%	9.77	16.5	8.3
September	99927	3331	230	17.0	56.63	766	709	92.6%	28	15.0	47.95	90	42	46.4%	1.2	1.24	3.96	3.84	-0.13	-3.3%	7.50	5.20	16.62	23.98	7.35	30.7%	16.97	9.7	8.3
October	99099	3197	63	15.0	47.95	230	182	79.1%	46	13.3	48.55	168	119	71.1%	1.3	1.01	3.69	4.75	1.06	22.3%	9.16	6.75	24.64	33.44	8.80	26.3%	22.28	12.2	9.5
November	109510	3650	86	12.0	43.80	314	270	86.0%	47	12.0	43.80	172	128	74.5%	1.6	0.87	3.19	5.91	2.73	46.1%	8.36	4.29	15.66	30.52	14.86	48.7%	15.88	12.0	6.7
December	89151	2876	69	18.0	51.77	198	147	73.9%	28	17.5	50.33	81	30	37.5%	1.4	0.99	2.85	4.03	1.18	29.3%	6.98	8.43	24.24	20.07	-4.17	-20.8%	16.41	11.4	8.7
Total	1097403					3825	2887	75.5%				2512	1685	67.1%				66	12	18.0%				368	109	29.6%			
Average		3007	105	26.97	78.17	319	241	71.3%	73	23.41	68.95	209	140	58.9%	1.90	1.58	4.50	5.49	0.99	16.4%	10.48	8.02	21.58	30.67	9.09	26.9%	14.70	13.7	10.7



Lagoon Type: Exfiltration

Design Capacity: 5000 m³/day

Population Served: 3,408

Compliance Parameters:

	Concentration	
BOD ₅	30 mg/L	Annual Avg
TSS	40 mg/L	Annual Avg
Total Phosphorus	1.38 mg/L	Annual Avg

Note: Effluent = North to South Cell Effluent
Annual Average of T.P. measured at the overflow culvert located between the north and south cell.

2020 Capreol Lagoon Groundwater Monitoring Wells

Parameter (mg/L)	OW #2		OW #3		OW #5		OW #8		OW #12a		OW #15		OW #16		Average
	May/July	*Nov	May/July	*Nov	May/July	*Nov	May/July	*Nov	May/July	*Nov	May/July	*Nov	May/July	*Nov	
E.Coli (CFU/100 mL)															
Alkalinity	77	88	145	161	14	15	81	43	72	125	10	27	19	16	63.7857
Ammonia (as N)	3.65	3.37	15.10	16.50	0.03	0.01	0.61	2.05	0.02	0.95	0.01	0.01	0.01	0.01	3.0236
Nitrate (as N)	0.05	0.05	0.05	0.05	0.05	0.05	4.68	0.09	0.13	0.05	0.05	0.05	0.05	0.05	0.3893
Nitrite (as N)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.0500
BOD ₅	0.7	1.3	1.6	3.2	0.5	1.1	1.6	5.4	0.5	2.3	0.6	1.2	0.5	1.2	1.5500
D.O.C.	3.6	4.8	5.1	5.2	1.5	1.5	2.5	4.1	3.1	6.4	1.4	2.1	1.0	1.0	3.0929
Hardness (as CaCO ₃)	61.2	51.0	85.4	80.5	4.0	9.8	169.0	20.0	55.5	99.1	7.2	22.7	4.7	9.3	48.5286
Aluminum	0.001	0.028	0.001	0.0	0.015	0.086	0.004	0.074	0.001	0.015	0.002	0.040	0.002	0.0720	0.0247
Antimony	0.0005	0.0017	0.0005	0.0015	0.0005	0.0005	0.0005	0.0005	0.0005	0.0008	0.0005	0.0005	0.0005	0.0005	0.0007
Arsenic	0.001	0.005	0.001	0.007	0.001	0.001	0.001	0.003	0.001	0.008	0.001	0.001	0.001	0.0010	0.0024
Barium	0.018	0.032	0.048	0.065	0.001	0.006	0.012	0.005	0.017	0.039	0.002	0.009	0.001	0.0040	0.0185
Beryllium	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
Cadmium	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Calcium	16.70	14.50	23.20	22.40	0.98	2.57	0.05	5.57	15.70	29.70	1.81	5.79	1.19	2.47	10.1879
Chromium	0.001	0.002	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.0010	0.0012
Cobalt	0.0010	0.0009	0.0059	0.0046	0.0001	0.0001	0.0015	0.0003	0.0003	0.0031	0.0001	0.0001	0.0001	0.0001	0.0013
Copper	0.001	0.003	0.002	0.005	0.002	0.002	0.005	0.008	0.004	0.004	0.001	0.002	0.001	0.001	0.0029
Iron	0.11	4.50	0.09	13.20	0.02	0.07	0.07	0.10	0.02	0.47	0.02	0.04	0.02	0.03	1.3400
Lead	0.0001	0.0002	0.0001	0.0005	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Magnesium	4.470	4.100	6.670	5.970	0.375	0.829	8.600	1.480	3.950	6.050	0.643	1.990	0.422	0.773	3.3087
Manganese	0.184	0.300	0.950	0.850	0.001	0.004	0.096	0.010	0.006	4.29	0.001	0.003	0.001	0.001	0.4784
Mercury	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Molybdenum	0.003	0.006	0.002	0.010	0.001	0.001	0.001	0.002	0.001	0.005	0.001	0.001	0.001	0.0010	0.0026
Nickel	0.002	0.002	0.004	0.004	0.001	0.003	0.007	0.003	0.001	0.005	0.001	0.001	0.001	0.0010	0.0026
Potassium	3.6	4.8	5.1	5.8	0.4	0.7	2.2	5.2	3.0	4.4	0.4	1.0	0.5	0.6	2.6929
Selenium	0.0003	0.0002	0.0003	0.0006	0.0002	0.0002	0.0005	0.0003	0.0002	0.0006	0.0002	0.0002	0.0002	0.0002	0.0003
Silver	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Sodium	41.0	47.0	49.0	48.0	4.6	6.3	43.0	51.0	42.0	49.0	1.6	3.3	3.2	3.3	28.0214
Tellurium	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.0010	0.0010
Tin	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.0010	0.0010
Zinc	0.001	0.001	0.002	0.011	0.001	0.008	3.130	0.001	0.001	0.001	0.001	0.004	0.001	0.0030	0.2261
pH	6.76		7.13		7.05		7.00		7.29		6.66		7.20		3.5064
pH (15 deg. C)		6.62		6.61		6.68		6.29		6.45		6.10		6.71	
T.K.N.	4.3	4.1	16.2	14.7	0.8	0.7	1.9	2.9	1.7	1.3	1.1	0.7	0.4	1.4	3.7286
Total Phosphorus	0.480	0.890	0.299	0.241	0.009	0.023	0.110	0.800	0.051	0.215	0.039	0.052	0.018	0.022	0.2321

Work Orders 400693
May.20/20

414565
*Oct.20/20

416965
Nov.12/20

2020 Vermillion River Sampling

Parameter (mg/L)	May.20/20				Annual Average		Monthly Phosphorus Sampling		
	Upstream	Downstream	Upstream	Downstream	Upstream	Downstream	Sample Date	Upstream	Downstream
Alkalinity	12	13	17	19	14.5	16.0	May.14/20	0.045	0.006
Ammonia (as N)	0.01	0.01	0.01	0.01	0.0	0.0	Jun.9/20	0.003	0.003
Chloride	0.7	0.7	0.5	0.9	0.6	0.8	July.2/20	0.002	0.008
Sulphate	5.4	5.4	4.8	4.8	5.1	5.1	Aug.19/20	0.020	0.002
BOD ₅	0.9	0.8	1.6	1.7	1.3	1.3	Sep.16/20	0.046	0.014
Aluminum	0.001	0.033	0.034	0.035	0.018	0.034	Oct.8/20	0.014	0.002
Antimony	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	Nov.10/20	0.007	0.010
Arsenic	0.001	0.001	0.001	0.001	0.001	0.001	Dec.3/20	0.01500	0.01500
Barium	0.001	0.003	0.006	0.006	0.004	0.005			
Beryllium	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005			
Cadmium	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001			
Calcium	2.91	2.93	4.60	4.53	3.76	3.73			
Chromium	0.001	0.001	0.001	0.001	0.001	0.001			
Cobalt	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001			
Copper	0.001	0.002	0.001	0.001	0.001	0.002	Annual Average	0.019	0.008
Iron	0.03	0.03	0.20	0.19	0.12	0.11	Compliance Parameters: Downstream Total Phosphorus, 0.03 mg/L Annual average. Annual average of CBOD5 and TKN can not exceed 15% of the Upstream annual average value.		
Lead	0.0001	0.0001	0.0001	0.0001	0.000	0.000			
Magnesium	0.809	0.785	1.130	1.150	0.970	0.968			
Manganese	0.003	0.003	0.007	0.008	0.005	0.006			
Mercury	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001			
Molybdenum	0.001	0.001	0.001	0.001	0.001	0.001			
Nickel	0.001	0.002	0.002	0.002	0.002	0.002			
Potassium	0.1	0.4	0.500	0.500	0.300	0.450			
Selenium	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002			
Silver	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001			
Sodium	1.0	1.0	1.00	1.20	1.00	1.10			
Tellurium	0.001	0.001	0.001	0.001	0.001	0.001			
Tin	0.001	0.001	0.001	0.001	0.001	0.001			
Zinc	0.001	0.001	0.001	0.001	0.001	0.001			
pH	7.04	7.07	n/a	n/a					
pH (15 deg. C)	n/a	n/a	6.30	5.91					
T.D.S.	20	20	40	30	30	25			
T.K.N.	1.2	1.6	1.7	1.4	1.5	1.5			
Total Phosphorus	0.048	0.056	0.002	0.002	0.025	0.029			

2020 Capreol Lagoon Ground/Surface Water Levels

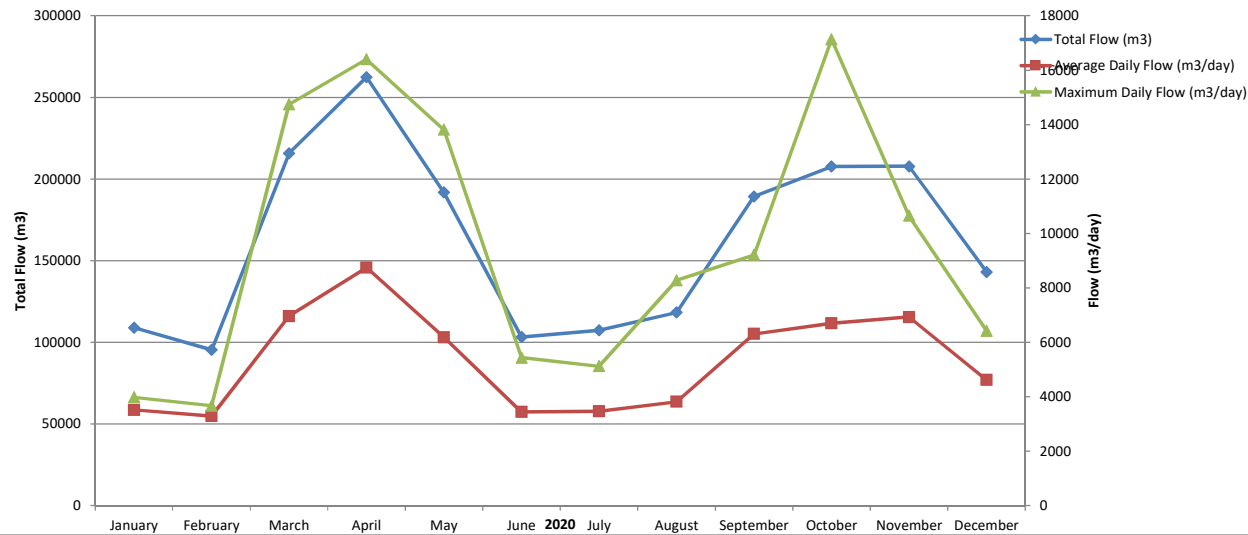
* Depth in metres from top of casing to water

Well I.D.	Water Level (m)*	Measure Date	Water Level (m)*	Measure Date
OW#1	2.8	May.21/20	3.5	Oct.22/20
OW#2	2.6	May.21/20	3.0	Oct.20/20
OW#3	2.3	May.21/20	3.4	Oct.20/20
OW#5	Dry	May.21/20	6.5	Oct.20/20
OW#7	Depth beyond tape	May.21/20	Dry	Oct.22/20
OW#8	4.0	May.21/20	5.0	Oct.20/20
OW#10a	6.3	May.21/20	6.4	Oct.22/20
OW#10b	5.6	May.21/20	6.1	Oct.22/20
OW#11	5.2	May.21/20	5.4	Oct.22/20
OW#12		May.21/20		
OW#12a	1.6	May.21/20	Out of Service	
OW#13a	4.5	May.21/20	5.3	Oct.22/20
OW#13b	4.7	May.21/20	5.4	Oct.22/20
OW#14	Dry	May.21/20	2.2	Oct.22/20
OW#15	8.7	May.21/20	6.9	Oct.20/20
OW#16	7.8	May.21/20	5.8	Oct.20/20
OW#21	Dry	May.21/20	3.3	Oct.22/20
OW#22	5.1	May.21/20	Dry	Oct.22/20
OW#23	6.7	May.21/20	5.8	Oct.22/20
OW#24	Dry	May.21/20	2.9	Oct.22/20
OW#25	Dry	May.21/20	4.4	Oct.22/20
OW#26	6.0	May.21/20	5.7	Oct.22/20
OW#28	4.8	May.21/20	2.1	Oct.22/20
OW#30	2.3	May.21/20	2.4	Oct.22/20
River @ Bridge			0.8	Oct.22/20



2020 Chelmsford Wastewater Treatment Plant Performance

Month	Flows			BOD ₅	CBOD					Total Suspended Solids				Total Phosphorus				Total Ammonia				Un-ionized Ammonia	TKN		Nitrite	Nitrate	pH		Alkalinity		Sludge			E.Coli	
	Total	Avg Day	Max Day		Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Raw		Effluent	Effluent			Effluent	Raw	Effluent	Raw	Effluent	Total m ³	Conc.		Total
	m ³	m ³ /d	m ³ /d		mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	µg/L		mg/L	mg/L			mg/L	mg/L	Raw	Effluent	mg/L	mg/L	Hauled		%
January	108944	3514	3980	180	110	3.6	12.65	96.7%	216	6.1	21.44	97.2%	5.4	0.22	0.77	95.9%	28.90	9.58	33.67	66.9%	13.82	33.90	9.80	0.62	6.8	7.9	6.9	294	134	1160	2.9	33.6	15830		
February	95371	3289	3670	154	140	6.3	20.72	95.5%	167	5.8	19.07	96.5%	4.6	0.40	1.32	91.3%	30.50	16.90	55.58	44.6%	41.21	33.50	17.25	0.27	2.3	7.8	7.2	276	168	900	1.3	11.7	34569		
March	215779	6961	14740	232	225	6.3	43.85	97.2%	179	8.0	55.68	95.5%	3.5	0.22	1.53	93.7%	29.50	14.65	101.97	50.3%	76.43	32.90	14.35	0.45	1.9	7.9	7.5	248	143	1040	2.9	30.2	17516		
April	262416	8747	16400	110	4.2	4.2	36.74	0.0%	297	7.4	64.73	97.5%	2.1	0.19	1.66	91.0%	5.80	4.16	36.39	28.3%	41.11	8.10	5.23	0.34	3.9	7.8	7.7	251	215	1010	4.0	40.4	1393		
May	191701	6184	13810	110	57	2.9	17.93	94.9%	197	5.8	35.87	97.1%	2.1	0.20	1.24	90.5%	8.10	1.95	12.06	75.9%	25.49	10.70	3.55	0.42	8.0	7.8	7.6	251	158	1280	2.2	28.2	38		
June	103143	3438	5430	120	76	2.2	7.56	97.1%	323	4.4	15.13	98.6%	3.3	0.22	0.76	93.3%	15.70	0.34	1.17	97.8%	3.77	19.40	1.00	0.57	14.7	7.7	7.4	255	118	1240	1.7	21.1	7		
July	107316	3462	5120	170	150	2.0	6.92	98.7%	224	4.1	14.19	98.2%	2.5	0.20	0.69	92.0%	35.30	0.59	2.04	98.3%	4.62	43.30	2.33	0.69	17.3	7.6	7.2	284	98	1120	1.5	16.8	23		
August	118238	3814	8280	170	160	6.3	24.03	96.1%	231	6.7	25.55	97.1%	4.8	0.33	1.26	93.1%	25.40	7.30	27.84	71.3%	49.27	29.90	7.25	1.64	13.1	7.4	7.0	272	101	1000	1.6	16.0	62		
September	189332	6311	9210	110	96	2.3	14.52	97.6%	108	4.7	29.66	95.6%	2.2	0.19	1.20	91.4%	10.80	0.38	2.40	96.5%	6.55	13.30	1.10	0.52	10.0	7.5	7.2	281	164	1040	2.4	25.0	58		
October	207588	6696	17130	51	57	2.5	16.74	95.6%	288	6.7	44.87	97.7%	3.0	0.27	1.81	91.0%	15.00	0.19	1.27	98.7%	1.75	20.60	1.50	0.78	11.8	7.3	7.2	273	141	880	1.4	12.3	57		
November	207756	6925	10650	110	90	2.9	20.08	96.8%	161	6.2	42.94	96.1%	2.0	0.17	1.18	91.5%	8.76	0.16	1.11	98.2%	2.06	16.00	1.30	0.38	7.0	7.9	7.7	273	198	960	1.7	16.3	115		
December	143070	4615	6420	123	111	5.2	24.00	95.3%	183	8.2	37.84	95.5%	2.9	0.16	0.74	94.5%	19.20	2.57	11.86	86.6%	31.00	24.65	4.57	0.90	9.0	7.8	7.6	278	165	680	1.5	10.2	1727		
Total	1950654							96.1%				97.0%				92.5%				73.9%															
Average		5344				106	3.89	20.48	88.5%	215	6.18	33.91	96.9%	3.20	0.23	1.18	92.4%	19.41	4.90	23.9	76.1%	24.8	23.85	5.77	0.63	8.82	7.70	7.35	270	150		2.09		5950	
Summer							3.03	14.62	96.8%		5.40	27.55	97.5%		0.24	1.16	91.8%	18.38	1.79	7.80	90.5%														
Winter						4.75	26.34	95.6%		6.95	40.28	96.6%		0.23	1.20	93.1%	20.44	8.00	40.10	60.4%															



Plant Type: Extended Aeration w/modified activated sludge for denitrification

Design Capacity: 7100 m³/day

Population Served: 7,147 (Plant & Lagoon)

Compliance Parameters:

Summer - May 1 to October 31

	Conc.	Loading	
CBOD	7.0 mg/L	49.7 kg/day	Seasonal Average
TSS	7.0 mg/L	49.7 kg/day	Seasonal Average
Total Phosphorus	0.3 mg/L	2.13 kg/day	Monthly Average
Total Ammonia as N	2.0 mg/L	14.2 kg/day	Seasonal Average
E.Coli	200 col/100 mL		Monthly Geometric Mean
UV Disinfection turned on.			

Winter - November 1 to April 30

	Conc.	Loading	
CBOD	15.0 mg/L	106.5 kg/day	Seasonal Average
TSS	15.0 mg/L	106.5 kg/day	Seasonal Average
Total Phosphorus	0.5 mg/L	3.55 kg/day	Monthly Average
Total Ammonia as N	4.0 mg/L	28.4 kg/day	Seasonal Average
UV Disinfection turned off.			



2020 Chelmsford Wastewater Treatment Plant Waste Sludge Analysis

Parameter (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December	Average
Ammonia (as N)	22.3	31.9	45.6	20.2	20.9	123.0	36.2	16.0	23.1	11.3	30.6	19.4	33.4
Nitrate (as N)	0.05	0.50	0.50	0.05	0.50	0.05	0.50	0.50	0.50	0.05	0.5	0.05	0.3125
Nitrite (as N)	0.05	0.50	0.50	0.22	0.50	0.05	0.50	0.50	0.50	0.05	2.80	0.05	0.52
Potassium	34.0	28.0	47.0	60.0	26.0	37.0	24	19.0	31.0	9.0	21.0	12.0	29.0
TKN	397	800	1220	1170	497	944	929	633	1080	254	873	472	772
Total Phosphorus	119	291	164	288	153	260	239	225	367	78	308	86	215
Total Solids	7500	15900	22700	41200	13800	17500	14300	15300	25200	5660	17600	5130	16816
Arsenic	0.03	0.02	0.05	0.08	0.04	0.04	0.02	0.02	0.06	0.01	0.04	0.01	0.0350
Cadmium	0.0031	0.0039	0.0076	0.0115	0.0037	0.0062	0.0040	0.0040	0.0081	0.0012	0.0066	0.0013	0.0051
Chromium	0.08	0.10	0.25	0.34	0.10	0.13	0.10	0.10	0.22	0.02	0.14	0.03	0.1342
Cobalt	0.065	0.074	0.135	0.124	0.041	0.139	0.072	0.064	0.231	0.045	0.129	0.048	0.0973
Copper	2.10	1.80	2.20	5.00	1.90	2.80	2.5	2.50	2.0	0.71	2.70	0.77	2.25
Lead	0.042	0.049	0.087	0.161	0.052	0.080	0.077	0.095	0.131	0.019	0.085	0.020	0.0748
Mercury	0.001	0.002	0.003	0.005	0.001	0.001	0.003	0.002	0.006	0.001	0.002	0.001	0.0023
Molybdenum	0.02	0.02	0.04	0.02	0.01	0.03	0.02	0.02	0.04	0.01	0.02	0.01	0.0217
Nickel	0.29	0.26	0.68	2.80	0.89	0.62	0.29	0.01	0.87	0.17	1.19	0.27	0.70
Selenium	0.015	0.013	0.021	0.039	0.018	0.028	0.015	0.002	0.029	0.005	0.004	0.003	0.0160
Zinc	1.79	1.68	3.68	4.35	1.68	2.67	2.19	2.49	4.66	0.70	2.76	0.70	2.45
Sample Date	Jan.8/20	Feb.5/20	Mar.4/20	Apr.1/20	May.6/20	Jun.3/20	Jul.1/20	Aug.14/20	Sep.2/20	Oct.7/20	Nov.4/20	Dec.2/20	#DIV/0!

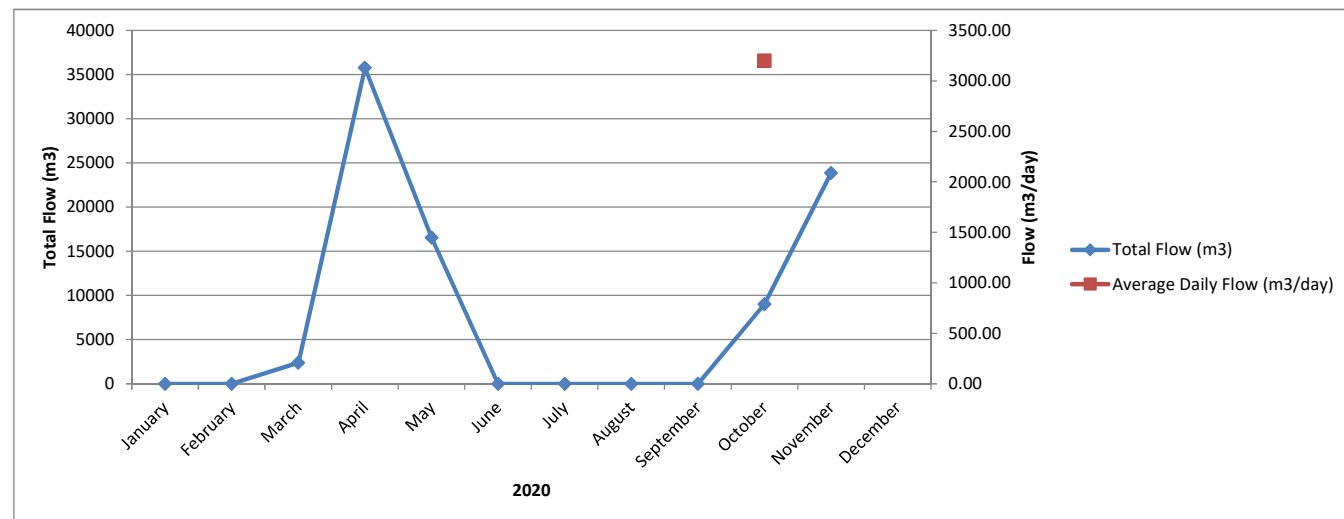
Work Order

395135



2020 Chelmsford Wastewater Treatment Lagoon Performance

Month	Flows		CBOD			Total Suspended Solids			Total Phosphorus			Total Ammonia		TKN	
	Total m ³	Avg Day m ³ /d	Raw mg/L	Effluent mg/L	Loading kg/d	Raw mg/L	Effluent mg/L	Loading kg/d	Raw mg/L	Effluent mg/L	Loading kg/d	Effluent mg/L	Loading kg/d	Raw mg/L	Effluent mg/L
January	no results				0.00			0.00			0.00		0.00		
February	no results				0.00			0.00			0.00		0.00		
March	2382		24.00		0.00	150		0.00	1.41		0.00	4.97	0.00		
April	35771		13.55		0.00	10		0.00	0.83		0.00	3.89	0.00		
May	16556		30.00		0.00	155		0.00	0.81		0.00	1.29	0.00		
June	no results				0.00			0.00			0.00		0.00		
July	no results				0.00			0.00			0.00		0.00		
August	no results				0.00			0.00			0.00		0.00		
September	no results				0.00			0.00			0.00		0.00		
October	9030	3197	29.00		0.00	8.33		0.00	0.58		0.00		0.00		
November	23869		15.00		0.00	18		0.00	0.84		0.00		0.00		
December					0.00			0.00			0.00		0.00		
Total	87608														
Average		240	22	#DIV/0!	0.00	68	#DIV/0!	0.00	0.89	#DIV/0!	0.00	3.38	0.00	#DIV/0!	#DIV/0!



Lagoon Type: Seasonal Retentional

Design Capacity: 824 m³/day

Population Served: Delivery to Chelmsford WWTP

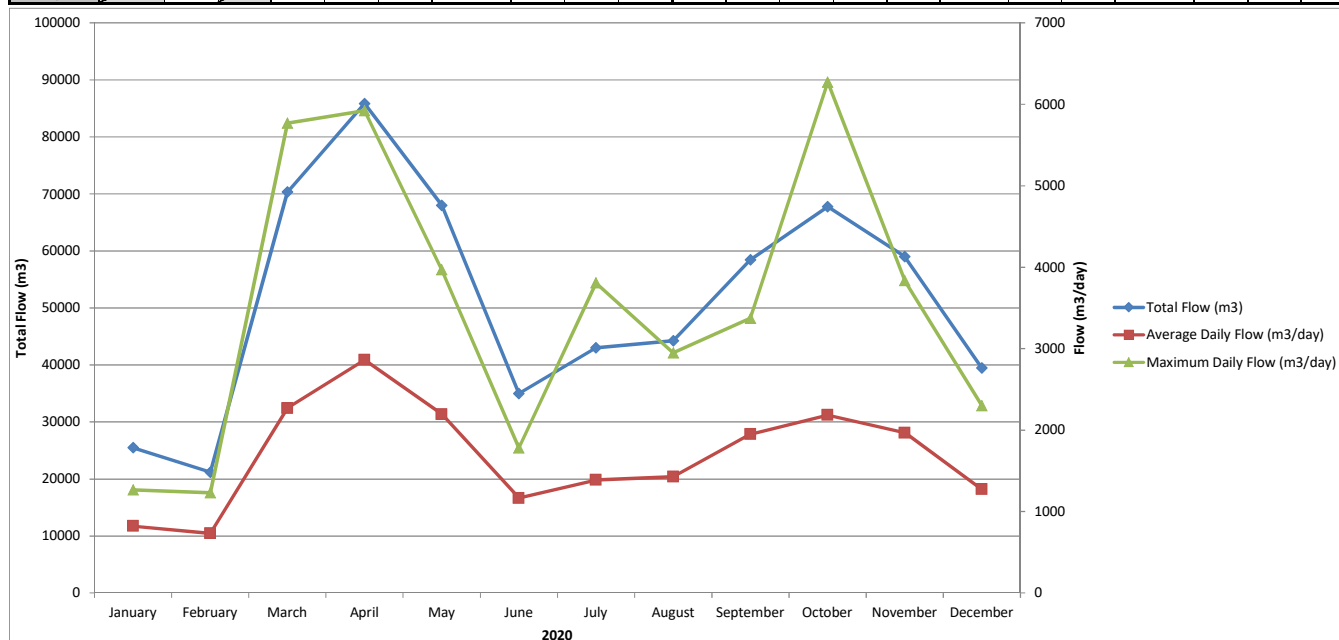
Compliance Parameters:

	Concentration	
BOD ₅	30 mg/L	Annual Average
TSS	40 mg/L	Annual Average

Note:

2020 Coniston Wastewater Treatment Plant Performance

Month	Flows			BOD ₅				Total Suspended Solids				Total Phosphorus				Total Ammonia				Un-ionized	TKN	Nitrite	Nitrate	pH		Alkalinity		Sludge			Chlorine		E.Coli	
	Total	Avg Day	Max Day	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Ammonia	Effluent	Effluent	Effluent	Raw	Effluent	Raw	Effluent	Total m ³	Conc.	Total	Total	Residual	Geomean	
	m ³	m ³ /d	m ³ /d	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	µg/L	mg/L	mg/L	mg/L			mg/L	mg/L	Hauled	%	m ³	Kg	mg/L	# Col./100ml	
January	25474	822	1264	140	25.0	20.54	82.1%	75	18.8	15.45	74.9%	7.0	3.37	2.77	51.9%	20.20	18.00	14.79	10.9%	54.6	18.50	0.05	0.05	7.0	6.9	173	165	160	2.7	4.3	39.1	0.76	7280	
February	21195	731	1230	100	28.0	20.46	72.0%	95	33.0	24.12	65.3%	4.1	3.10	2.27	24.4%	101.70	18.90	13.81	81.4%	32.0	21.20	0.05	0.05	7.0	7.0	167	161	80		0.0	29.9	0.74	83000	
March	70356	2270	5770	84	18.0	40.85	78.6%	46	13.0	29.50	71.7%	3.9	1.52	3.45	61.3%	21.30	18.80	42.67	11.7%	46.4	20.10	0.05	0.07	7.1	7.2	159	135	160	0.5	0.8	60.6	0.82	1000	
April	85869	2862	5923	28	14.9	42.65	46.8%	67	7.3	20.89	89.1%	1.7	0.72	2.06	57.6%	5.20	4.11	11.76	21.0%	11.1	6.45	1.58	0.25	7.3	7.3	145	127	120	0.4	0.5	73.4	0.73	35500	
May	68015	2194	3970	39	5.4	11.85	86.2%	57	7.0	15.36	87.7%	1.5	1.17	2.57	22.0%	8.88	7.88	17.29	11.3%	35.0	9.50	0.50	0.50	7.6	7.4	182	152	160	0.5	0.8	59.5	0.80	780	
June	34953	1165	1781	58	3.4	3.96	94.1%	87	29.6	34.49	66.0%	3.4	3.24	3.77	4.7%	15.20	11.40	13.28	25.0%	93.5	10.10	2.37	0.69	7.4	7.2	201	169	0	0.2	0.0	49.3	0.93	120	
July	43015	1388	3807	34	64.2	89.08	-88.8%	70	30.5	42.32	56.4%	3.3	2.99	4.15	9.4%	18.60	20.80	28.86	-11.8%	307.7	21.50	0.05	0.05	7.2	7.2	244	175	40	1.0	0.4	89.1	1.04	1190	
August	44245	1427	2949	20	1.0	1.43	95.0%	33	13.1	18.70	60.3%	2.2	3.04	4.34	-38.2%	11.70	12.50	17.84	-6.8%	38.99	14.40	0.05	0.05	7.1	7.5	251	163	0		0.0	92.7	0.70	1220	
September	58446	1948	3374	100	18.0	35.07	82.0%	72	12.3	23.96	82.9%	2.3	1.50	2.92	34.8%	9.26	8.56	16.68	7.6%	87.11	8.10	0.05	0.05	7.0	7.2	149	161	80	0.1	0.1	92.5	0.94	7	
October	67746	2185	6273	120	12.6	27.54	89.5%	77	12.4	27.10	83.9%	2.7	1.95	4.26	28.0%	10.50	14.00	30.59	-33.3%	78.3	13.80	0.05	0.05	6.6	7.0	184	170	120	2.9	3.5	79.1	0.80	180	
November	58990	1966	3834	90	13.0	25.56	85.6%	70	8.2	16.12	88.3%	2.5	1.13	2.22	54.3%	7.44	7.14	14.04	4.0%	39.0	8.30	0.05	0.51	7.0	7.2	154	152	240	0.4	1.0	65.9	0.90	644	
December	39456	1273	2301	55	6.5	8.27	88.2%	78	4.3	5.47	94.5%	2.6	1.30	1.65	50.0%	14.30	12.80	16.29	10.5%	186.6	15.30	1.17	0.91	6.9	7.1	157	143	320	1	3.2	39.6	0.86	30	
Total	617760																												9.7		770.7			
Average		1692		72	17.50	27.27	76.5%	69	15.79	22.79	79.6%	3.10	2.09	3.04	35.0%	20.36	12.91	19.83	0.11	84.19	13.94	0.50	0.27	7.10	7.18	181	156		1.21			0.84	802	



Plant Type: Extended Aeration

Design Capacity: 3000 m³/day

Population Served: 2,090

Compliance Parameters:

	Conc.	Loading	
BOD ₅	20 mg/L	35 kg/day	*
TSS	20 mg/L	35 kg/day	*
E.Coli	200 col/100 mL		Annual Geometric Mean

* Average of any 12 consecutive month period.



2020 Coniston Wastewater Treatment Plant Waste Sludge Analysis

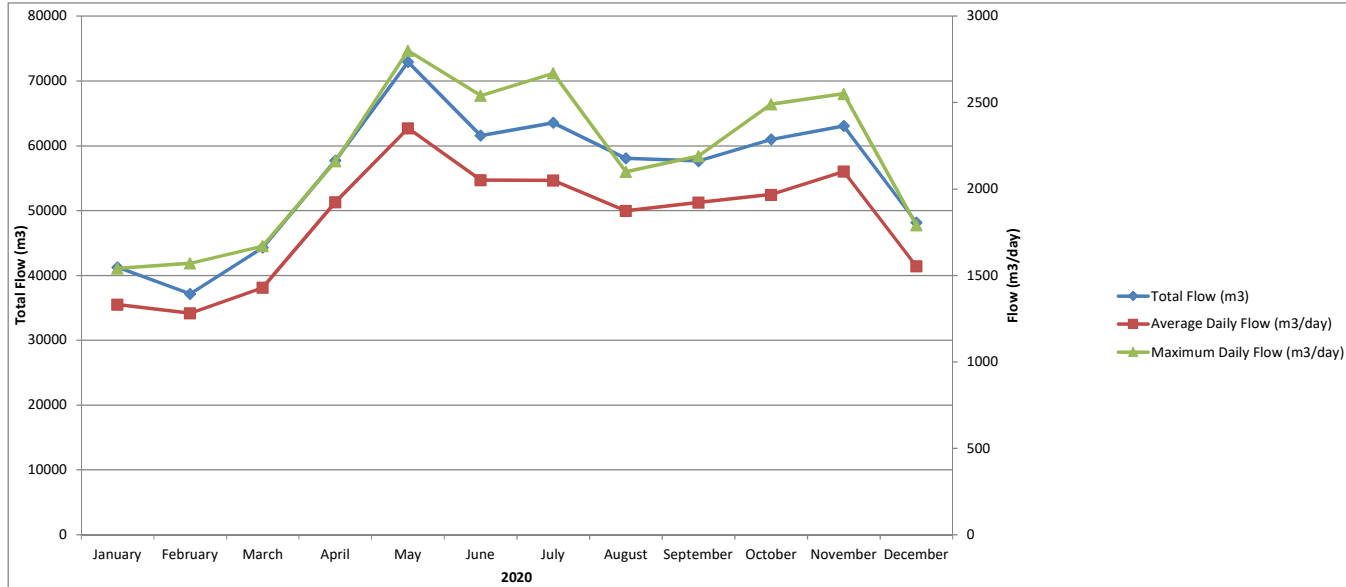
Parameter (mg/L)	January	February	March	April	May	4-Jun	23-Jun	July	August	September	October	November	December	Average
Ammonia (as N)	48.1	23.5	62	30.2	27.4	36.4	19.1	20.4	17.9	8.0	14.8	6	13.4	25.2
Nitrate (as N)	0.05	0.05	0.05	0.05	0.05	0.5	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.08
Nitrite (as N)	0.05	0.05	1.49	0.05	0.05	0.5	0.05	0.05	0.05	0.05	0.05	0.05	0.82	0.25
Potassium	56.0	10.3	12.0	7.0	8.0	10.0	4	6	3	4	25	6.9	10	12.5
TKN	1850.0	70.0	221.0	70.9	167	299	131	235	45	34	1330	49	338	372
Total Phosphorus	4.350	14.000	0.002	21.600	38.7	64.4	23.7	43.7	12	5.5	181	10.8	73.7	38.0
Total Solids	30900	1410	5350	1370	2900	6290	2860	5580	880	930	28700	1510	4290	7152
Arsenic	0.130	0.003	0.010	0.010	0.01	0.01	0.01	0.01	0.01	0.01	0.07	0.005	0.01	0.0229
Cadmium	0.0506	0.00075	0.0041	0.0018	0.0026	0.0066	0.0038	0.0067	0.0008	0.0007	0.0407	0.00238	0.0040	0.0097
Chromium	0.57	0.009	0.07	0.03	0.02	0.05	0.02	0.06	0.01	0.01	0.32	0.018	0.03	0.0936
Cobalt	0.571	0.0061	0.027	0.011	0.010	0.024	0.011	0.033	0.021	0.007	0.280	0.0141	0.042	0.0813
Copper	21.30	0.39	1.70	0.56	0.65	1.60	1.05	2.6	0.16	0.33	12.8	0.63	1.5	3.482
Lead	0.589	0.0110	0.059	0.022	0.024	0.062	0.032	0.101	0.006	0.011	0.624	0.0257	0.055	0.1247
Mercury	0.003	0.0001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.011	0.0002	0.001	0.0018
Molybdenum	0.08	0.002	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.06	0.005	0.01	0.0182
Nickel	14.90	0.23	0.64	0.39	0.52	1.06	0.49	1.12	0.23	0.25	11.00	0.67	0.91	2.49
Selenium	0.126	0.0021	0.007	0.006	0.003	0.012	0.002	0.009	0.002	0.002	0.057	0.0036	0.013	0.0188
Zinc	17.200	0.353	1.790	0.510	0.590	1.770	1.07	2.65	0.17	0.36	13.6	0.667	1.45	3.24
Sample Date	Jan.7/20	Feb.6/20	Mar.10/20	Apr.14/20	May.7/20	Jun.4/20	Jun.23/20	Jul.16/20	Aug.13/20	Sep.1/20	Oct.1/20	Nov.4/20	Dec.3/20	

Work Order	391595	393395	395448	402208	403875	405916	410100	412824	416130	418691
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2020 Dowling Wastewater Treatment Plant Performance

Month	Flows			BOD ₅				Total Suspended Solids				Total Phosphorus				Total Ammonia				Un-ionized	TKN	Nitrite	Nitrate	pH		Alkalinity		Sludge			Chlorine		E.Coli
	Total	Avg Day	Max Day	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Ammonia	Effluent	Effluent	Effluent	Raw	Effluent	Raw	Effluent	Total m ³	Conc.	Total	Total	Residual	Geomean
	m ³	m ³ /d	m ³ /d	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	µg/L	mg/L	mg/L	mg/L	Raw	Effluent	mg/L	mg/L	Hauled	%	m ³	Kg	mg/L	# Col./100mL
January	41249	1331	1540	38	4.9	6.52	87.1%	49.0	7.2	9.58	85.3%	1.0	0.69	0.92	31.0%	4.10	0.57	0.76	86.1%	0.24	3.00	0.05	4.78	6.7	6.5	79	48	160		0.0	153.0	0.57	18
February	37145	1281	1570	59	4.2	5.38	92.9%	40.8	6.6	8.45	83.8%	1.0	0.51	0.65	49.0%	9.60	0.59	0.76	93.9%	0.53	2.10	0.05	4.98	6.9	6.9	87	58	80	2.0	1.6	129.4	0.54	9
March	44289	1429	1670	120	3.2	4.57	97.3%	42.2	3.6	5.14	91.5%	1.1	0.44	0.63	60.0%	3.76	1.48	2.11	60.6%	3.87	1.60	0.70	0.05	7.1	7.1	85	56	160		0.0	136.6	0.60	3
April	57696	1923	2160	27	4.5	8.65	83.3%	37.6	4.2	8.08	88.8%	0.9	0.39	0.75	56.7%	4.10	1.78	3.42	56.6%	5.91	3.10	0.43	3.85	7.2	7.2	76	52	200		0.0	143.6	0.54	32
May	72902	2352	2800	34	7.6	17.87	77.6%	34.7	3.9	9.17	88.8%	1.1	0.49	1.15	55.5%	2.13	1.70	4.00	20.2%	2.10	2.90	0.24	2.21	6.6	6.7	75	56	160		0.0	145.6	0.67	16
June	61555	2052	2540	24	8.3	17.03	65.4%	40.2	5.5	11.29	86.3%	0.9	0.50	1.03	44.4%	2.67	1.70	3.49	36.3%	1.70	3.50	0.44	2.49	6.7	6.8	69	50	160		0.0	131.1	0.77	10
July	63523	2049	2670	29	9.2	18.85	68.3%	81.4	5.1	10.45	93.7%	0.8	0.51	1.05	36.3%	2.87	2.41	4.94	16.0%	2.49	4.90	0.82	1.85	6.7	6.8	69	52	160		0.0	132.9	0.75	33
August	58067	1873	2100	32	4.4	8.24	86.4%	45.0	4.7	8.80	89.6%	0.8	0.46	0.86	42.5%	2.98	0.40	0.75	86.6%	0.39	2.50	0.05	4.14	6.5	6.6	70	50	160		0.0	134.8	0.53	21
September	57636	1921	2190	42	5.0	9.61	88.1%	45.3	4.6	8.84	89.8%	0.8	0.45	0.86	43.8%	3.14	0.03	0.06	99.0%	0.09	0.90	0.05	5.29	6.6	6.7	72	51	200		0.0	130.8	0.53	24
October	60978	1967	2490	21	3.7	7.28	82.4%	49.9	6.4	12.59	87.2%	0.6	0.36	0.71	40.0%	2.77	0.06	0.12	97.8%	0.06	0.80	0.05	4.66	6.7	6.6	73	52	200		0.0	175.3	0.56	89
November	63031	2101	2550	31	5.4	11.35	82.6%	28.9	6.1	12.82	78.9%	0.8	0.44	0.92	45.0%	1.69	0.07	0.15	95.9%	0.11	2.20	0.05	4.26	6.7	6.7	74	51	160		0.0	194.1	0.76	17
December	48167	1554	1790	20	4.6	7.15	77.0%	30	5.4	8.39	82.0%	1.5	0.46	0.71	69.3%	2.90	0.09	0.14	96.9%	0.3	1.70	0.35	6.06	6.8	6.69	66	48	240		0.0	170.4	0.82	12
Total	666238						85.0%				88.1%				49.3%				71.5%								2		1777.6				
Average		1825		40	5.42	10.21	85.0%	44	5.28	9.47	87.1%	0.94	0.48	0.85	49.3%	3.56	0.91	1.72	0.70	1.48	2.43	0.27	3.72	6.77	6.77	75	52		0.13			0.64	24



Plant Type: Extended Aeration

Design Capacity: 3200 m³/day

Population Served: 1,857

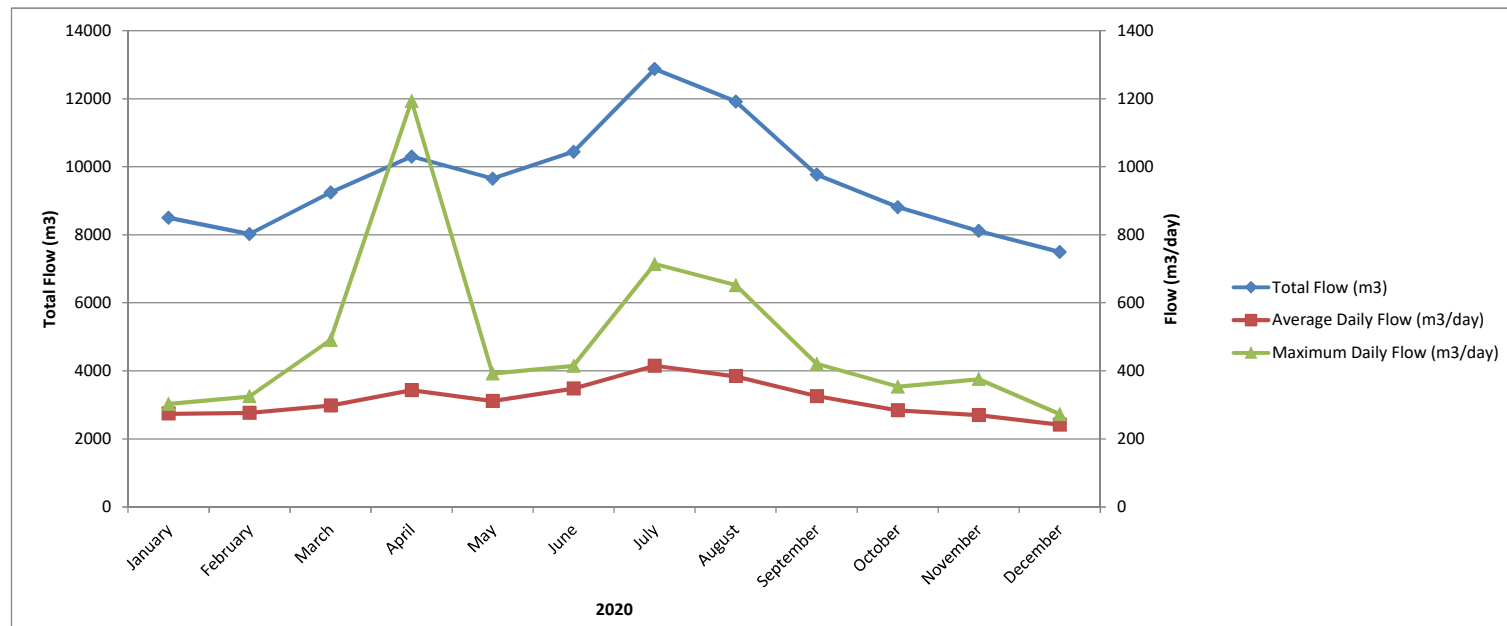
Compliance Parameters:

	Conc.	Loading	
BOD ₅	25 mg/L	80 kg/day	Annual Average
TSS	25 mg/L	80 kg/day	Annual Average
Total Phosphorus	1.0 mg/L	3.2 kg/day	Annual Average
E.Coli	200 col/100 mL		Monthly Geometric Mean



2020 Falconbridge Wastewater Treatment Plant Performance

Month	Flows			BOD ₅				Total Suspended Solids				Total Phosphorus				Total Ammonia				Un-ionized	TKN	Nitrite	Nitrate	pH		E.Coli
	Total m ³	Avg Day m ³ /d	Max Day m ³ /d	Raw mg/L	Effluent mg/L	Loading kg/d	Plant Efficiency	Raw mg/L	Effluent mg/L	Loading kg/d	Plant Efficiency	Raw mg/L	Effluent mg/L	Loading kg/d	Plant Efficiency	Raw mg/L	Effluent mg/L	Loading kg/d	Plant Efficiency	Ammonia µg/L	Effluent mg/L	Effluent mg/L	Effluent mg/L	Raw	Effluent	Average # Col./100mL
January	8502	274	303	200	1.4	0.38	99.3%	102	2.7	0.74	86.7%	7.5	0.04	0.01	99.5%	33.10	0.59	0.16	98.2%	0.510	1.00	0.05	0.36	7.1	7.0	3280
February	8026	277	325	150	1.3	0.36	99.1%	68	2.9	0.80	71.3%	6.1	0.03	0.01	99.5%	33.40	0.53	0.15	98.4%	0.64	0.80	0.05	0.55	7.1	6.9	6000
March	9250	298	491	210	0.9	0.27	99.6%	61	3.6	1.07	71.8%	6.6	0.11	0.03	98.3%	28.60	0.56	0.17	98.0%	0.75	1.00	0.05	0.34	7.2	7.1	1000
April	10305	344	1194	202	2.2	0.76	98.9%	94	2.7	0.93	85.6%	7.5	0.02	0.01	99.7%	51.40	0.34	0.12	99.3%	1.21	0.90	0.05	0.30	7.6	7.3	210
May	9649	311	392	160	1.2	0.37	99.3%	129	3.2	1.00	84.4%	7.2	0.04	0.01	99.4%	38.30	0.13	0.04	99.7%	0.41	1.10	0.05	0.05	7.8	7.5	650
June	10441	348	415	160	1.9	0.66	98.8%	149	4.0	1.39	83.0%	8.6	0.03	0.01	99.7%	47.10	0.07	0.02	99.9%	0.57	1.10	0.05	0.05	7.3	7.1	20
July	12874	415	714	120	0.6	0.25	99.5%	76	2.6	1.08	71.3%	6.7	0.04	0.02	99.4%	35.10	0.11	0.05	99.7%	0.80	1.60	0.05	0.05	7.1	6.8	55
August	11919	384	652	170	0.9	0.35	99.5%	82	2.1	0.81	84.9%	6.9	0.01	0.00	99.9%	38.40	0.15	0.06	99.6%	0.30	0.90	0.05	0.05	6.8	6.5	25
September	9770	326	421	120	2.1	0.68	98.3%	49	2.8	0.91	51.5%	3.4	0.02	0.01	99.4%	17.90	0.03	0.01	99.8%	0.09	0.60	0.05	0.05	7.1	7.0	81
October	8815	284	354	180	1.7	0.48	99.1%	77	2.8	0.80	79.6%	7.0	0.004	0.00	99.9%	44.20	0.01	0.00	100.0%	0.01	0.65	0.05	0.05	6.8	6.9	170
November	8114	270	376	180	1.4	0.38	99.2%	111	2.6	0.70	86.9%	7.0	0.01	0.00	99.9%	40.20	0.14	0.04	99.7%	0.16	1.30	0.05	0.11	7.1	7.2	745
December	7497	242	273	160	3.8	0.92	97.6%	62	3.0	0.73	69.0%	7.4	0.08	0.02	98.9%	43.10	0.31	0.07	99.3%	0.87	3.10	0.50	0.50	6.84	6.9	620
Total	115163						99.1%				80.4%				99.5%				99.4%							
Average		316		168	1.62	0.49	99.1%	88	2.92	0.91	80.4%	6.83	0.04	0.01	99.5%	37.57	0.25	0.07	99.3%	0.53	1.17	0.09	0.21	7.15	7.02	1071



Plant Type: Trickling Filter
Design Capacity: 909 m³/day
Population Served: 754

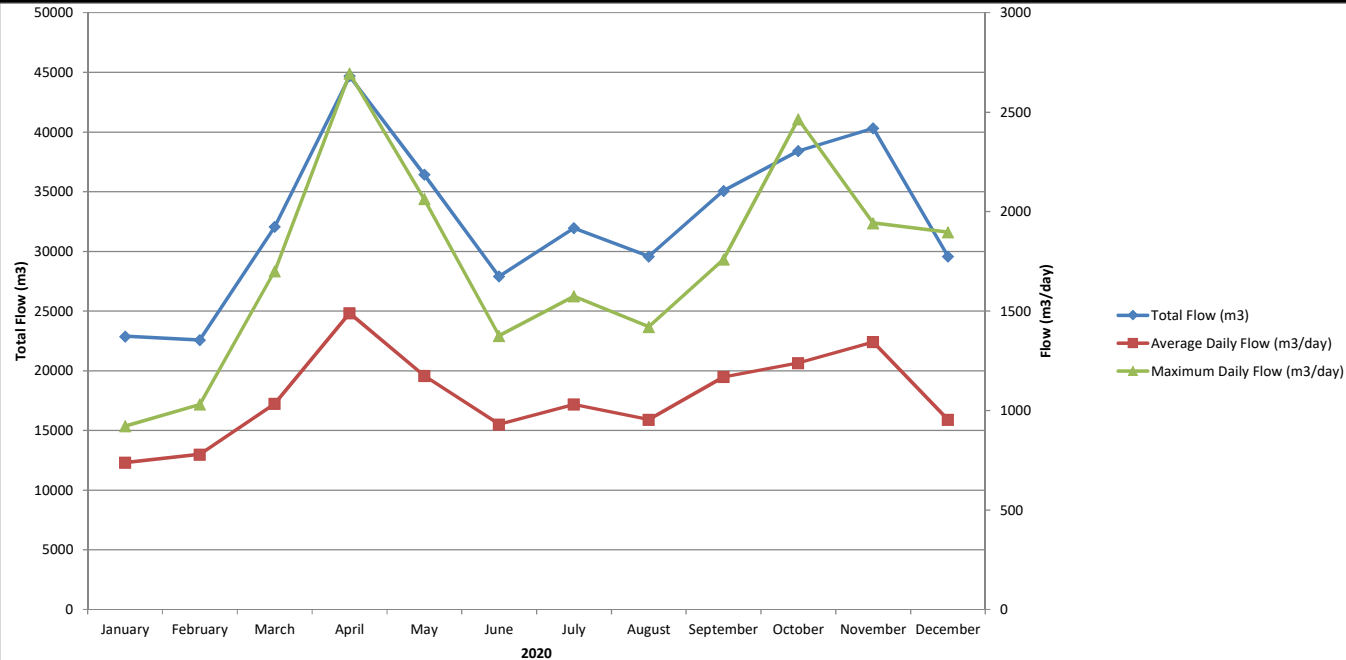
Compliance Parameters:

	Conc.	Loading	
BOD ₅	15 mg/L	46 kg/day	Annual Avg.
TSS	15 mg/L	46 kg/day	Annual Avg.



2020 Levack Wastewater Treatment Plant Performance

Month	Flows			CBOD				Total Suspended Solids				Total Phosphorus				Total Ammonia				Un-ionized Ammonia µg/L	TKN		Nitrite		Nitrate		pH		Alkalinity		Sludge			Chlorine		E.Coli Geomean # Col./100mL
	Total	Avg Day	Max Day	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant		Raw	Effluent	Effluent	Effluent	Raw	Effluent	Raw	Effluent	Total m ³	Total Conc.	Total m ³	Total Kg	Residual mg/L			
	m ³	m ³ /d	m ³ /d	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency		mg/L	mg/L	mg/L	mg/L	Raw	Effluent	mg/L	mg/L	Hauled	%						
January	22880	738	922	140	4.4	3.25	96.9%	212	6.6	4.87	96.9%	5.2	0.52	0.38	90.0%	28.70	12.00	8.86	58.2%	6.53	35.1	11.60	0.05	13.30	7.5	6.9	158	38	160	2.1	3.4	19.7	0.60	2.6		
February	22584	779	1031	120	4.2	3.27	96.5%	132	5.3	4.13	96.0%	3.1	0.40	0.31	87.1%	26.60	17.10	13.32	35.7%	17.25	33.2	14.30	0.05	3.63	7.2	6.9	157	61	160	2.6	4.2	16.9	0.57	2.2		
March	32067	1034	1701	190	4.2	4.34	97.8%	180	6.3	6.52	96.5%	5.1	0.40	0.41	92.2%	24.30	20.40	21.10	16.0%	31.82	26.7	18.50	0.05	67.50	7.3	7.1	176	132	160	1.4	2.2	17.0	0.54	6		
April	44679	1489	2694	98	4.0	5.96	95.9%	128	6.8	10.13	94.7%	4.7	0.42	0.63	91.1%	12.80	12.20	18.17	4.7%	20.46	15.7	12.30	1.68	3.52	7.1	6.9	133	85	160		0.0	28.5	0.49	10		
May	36428	1175	2064	100	2.4	2.82	97.6%	107	4.9	5.76	95.4%	3.2	0.54	0.63	83.1%	12.20	0.58	0.68	95.2%	0.34	16.5	0.80	0.05	12.80	7.2	6.7	132	45	160		0.0	40.9	0.44	8		
June	27905	930	1376	85	2.6	2.42	96.9%	126	6.2	5.77	95.1%	3.7	0.48	0.45	87.0%	17.90	0.14	0.13	99.2%	0.12	23.3	0.80	0.05	18.80	7.1	6.7	156	56	200		0.0	55.2	0.60	31		
July	31954	1031	1575	100	2.6	2.68	97.4%	144	9.7	10.00	93.3%	3.9	0.50	0.52	87.2%	18.70	0.16	0.16	99.1%	0.29	27.4	2.10	0.44	16.70	7.0	6.6	150	53	160		0.0	64.5	0.50	13		
August	29580	954	1421	67	1.3	1.24	98.1%	174	10.5	10.02	94.0%	2.9	0.57	0.54	80.3%	16.00	0.16	0.15	99.0%	0.18	15.6	0.50	0.05	17.30	7.3	6.6	148	52	160		0.0	63.3	0.55	4		
September	35074	1169	1760	160	3.0	3.51	98.1%	139	6.8	7.95	95.1%	2.5	0.42	0.49	83.2%	15.50	0.15	0.18	99.0%	0.14	20.4	0.30	0.05	15.70	7.1	6.8	146	59	200		0.0	74.0	0.59	9		
October	38419	1239	2465	48	2.3	2.85	95.2%	142	8.0	9.91	94.4%	2.8	0.43	0.53	84.6%	15.70	0.07	0.09	99.6%	0.06	220.0	0.53	0.05	14.95	6.7	6.6	131	48	160	1.0	1.6	76.1	0.56	5		
November	40323	1344	1942	86	1.5	2.02	98.3%	122	6.4	8.60	94.8%	3.1	0.41	0.55	86.9%	12.00	0.03	0.04	99.8%	0.02	15.6	1.10	0.05	11.20	6.7	6.7	110	57	160	2.3	3.7	66.5	0.66	5		
December	29577	954	1896	100	4.0	3.82	96.0%	160	6.0	5.72	96.3%	3.6	0.47	0.45	86.9%	19.70	0.10	0.10	99.5%	0.15	22.4	1.00	0.05	18.40	6.9	6.8	156	52	200	2.2	4.4	57.9	0.84	2		
Total	391470						97.2%				95.2%				87.3%				71.9%										2040		19.4					
Average		1073		108	3.04	3.18	97.2%	147	6.96	7.45	95.2%	3.65	0.46	0.49	87.3%	18.34	5.26	5.25	71.9%	6.45	39.33	5.32	0.22	17.82	7.09	6.78	146	62		1.93			0.58	8		



Plant Type: Extended Aeration

Design Capacity: 2270 m³/day

Population Served: 2,320

Compliance Parameters:

	Conc.	Loading	
CBOD	25 mg/L	56.75 kg/day	Annual Average
TSS	25 mg/L	56.75 kg/day	Annual Average
Total Phosphorus	1.0 mg/L	3.1 kg/day	Monthly Average
pH	6.0 to 9.5 inclusive, at all times		
E.Coli	200 col/100 mL		Monthly Geometric Mean



2020 Levack Wastewater Treatment Plant Waste Sludge Analysis

Parameter (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December	Average
Ammonia (as N)	10.3	116	124	13	21.8	1.9	1.8	1.0	1.6	11.5	34.8	66.8	33.7
Nitrate (as N)	11.20	0.50	0.50	0.52	0.50	14.60	10.20	14.50	5.04	0.05	0.50	0.50	4.88
Nitrite (as N)	0.05	0.50	0.50	0.31	0.50	0.90	0.81	2.99	1.09	0.05	0.50	0.50	0.73
Potassium	17	54	61	6	23	7	6	7	9	14	25	31	21.7
TKN	92	1530	155	87.1	803	109	76	91	97	560	1590	1920	592.5
Total Phosphorus	37.2	554	478	26.2	300	44.7	54.6	36.8	46.7	254	486	925	270.3
Total Solids	1860	23800	22400	1370	13100	2240	2360	1970	2230	9710	20100	24500	10470
Arsenic	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.04	0.0133
Cadmium	0.0009	0.0105	0.0087	0.0004	0.0069	0.0009	0.0008	0.0011	0.0012	0.0077	0.0004	0.0188	0.0049
Chromium	0.01	0.12	0.17	0.01	0.08	0.01	0.01	0.01	0.02	0.10	0.01	0.28	0.0692
Cobalt	0.013	0.063	0.066	0.007	0.108	0.008	0.009	0.016	0.011	0.103	0.019	0.237	0.0550
Copper	0.60	4.00	4.5	0.23	2.9	0.49	0.54	0.57	0.93	4.7	0.16	11.7	2.61
Lead	0.024	0.264	0.178	0.010	0.142	0.028	0.028	0.026	0.049	0.270	0.008	0.587	0.1345
Mercury	0.001	0.010	0.003	0.001	0.001	0.001	0.001	0.001	0.001	0.004	0.001	0.010	0.0029
Molybdenum	0.01	0.03	0.03	0.01	0.02	0.01	0.01	0.01	0.01	0.02	0.01	0.07	0.0200
Nickel	0.18	1.00	1.30	0.11	1.03	0.14	0.14	0.18	0.03	1.30	0.08	3.10	0.72
Selenium	0.005	0.017	0.015	0.005	0.011	0.002	0.002	0.002	0.002	0.012	0.002	0.051	0.0105
Zinc	0.48	4.07	3.81	0.19	2.26	0.38	0.35	0.46	0.62	3.42	0.10	7.50	1.97
Sample Date	Jan.6/20	Feb.5/20	Mar.3/20	Apr.1/20	Jun.6/20	Jun.3/20	Jul.2/20	Aug.6/20	Sep.2/20	Oct.7/20	Nov.4/20	Dec.2/20	

Work order

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395136

396862

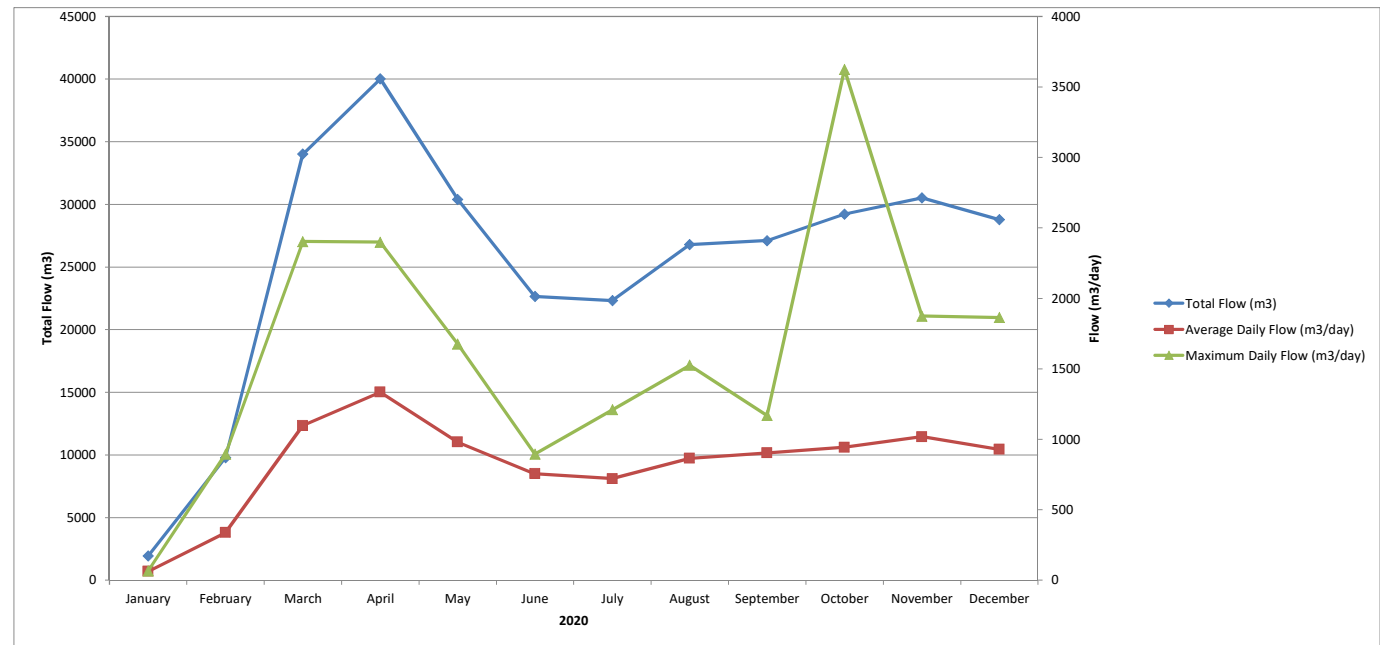
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2020 Lively Wastewater Treatment Plant Performance

Month	Flows				BOD ₅		CBOD				Total Suspended Solids				Total Phosphorus				Total Ammonia				Un-ionized µg/L	TKN		Nitrite mg/L	Nitrate mg/L	pH		Alkalinity		Sludge			Chlorine		E.Coli # Col./100ml
	Total	Avg Day	Max Day	Diverted	Raw	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Raw		Effluent	Effluent			Effluent	Raw	Effluent	Raw	Effluent	Total m ³	Conc.	Total	Total	
	m ³	m ³ /d	m ³ /d	m ³	mg/L	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	mg/L	mg/L	Raw	Effluent	mg/L	mg/L	Hauled	%	m ³	Kg	mg/L			
January	1929	62	66	10894				0.00	n/a			0.00	n/a			0.00	n/a			0.00	n/a																
February	9778	337	894	2821	230	190	27.0	9.10	85.8%	316	35.6	12.02	95.7%	7.2	2.48	0.84	87.0%	58.10	27.40	9.24	82.2%	47.46	66.9	30.10	1.80	0.78	n/a	7.2	221	133	0		0.0	44.7	0.80	11	
March	34009	1097	2402	4841	97	87	2.3	2.52	97.4%	215	8.7	9.51	98.2%	8.0	0.60	0.66	96.6%	49.00	25.80	28.30	76.0%	89.04	53.2	26.10	0.05	3.96	7.1	7.2	181	104	0		0.0	76.4	0.85	18	
April	40014	1334	2398	3357	110	82	4.9	6.54	94.0%	45	23.3	31.05	71.2%	1.9	0.85	1.13	75.1%	13.70	9.59	12.79	61.1%	14.41	30.1	11.00	0.47	2.31	7.1	7.0	143	108	160		640.0	155.0	0.60	155	
May	30397	981	1676	1916	29	42	3.1	3.04	92.6%	31.8	12.9	12.66	76.2%	1.8	0.88	0.86	71.4%	11.50	12.90	12.65	34.4%	21.32	13.9	12.90	0.23	0.32	7.0	6.9	147	113	320		1280.0	128.5	1.00	45	
June	22653	755	895	1855	59	37	5.3	4.00	85.7%	49	10.4	7.86	82.1%	2.6	0.52	0.39	83.1%	15.30	14.70	11.10	18.9%	89.60	16.6	16.70	0.67	0.53	7.0	7.2	163	114	400		1120.0	84.2	0.89	21	
July	22311	720	1210	2032	57	41	2.6	1.87	93.7%	42	6.1	4.39	91.4%	2.7	0.38	0.27	91.6%	19.70	21.60	15.55	34.8%	71.50	23.6	20.60	0.62	0.66	7.2	7.2	144	108	400		1600.0	73.5	1.00	9	
August	26789	864	1525	4098	22	19	0.6	0.52	96.8%	39	4.9	4.19	93.0%	2.1	0.43	0.37	88.4%	13.00	11.20	9.68	51.2%	57.80	16.6	10.90	1.24	0.69	7.2	7.0	220	103	280		1120.0	53.5	0.74	16	
September	27103	903	1169	2143	75	61	1.2	1.08	98.0%	56	5.6	5.06	92.3%	1.9	0.46	0.42	81.3%	13.40	16.70	15.09	3.7%	285.30	16.1	14.80	0.42	0.67	7.2	7.0	151	121	400		1280.0	80.8	0.79	15	
October	29220	943	3624	3278	53	48	1.6	1.51	96.7%	37	2.8	2.64	98.0%	2.4	0.44	0.41	95.2%	21.00	6.85	6.46	91.5%	31.17	24.7	6.80	0.91	0.99	7.0	7.0	136	81	400		1120.0	91.5	0.89	8	
November	30512	1017	1873	2511	51	44	1.2	1.22	97.3%	74	3.4	3.46	97.5%	2.1	0.40	0.40	89.7%	14.10	0.37	0.38	98.6%	0.83	15.4	1.60	0.05	8.02	6.9	7.1	154	63	320		3630.9	113.7	0.82	3	
December	28783	928	1863	673	64	52	1.5	1.39	97.1%	48	4.3	3.99	95.5%	2.6	0.58	0.54	88.9%	21.45	8.57	7.96	80.1%	31.51	23.4	7.95	0.43	3.94	7.2	7.2	168	86.29	280		0.0	73.9	0.72	6	
Total	303498								94.3%				93.7%				89.8%					70.5%									1134.66		0.0				
Average		832			77	64	4.66	2.73	94.1%	87	10.72	8.07	90.1%	3.21	0.73	0.53	86.2%	22.75	14.15	10.8	57.5%	67.27	27.31	14.50	0.63	2.08	7.09	7.09	166	103	269.09				0.83	28	



Plant Type: Extended Aeration

Design Capacity: 1600 m³/day

Population Served: 2,761

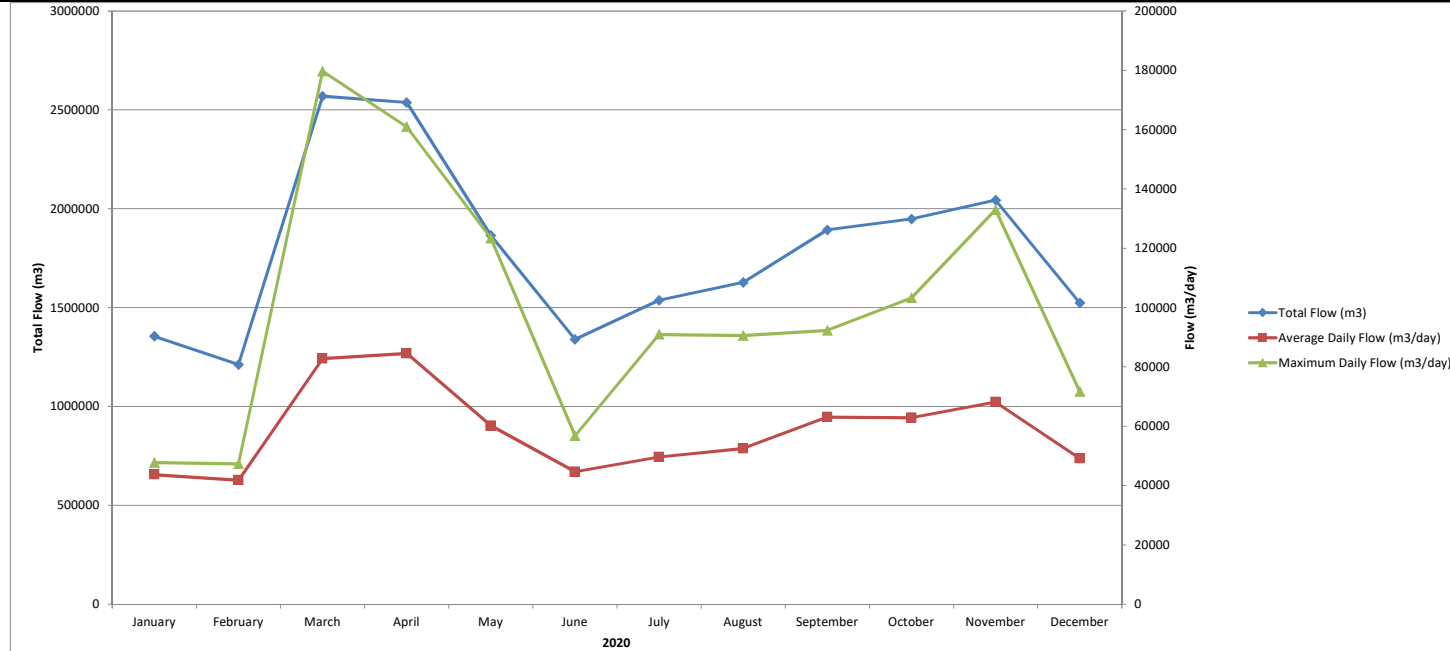
Compliance Parameters:

	Conc.	Loading	
BOD ₅	25 mg/L	40 kg/day	*
TSS	25 mg/L	40 kg/day	*
Total Phosphorus	1.0 mg/L	1.6 kg/day	Monthly Average
E.Coli	200 col/100 mL		Monthly Geometric Mean

* Annual average of any consecutive 12 month period.

2020 Sudbury Wastewater Treatment Plant Performance

Month	Flows			BOD ₅	CBOD				Total Suspended Solids				Total Phosphorus				Total Ammonia				Un-ionized Ammonia	TKN		Nitrite	Nitrate	pH		Alkalinity		Sludge		Chlorine		Dechlorination		E.Coli Geomean # col./100mL	
	Total	Avg Day	Max Day		Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant		Raw	Effluent	Effluent	Effluent	Raw	Effluent	Raw	Effluent	Total	Conc.	Total	Residual	Total	Loading		
	m ³	m ³ /d	m ³ /day		mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency		mg/L	mg/L	mg/L	mg/L	Raw	Effluent	mg/L	mg/L	m ³	%	Kg	mg/L	mg/L	Kg/day		
January	1355300	43719	47800	150	127	6.6	288.5	94.8%	211	14.0	612.1	93.4%	3.7	0.47	20.5	87.2%	19.50	17.62	770.3	9.6%	33.24	24.3	17.0	0.89	0.67	7.0	6.9	182	145	0	3.50	2854	0.65	0.000	0.00	101	
February	1212100	41797	47300	210	165	4.7	196.4	97.2%	272	12.4	518.3	95.4%	3.4	0.36	15.0	89.4%	21.40	19.50	815.0	8.9%	43.72	27.4	19.0	0.05	0.33	7.1	7.0	166	134	0		2318	0.76	0.000	0.00	377	
March	2568900	82868	179700	170	125	5.7	472.3	95.4%	183	14.5	1201.6	92.1%	3.0	0.47	38.9	84.3%	16.40	14.40	1193.3	12.2%	17.14	21.1	13.9	0.34	0.72	6.9	6.8	172	143	0		4071	0.79	0.000	0.00	9	
April	2537500	84583	161000	100	77	8.4	710.5	89.1%	131	10.1	854.3	92.3%	2.0	0.48	40.6	76.0%	10.20	9.84	832.3	3.5%	7.96	14.0	10.3	0.51	0.90	6.8	6.7	146	138	0		4166	0.83	0.000	0.00	11	
May	1865000	60161	123400	118	99	3.7	222.6	96.3%	130	8.2	493.3	93.7%	1.8	0.22	13.2	87.8%	15.80	13.63	820.0	13.7%	20.55	21.1	14.2	0.30	0.46	6.8	6.7	174	146	0		3076	0.70	0.001	0.06	3	
June	1340100	44670	56800	135	105	2.9	129.5	97.2%	226	9.6	428.8	95.8%	3.0	0.28	12.5	90.7%	19.80	17.08	763.0	13.7%	50.39	25.6	16.3	0.25	0.43	6.9	6.8	181	146	0		2767	0.65	0.007	0.31	4	
July	1537100	49584	91000	110	105	3.0	148.8	97.1%	172	7.4	366.9	95.7%	1.8	0.20	9.9	88.9%	17.30	14.04	696.2	18.8%	41.13	19.4	13.1	0.85	0.48	7.2	6.9	156	141	0		2942	0.63	0.002	0.10	2	
August	1628300	52526	90600	90	95	3.5	183.8	96.3%	147	8.1	425.5	94.5%	2.0	0.30	15.8	85.0%	14.80	15.63	821.0	-5.6%	89.28	19.3	13.1	0.82	1.06	7.1	7.1	180	139	0		3215	0.68	0.002	0.11	13	
September	1892800	63093	92300	123	101	9.7	612.0	90.4%	140	20.0	1261.9	85.7%	1.9	0.49	30.9	74.2%	13.49	13.30	839.1	1.4%	62.13	16.4	13.5	0.31	0.49	7.2	7.0	187	143			3672	0.70	0.003	0.19	7	
October	1948600	62858	103300	150	115	5.4	339.4	95.3%	133	9.2	578.3	93.1%	2.1	0.25	15.7	88.1%	13.40	14.44	907.7	-7.8%	78.42	21.7	12.8	0.53	0.46	7.2	7.0	168	155	0		3577	0.83	0.007	0.44	10	
November	2043966	68132	133000	107	120	6.8	463.3	94.3%	157	10.2	694.9	93.5%	1.7	0.50	34.1	70.6%	7.20	12.88	877.5	-78.9%	64.18	14.4	11.4	0.45	0.27	7.1	7.0	170	159			3304	0.72	0.001	0.07	29	
December	1524400	49174	71700	140	96	5.1	250.8	94.7%	147	9.4	462.2	93.6%	2.6	0.45	22.1	82.7%	18.30	19.15	941.7	-4.6%	113.81	22.5	18.6	2.15	0.21	7.2	7.0	179	160	0		2711	0.56	0.002	0.10	3	
Total	21454066							94.8%				93.2%				83.7%				2.3%																	
Average		58778			111	5.46	334.84	94.8%	171	11.09	658.18	93.2%	2.41	0.37	22.45	83.7%	15.63	15.13	856.43	-0.01	51.83	20.60	14.44	0.62	0.54	7	7			145.74		3.50	3223	0.71	0.00	0.11	47



Plant Type: High Rate
Design Capacity: 79625 m³/day
Population Served: 84609

Compliance Parameters:

	Conc.	Loading	
CBOD	25 mg/L	1990.6 kg/day	Annual Avg
TSS	25 mg/L	1990.6 kg/day	Annual Avg
Total P	1.0 mg/L	79.6 kg/day	Monthly Avg (Oct.-May)
Total P	0.5 mg/L	39.8 kg/day	Monthly Avg (June-Sept.)
E.Coli	200 col/100 mL		Monthly Geometric Mean
pH	6.0 to 9.5 inclusive, at all times		
Dechlorination	total chlorine residual 0.02 mg/L, 1.6 kg/L, Monthly Avera		



2020 Sudbury Wastewater Treatment Plant Waste Sludge Analysis

Parameter (mg/L)	January	February	March	1-Apr	14-Apr	May	1-Jun	8-Jun	29-Jun	July	August	September	October	November	December	December	Average
Ammonia (as N)	276	231	225	308	483	190	329	389	349	328	305	399	280	198	277	646	325.8
Nitrate (as N)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.05	0.5	0.5	0.5	0.5	0.5	0.5	0.47
Nitrite (as N)	0.5	0.5	4.7	0.5	2.7	2.7	15.2	5.3	0.5	0.05	9.7	8.5	4.3	7.0	10.2	17.6	5.62
Potassium	99	43	77	67	58	53	46	44	51	72	63	54	51	43	91	80	62.0
TKN	1960	1740	1990	1870	1860	2120	1860	1740	2360	2320	2240	2280	2040	1920	2440	2630	2086
Total Phosphorus	483	479	485	576	458	483	487	405	516	564	564	586	516	431	562	210	488
Total Solids	27800	25400	29300	31300	28900	34300	26400	23900	32100	34600	30800	31100	26800	27500	30000	35500	29731
Arsenic	0.11	0.05	0.09	0.12	0.13	0.12	0.06	0.07	0.09	0.14	0.13	0.12	0.10	0.05	0.11	0.14	0.1019
Cadmium	0.0253	0.0141	0.0143	0.0221	0.0228	0.0216	0.0143	0.0161	0.0204	0.0244	0.0238	0.0256	0.0163	0.0084	0.0254	0.0192	0.0196
Chromium	0.38	0.19	0.32	0.28	0.26	0.26	0.18	0.18	0.20	0.32	0.35	0.31	0.21	0.11	0.34	0.30	0.2619
Cobalt	0.209	0.090	0.147	0.156	0.130	0.152	0.094	0.095	0.148	0.253	0.245	0.261	0.196	0.0860	0.2030	0.2390	0.1690
Copper	10.8	4.8	5.6	8.6	10.0	9.0	6.0	6.2	7.4	10.7	11.4	7.3	6.7	3.5	12.5	10.4	8.18
Lead	0.419	0.170	0.215	0.287	0.261	0.286	0.200	0.222	0.331	0.472	0.467	0.447	0.276	0.123	0.486	0.349	0.3132
Mercury	0.005	0.002	0.004	0.003	0.005	0.004	0.001	0.003	0.003	0.007	0.007	0.004	0.005	0.0010	0.0070	0.0040	0.0041
Molybdenum	0.09	0.03	0.05	0.04	0.04	0.04	0.05	0.05	0.05	0.08	0.08	0.06	0.06	0.020	0.090	0.070	0.0563
Nickel	3.3	1.4	2.0	3.8	3.4	3.8	1.8	1.7	2.7	4.1	4.8	2.4	3.3	1.50	4.50	5.30	3.11
Selenium	0.066	0.030	0.033	0.044	0.052	0.050	0.041	0.046	0.035	0.075	0.071	0.071	0.052	0.012	0.096	0.059	0.0521
Zinc	7.80	4.39	5.42	5.52	5.14	6.44	5.27	5.78	7.12	8.80	9.40	5.80	6.00	2.73	9.00	7.13	6.36
Sample Date	Jan.1/20	Feb.3/20	Mar.2/20	Apr.1/20	Apr.14/20	May.4/20	Jun.1/20	Jun.8/20	Jun.29/20	Jul.30/20	Aug.4/20	Sep.1/20	Oct.5/20	Nov.2/20	Dec.1/20	Dec.29/20	

Work Order	391133	393096	394850	396908	397581	399090	401592	402301	404293	407128	407338	409974	413091	415836	418387	420341
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2020 Sudbury Wastewater Treatment Plant - Raw & Effluent Metals Analysis

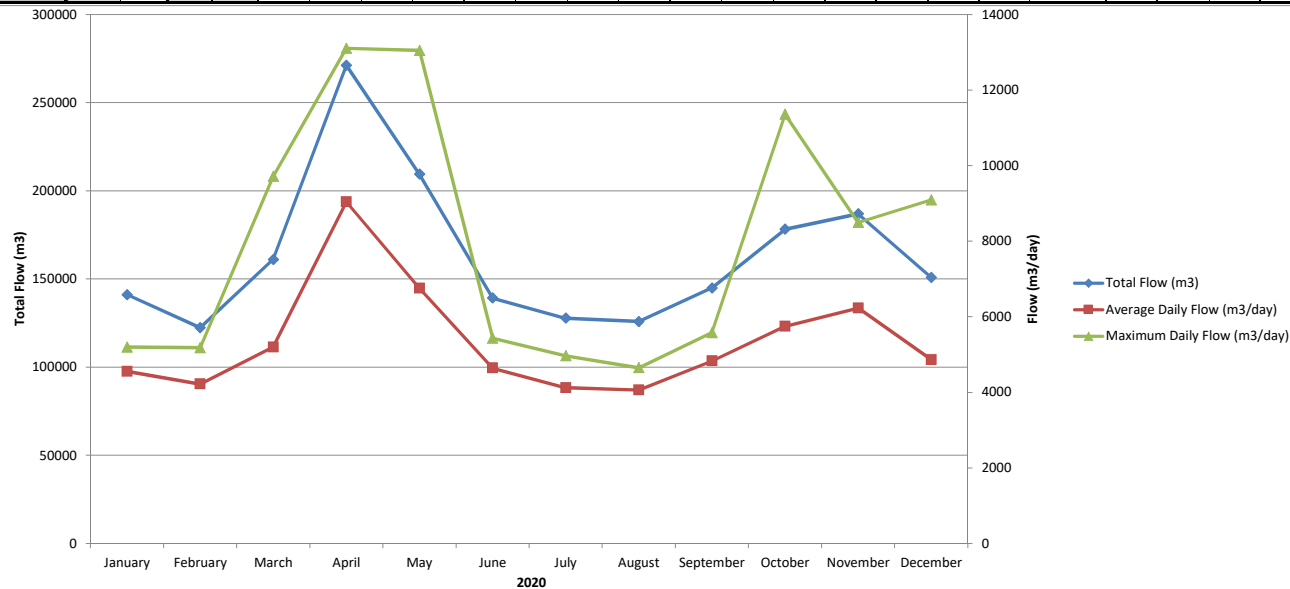
Parameter (mg/L)	Location	January	February	March	Apr.1/10	Apr.14/20	May	Jun.1	Jun.8	Jun.29	July	August	Aug.10	September	October	November	Dec.1	Dec.29	Average
Arsenic	Raw	0.0010	0.0020	0.0030	0.0040	0.0030	0.0080	0.0100	0.0020	0.0100	no results	0.0100		0.0020	0.0020	0.0010	0.0010	0.0100	0.0046
	Effluent	0.0010	0.0020	0.0020	0.0030	0.0030	0.0060	0.0100	0.0020	0.0020	no results	0.0010	0.0020	0.0020	0.0020	0.0010	0.0010	0.0100	0.0031
Cadmium	Raw	0.0001	0.0001	0.0001	0.0001	0.0002	0.0001	0.0010	0.0001	0.0010	no results	0.0010		0.0001	0.0001	0.0001	0.0001	0.0010	0.0003
	Effluent	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0010	0.0001	0.0001	no results	0.0001	0.0001	0.0001	0.0001	0.0002	0.0001	0.0010	0.0002
Chromium	Raw	0.0020	0.0020	0.0040	0.0030	0.0010	0.0020	0.0100	0.0100	0.0100	no results	0.0100		0.0030	0.0030	0.0020	0.0030	0.0100	0.0050
	Effluent	0.0010	0.0010	0.0020	0.0020	0.0010	0.0020	0.0100	0.0070	0.0020	no results	0.0010	0.0020	0.0020	0.0020	0.0020	0.0020	0.0100	0.0031
Cobalt	Raw	0.0026	0.0032	0.0015	0.0023	0.0044	0.0024	0.0030	0.0021	0.0020	no results	0.0050		0.0027	0.0019	0.0026	0.0019	0.0030	0.0027
	Effluent	0.0027	0.0040	0.0026	0.0024	0.0043	0.0021	0.0020	0.0015	0.0018	no results	0.0031	0.0011	0.0020	0.0019	0.0028	0.0019	0.0030	0.0025
Copper	Raw	0.0030	0.0110	0.0040	0.0100	0.0700	0.0040	0.0100	0.0180	0.0200	no results	0.0600		0.0190	0.0160	0.0070	0.0070	0.0200	0.0186
	Effluent	0.0070	0.0160	0.0060	0.0160	0.0160	0.0070	0.0100	0.0060	0.0050	no results	0.0090	0.0080	0.0100	0.0050	0.0090	0.0070	0.0100	0.0092
Lead	Raw	0.0009	0.0017	0.0001	0.0001	0.0021	0.0001	0.0010	0.0002	0.0010	no results	0.0020		0.0004	0.0002	0.0002	0.0001	0.0010	0.0007
	Effluent	0.0002	0.0004	0.0001	0.0001	0.0002	0.0001	0.0010	0.0001	0.0001	no results	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0010	0.0003
Mercury	Raw	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0010	0.0001	0.0010	no results	0.0010		0.0001	0.0001	0.0001	0.0001	0.0010	0.0003
	Effluent	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0010	0.0001	0.0001	no results	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0010	0.0002
Molybdenum	Raw	0.0030	0.0010	0.0010	0.0080	0.0010	0.0240	0.0100	0.0010	0.0100	no results	0.0100		0.0050	0.0030	0.0060	0.0010	0.0100	0.0063
	Effluent	0.0010	0.0010	0.0010	0.0170	0.0040	0.0080	0.0100	0.0010	0.0110	no results	0.0010	0.0030	0.0040	0.0040	0.0050	0.0010	0.0100	0.0051
Nickel	Raw	0.0810	0.0870	0.0520	0.0980	0.1290	0.1010	0.0700	0.0650	0.0600	no results	0.1500		0.0920	0.0660	0.0680	0.0580	0.0700	0.0831
	Effluent	0.0720	0.0730	0.0660	0.0980	0.1090	0.0850	0.0500	0.0560	0.0580	no results	0.1070	0.0670	0.0850	0.0610	0.0710	0.0600	0.0700	0.0743
Selenium	Raw	0.0007	0.0010	0.0005	0.0022	0.0005	0.0002	0.0050	0.0002	0.0020	no results	0.0030		0.0002	0.0011	0.0002	0.0009	0.0020	0.0013
	Effluent	0.0006	0.0018	0.0005	0.0055	0.0005	0.0002	0.0040	0.0002	0.0011	no results	0.0014	0.0002	0.0021	0.0055	0.0002	0.0008	0.0020	0.0017
Zinc	Raw	0.0510	0.0880	0.0020	0.0050	0.0750	0.0060	0.0100	0.0070	0.0100	no results	0.0600		0.0090	0.0060	0.0020	0.0020	0.0100	0.0229
	Effluent	0.0270	0.0290	0.0220	0.0090	0.0220	0.0110	0.0200	0.0130	0.0160	no results	0.0190	0.0170	0.0140	0.0090	0.0130	0.0110	0.0100	0.0164

Work Order	391133	393096	394850	396868	397581	399090	401592	402301	404293	no results	407338	407912 no Raw	409974	413091	415836	418387	420341
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2020 Valley East Wastewater Treatment Plant Performance

Month	Flows			BOD ₅ mg/L	CBOD				Total Suspended Solids				Total Phosphorus				Total Ammonia				Un-ionized		TKN		Nitrite	Nitrate	pH		Alkalinity		Sludge			Chlorine		E.Coli
	Total m ³	Avg Day m ³ /d	Max Day m ³ /d		Raw	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Ammonia µg/L	Raw	Effluent	Effluent	Effluent	Raw	Effluent	Raw	Effluent	Total m ³ Hauled	Conc. %	Total m ³	Total Kg	Residual mg/L	Geomean # Col./100mL
					mg/L	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency		mg/L	mg/L	mg/L	mg/L										
January	141101	4552	5198	160	150	6.7	30.50	95.5%	201	8.2	37.32	95.9%	3.5	0.65	2.96	81.2%	35.90	30.05	136.78	16.3%	139.6	36.1	29.5	1.17	1.82	7.5	7.2	207	176	1160	4.1	47.6	211.0	0.79	50	
February	122398	4221	5181	230	213	7.3	30.81	96.6%	201	8.3	35.03	95.9%	4.0	0.54	2.28	86.5%	31.80	30.65	129.36	3.6%	126.1	35.8	31.0	3.40	2.60	7.5	7.4	212	175	920		0.0	174.1	0.80	11	
March	161129	5198	9715	250	140	8.0	41.58	94.3%	169	13.2	68.61	92.2%	3.2	0.63	3.27	80.2%	32.50	27.15	141.12	16.5%	86.9	33.5	27.1	1.80	1.70	7.4	7.2	214	167	1240		0.0	185.7	0.63	47	
April	271177	9039	13106	77	55	9.3	84.06	83.1%	108	9.8	88.58	90.9%	1.7	0.41	3.71	76.2%	10.80	14.59	131.88	-35.1%	32.0	12.8	14.7	1.93	1.98	7.4	7.1	180	155	876		0.0	314.6	0.73	14	
May	209457	6757	13048	150	110	5.7	38.51	94.8%	148	8.1	54.73	94.5%	2.4	0.42	2.84	82.6%	13.90	19.10	129.05	-37.4%	30.5	15.1	17.7	1.80	1.90	7.4	7.0	195	163	1160		0.0	316.6	0.81	7	
June	139240	4641	5436	150	110	8.1	37.59	92.6%	204	7.8	36.20	96.2%	3.7	0.56	2.60	84.8%	20.80	24.65	114.41	-18.5%	112.2	27.1	24.3	3.30	2.10	7.5	7.2	191	163	1080		0.0	218.2	0.89	11	
July	127814	4123	4968	100	77	2.7	11.13	96.5%	160	6.4	26.39	96.0%	3.5	0.54	2.23	84.7%	25.90	26.36	108.68	-1.8%	276.0	26.4	24.6	1.10	1.80	7.5	7.4	203	167	1120		0.0	206.2	0.83	60	
August	125848	4060	4650	110	130	3.4	13.80	97.4%	186	5.5	22.33	97.0%	3.9	0.48	1.95	87.6%	23.10	25.78	104.66	-11.6%	242.4	30.4	23.9	1.99	1.91	7.4	7.3	202	157	962		0.0	181.3	0.65	104	
September	144923	4831	5580	213	67	4.2	20.29	93.7%	171	6.3	30.43	96.3%	3.2	0.54	2.61	83.2%	19.10	21.38	103.28	-11.9%	245.0	21.7	19.4	1.39	2.19	7.5	7.3	191	158	1080		0.0	199.6	0.70	36	
October	178253	5750	11359	180	140	4.2	24.15	97.0%	174	7.8	44.85	95.5%	3.0	0.81	4.66	73.0%	24.70	22.00	126.50	10.9%	211.4	32.8	21.0	3.51	2.32	7.5	7.3	201	163	1200		0.0	242.1	0.77	33	
November	186974	6232	8495	110	110	4.4	27.42	96.0%	144	7.4	46.12	94.9%	2.4	0.39	2.43	83.8%	17.90	15.98	99.59	10.7%	176.8	22.4	15.7	1.32	2.22	7.5	7.3	174	154	1240		0.0	294.2	0.83	18	
December	150867	4867	9092	140	130	4.5	21.90	96.5%	162	5.7	27.74	96.5%	2.6	0.53	2.58	79.6%	20.90	24.12	117.38	-15.4%	216.8	51.9	23.7	5.56	2.63	7.5	7.2	212	172.8	1240		0.0	250.3	0.80	4	
Total	1959181							94.8%				95.1%				81.9%				-2.8%										13278		47.6				
Average		5368				119	5.71	31.81	94.5%	169	7.88	43.20	95.2%	3.09	0.54	2.84	81.9%	23.11	23.48	120.2	-0.1	157.98	28.83	22.70	2.36	2.10	7.47	7.25	199	164		4.10		232.83	0.77	33



Plant Type: Extended Aeration
Design Capacity: 11,400 m³/day
Population Served: 17,365

Compliance Parameters:

	Conc.	Loading	
CBOD	25 mg/L	284 kg/day	Annual Average
TSS	25 mg/L	284 kg/day	Annual Average
Total Phosphorus	1.0 mg/L	11.4 kg/day	Monthly Average
pH	6.0 to 9.5 inclusive, at all times		Monthly Geometric Mean
E.Coli	200 col/100 mL		Monthly Geometric Mean



2020 Valley East Wastewater Treatment Plant Waste Sludge Analysis

Parameter (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December	Average
Ammonia (as N)	43.3	133	139	161	156	287	304	181	12.3	128	113	125	148.6
Nitrate (as N)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.50
Nitrite (as N)	0.5	8.7	0.5	0.5	0.5	17.7	0.5	23.5	16.7	15.2	16.6	4.2	8.76
Potassium	85	48	57	57	40	34	40	41	49	34	5.8	29	43.3
TKN	1940	1520	1490	2020	2010	1330	1620	1550	1680	1140	1560	3360	1768.3
Total Phosphorus	630	973	590	742	742	491	601	540	513	554	608	852	653.0
Total Solids	32000	37400	36200	51600	47800	25000	30500	28100	35700	26800	38200	33700	35250
Arsenic	0.1	0.05	0.04	0.08	0.08	0.04	0.04	0.05	0.05	0.04	0.026	0.03	0.0522
Cadmium	0.0197	0.0114	0.0080	0.0191	0.0164	0.0091	0.0102	0.0084	0.0110	0.0087	0.00415	0.0081	0.0112
Chromium	0.41	0.21	0.18	0.38	0.32	0.17	0.17	0.16	0.19	0.13	0.086	0.13	0.2113
Cobalt	0.109	0.053	0.049	0.091	0.068	0.039	0.048	0.053	0.052	0.042	0.0223	0.0340	0.0550
Copper	13.7	5.6	3.9	9.3	7.5	4.2	5.0	4.8	5.9	5.5	1.38	4.3	5.92
Lead	0.274	0.155	0.098	0.302	0.189	0.101	0.112	0.100	0.175	0.123	0.0501	0.101	0.1483
Mercury	0.001	0.005	0.001	0.007	0.005	0.001	0.004	0.003	0.001	0.003	0.0011	0.002	0.0028
Molybdenum	0.08	0.03	0.02	0.04	0.03	0.02	0.02	0.03	0.04	0.02	0.008	0.02	0.0298
Nickel	0.74	0.37	0.34	0.73	0.66	0.28	0.29	0.32	0.46	0.27	0.11	0.29	0.41
Selenium	0.061	0.027	0.016	0.041	0.033	0.022	0.022	0.024	0.035	0.020	0.0106	0.022	0.0278
Zinc	12.90	6.26	5.27	9.70	8.20	5.06	6.25	5.74	7.47	5.38	1.33	4.44	6.50
Sample Date	Jan.8/20	Feb.5/20	Mar.4/20	Apr.1/20	May.6/20	Jun.3/20	Jul.2/20	Aug.4/20	Sep.16/20	Oct.7/20	Nov.10/20	Dec.2/20	

Work Order

391688

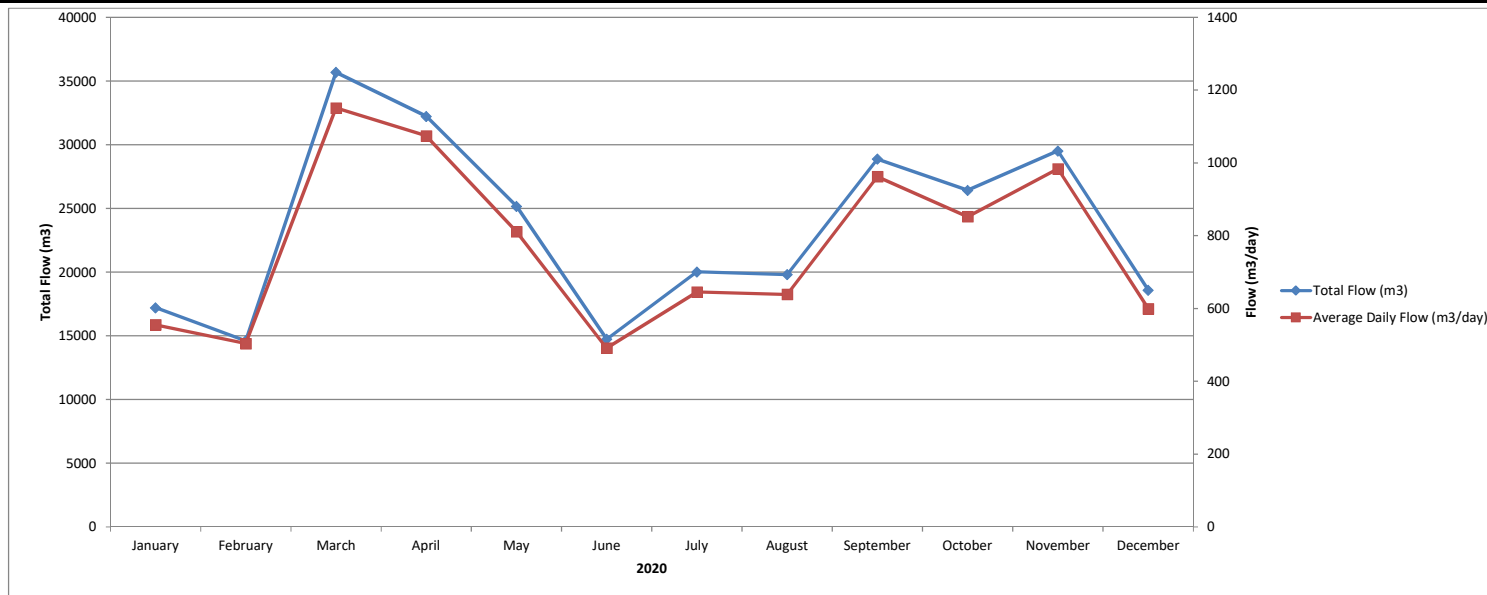
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2020 Wahnapiatae Wastewater Treatment Lagoon Performance

Month	Flows		BOD ₅		CBOD					Total Suspended Solids						Total Phosphorus						Total Ammonia						Un-Ionized	TKN	pH	H ₂ S	E.Coli
	Total m ³	Avg Day m ³ /d	Raw mg/L	Effluent mg/L	Loading kg/d	Raw Loading kg/day	Removed kg/day	Plant Efficiency		Raw mg/L	Effluent mg/L	Loading kg/d	Raw Loading kg/day	Removed kg/day	Plant Efficiency	Raw mg/L	Effluent mg/L	Loading kg/d	Raw Loading kg/day	Removed kg/day	Plant Efficiency	Raw mg/L	Effluent mg/L	Loading kg/d	Raw Loading kg/day	Removed kg/day	Plant Efficiency	Ammonia µg/L	Raw mg/L	Effluent	Pre-Discharge mg/L	Geomean # Col./100ml
January	17214	555	49	35	0.00	19	19	100.0%		138	33.2	18.41	77	58	76.0%	3.9	0.21	0.12	2.19	2.07	94.7%	7.07	0.40	0.22	3.93	3.70	94.3%		9.5			
February	14611	504	no results in February																													
March	35684	1151	no results in March																													
April	32239	1075	68	53	3.5	3.76	57	53	93.4%	95	2.6	2.79	102	99	97.3%	3.5	0.04	0.04	3.78	3.74	98.8%	5.26	4.73	5.08	5.65	0.57	10.1%	9.08	15.2	7.00	0.02	10
May	25165	812	68	53	2.5	2.03	43	41	95.3%	95	6.7	5.44	77	72	92.9%	3.52	0.04	0.03	2.86	2.82	98.9%	5.26	4.73	3.84	4.27	0.43	10.1%	72.09		7.97	0.02	54
June	14731	491	68	53	1.1	0.54	26	25	97.9%	95	5.0	2.46	47	44	94.7%	3.52	0.03	0.01	1.73	1.71	99.1%	5.26	0.30	0.15	2.58	2.44	94.3%	3.76				38
July	20017	646	29	20	1.1	0.71	13	12	94.5%	5000	5.0	3.23	3229	3225	99.9%	108.0	0.03	0.02	69.74	69.72	100.0%	4.04	0.3	0.19	2.61	2.41	92.6%		29.0			
August	19806	639	no results in August																													
September	28875	963	no results in September																													
October	26424	852	38	20	1.8	1.53	17	16	91.0%	658	1.2	1.02	561	560	99.8%	4.6	0.61	0.52	3.89	3.37	86.6%	7.39	0.58	0.49	6.30	5.80	92.2%	1.13	14.6	7.10	0.02	
November	29513	984	38	20	3.7	3.64	20	16	81.5%	658	1.6	1.57	647	646	99.8%	4.56	0.03	0.03	4.49	4.45	99.3%	7.39	2.04	2.01	7.27	5.26	72.4%	5.73		7.19	0.02	23
December	18597	600	38	20	1.7	1.00	12	11	91.7%	658	2.4	1.42	395	393	99.6%	4.56	0.43	0.26	2.74	2.48	90.6%	7.39	6.10	3.66	4.43	0.77	17.5%	7.33		6.97		5
Total	282876						207	194	93.6%				5134	5098	99.3%				91	90	98.9%				37	21	57.8%					
Average		775	50	34	2.20	1.65	26	24	93.2%	925	7.20	4.54	642	637	95.0%	17.02	0.18	0.13	11.43	11.30	96.0%	6.1	2.40	1.96	4.63	2.67	0.60	16.52	17.1	7.25	0.02	26
Fall	135018	734	50.75	36.5	1.63	1.20	24.75	23.55	92.36%	1462	4.48	3.04	978.3	975.3	97.92%	29.90	0.18	0.15	19.55	19.41	99.25%	5.49	1.48	1.17	3.94	2.77	70.34%	25.66	21.80	7.54		46
Spring	147858	811	48.25	32	2.96	2.10	27.02	24.92	92.45%	387.25	9.93	6.05	305.2	299.1	97.60%	4.15	0.18	0.11	3.30	3.19	96.59%	6.78	3.32	2.74	5.32	2.58	48.45%	7.38	12.35	7.05		13



Lagoon Type: Seasonal Retention
Design Capacity: 1,246 m³/day
Population Served: 1,136

Compliance Parameters:
Concentration

CBOD Seasonal Average
TSS Seasonal Average
pH

Spring Discharge:

Cell 2 & 3 - Pre discharge Apr 10, 2019
Cell #3 Pre-Discharge sampled May 8/15.
Cell #2 & 3 Discharge sampled Apr 17-24, 2019
Total amount discharged approximately XXXX m³.

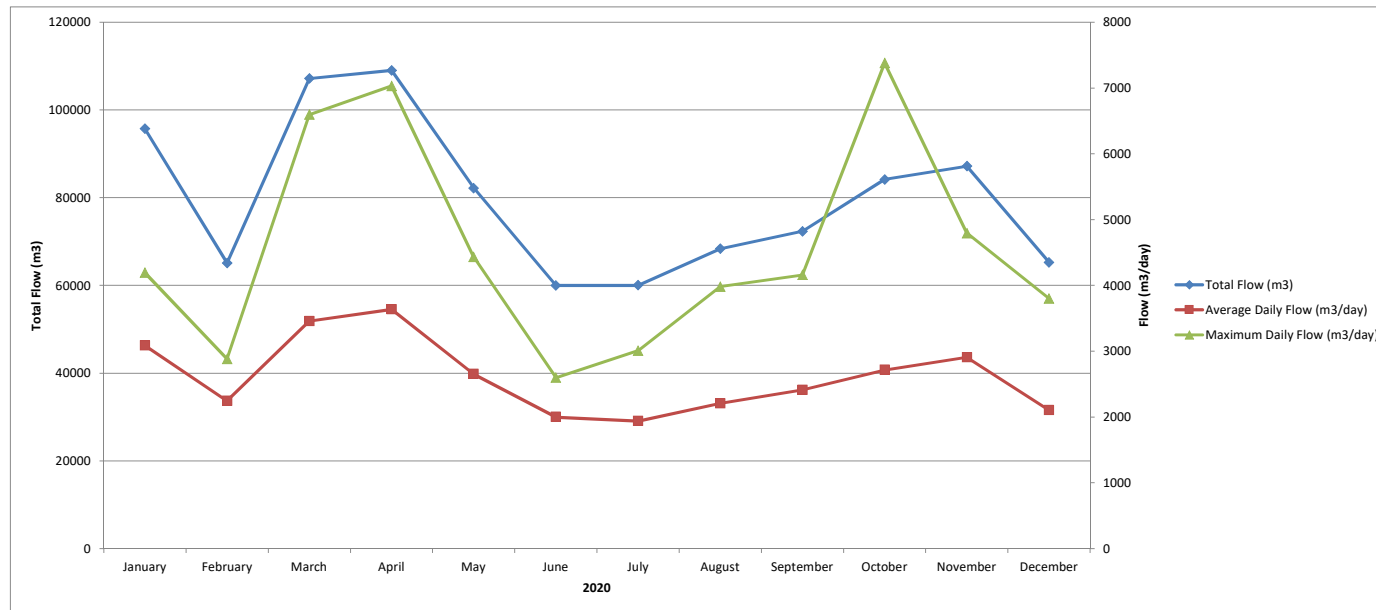
Fall Discharge:

Cell 1 Pre-Discharge sampled November 22, 2019
Cell #1 -Discharge sampled November 29, 2019
Cell #2 & 3 - Discharge Nov 8-15, 2019
Total amount discharged approximately XXXXX m³.



2020 Walden Wastewater Treatment Plant Performance

Month	Flows			BOD ₅		CBOD						Total Suspended Solids				Total Phosphorus				Total Ammonia				Un-ionized		TKN		Nitrite		Nitrate		pH		Alkalinity		Sludge			Chlorine		E.Coli
	Total m ³	Avg Day m ³ /d	Max Day m ³ /d	Raw	Raw	Effluent	Loading	Raw Loading	Removed	Plant	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Ammonia µg/L	Raw	Effluent	Effluent	Effluent	Raw	Effluent	Raw	Effluent	Total m ³	Conc.	Total	Total	Residual	Geomean				
				mg/L	mg/L	mg/L	kg/d	kg/day	kg/day	Efficiency	mg/L	mg/L	kg/d	kg/d	Efficiency	mg/L	mg/L	kg/d	kg/d	Efficiency	mg/L	mg/L	kg/d	kg/d	Efficiency	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	Hauled	%	m ³	Kg	mg/L	%	
January	95738	3088	4194	93	55	0.9	2.78	170	167	98.4%	68	6.9	21.31	89.9%	3.2	0.59	1.82	81.6%	24.70	1.48	4.57	94.0%	0.87	25.80	1.10	0.05	17.70	6.9	6.7	181	83	280		0.0	173.2	0.70	7				
February	65123	2246	2884	120	75	1.7	3.82	168	165	97.7%	79	6.2	13.92	92.2%	2.8	0.37	0.83	86.8%	20.90	0.22	0.49	98.9%	0.48	22.20	0.20	0.05	16.60	7.2	7.0	192	58	240		0.0	122.1	0.84	0.4				
March	107192	3458	6596	110	97	3.1	10.72	335	325	96.8%	48	6.2	21.44	87.1%	2.8	0.30	1.04	89.4%	28.10	1.04	3.60	96.3%	1.47	29.80	0.80	0.32	15.00	7.1	7.0	180	50	280		0.0	264.7	0.64	5				
April	109048	3635	7030	38	37	1.3	4.73	134	130	96.5%	25	4.7	17.08	81.2%	2.1	0.39	1.42	81.4%	11.20	0.21	0.76	98.1%	0.22	13.50	0.30	0.05	10.50	7.0	6.9	156	53	440		0.0	333.9	0.83	5				
May	82180	2651	4432	50	75	5.0	13.25	199	186	93.3%	30	5.5	14.58	81.7%	2.1	0.28	0.74	86.7%	16.90	3.34	8.85	80.2%	3.89	18.90	3.90	0.05	9.57	7.0	7.0	165	57	440		0.0	281.2	0.94	2				
June	59990	2000	2598	100	54	0.7	1.40	108	107	98.7%	72	6.8	13.60	90.6%	2.6	0.23	0.46	91.2%	21.70	0.16	0.32	99.3%	0.15	25.20	0.30	0.05	16.60	6.9	6.8	206	59	560		0.0	161.5	0.73	48				
July	60050	1937	3010	89	84	1.3	2.52	163	160	98.5%	71	8.9	17.24	87.5%	3.1	0.37	0.72	88.1%	27.00	0.38	0.74	98.6%	0.46	29.80	0.20	0.05	24.80	16.2	6.9	214	57	480		0.0	235.2	0.88	5				
August	68365	2205	3982	69	56	0.7	1.43	123	122	98.8%	109	8.0	17.64	92.7%	3.3	0.27	0.60	91.8%	19.70	0.23	0.51	98.8%	0.43	21.70	1.10	0.05	16.20	6.9	6.6	198	82	520		0.0	259.5	0.79	3				
September	72364	2412	4159	200	150	2.0	4.82	362	357	98.7%	135	8.4	20.26	93.8%	3.4	0.37	0.89	89.1%	22.00	0.17	0.41	99.2%	0.47	24.10	0.57	0.05	16.73	7.1	6.5	181	79	480		0.0	233.4	0.85	5				
October	84144	2714	7381	140	96	1.3	3.53	261	257	98.6%	53	7.8	21.17	85.3%	2.3	0.25	0.68	89.1%	28.50	0.02	0.05	99.9%	0.06	33.50	0.20	0.05	19.85	7.0	6.4	165	60	480		0.0	213.6	0.69	2				
November	87206	2907	4795	100	94	6.8	19.77	273	253	92.8%	106	11.5	33.43	89.2%	2.4	0.36	1.05	85.0%	16.10	3.93	11.42	75.6%	9.64	18.70	4.55	0.05	8.35	7.0	6.4	177	70	440	1.1	4.8	224.5	0.63	3				
December	65248	2105	3803	110	74	1.0	2.10	156	154	98.6%	92	6.8	14.31	92.6%	3.0	0.26	0.55	91.3%	24.40	0.09	0.19	99.6%	0.16	30.05	0.95	0.05	19.40	7.2	6.816	208	57	400		0.0	199.5	0.70	2				
Total	956648							2453	2382	97.1%				89.8%				87.4%				95.3%																			
Average		2621		102		2.15	5.91	204	198	97.3%	74	7.31	18.83	88.6%	2.76	0.34	0.90	87.6%	21.77	0.94	2.7	94.9%	1.53	24.44	1.18	0.07	15.94	7.79	6.75	185	64			5040	1.10	4.8		0.77	7		



Plant Type: Extended Aeration
Design Capacity: 4500 m³/day
Population Served: 3,313

Compliance Parameters:

	Conc.	Loading	
CBOD	25 mg/L	112.5 kg/day	Annual Average
TSS	25 mg/L	112.5 kg/day	Annual Average
Total Phosphorus	1.0 mg/L	4.5 kg/day	Monthly Average
E.Coli	200 col/100 mL		Monthly Geometric Mean