



2021 Annual Wastewater Report



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2021 Annual Wastewater Report

Version 1.0

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Date

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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 (CRM);** Any complaints received regarding Wastewater Treatment facilities through the City of greater Sudbury 311 (CRM) 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 acidic 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
10-Feb-2022	Initial issue	1.0	Andy Bilash
14-Feb-2022	Edited and formatted	2.0	Andy Bilash

1. Operating Issues & Corrective Actions

Date	Facility	Parameter	Probable Cause	Corrective Actions Taken
Mar 2021	Sudbury WWTP	Acute Lethality	High Ammonia	Decreased air to aeration tanks
Mar 2021	Sudbury WWTP	Acute Lethality	Overdosing Sodium Bisulphite	Decrease chemical pump speed
Mar 2021	Azilda WWTP	Total Suspended Solids	High Solids Polymer Issues	Cleaned out polymer tanks and increased wasting
Apr 2021	Valley East WWTP	Acute Lethality	unknown	Resubmitted additional samples
Apr 2021	Sudbury WWTP	Acute Lethality	unknown	Resubmitted additional samples
Mar.2021	Capreol Lagoon	CBOD5 & TSS	High Flows	Monitored and sampled
May 2021	Levack WWTP	pH	unknown	Increased lime feed monitored and sampled
June 2021	Levack WWTP	pH	unknown	Monitored and sampled
June 2021	Azilda WWTP	Total Ammonia	Air flow issues & Temperature issues	Increase air and monitored
Dec 2021	Azilda WWTP	Total Suspended Solids	Sampler Issues	Wasted and monitored solids level
Dec 2021	Capreol Lagoon	Total Phosphorus	unknown	Monitored and sampled
Dec 2021	Capreol Lagoon	TSS	unknown	Monitored and sampled

2. Maintenance & Capital Improvements

Facility	Maintenance Completed	Capital Improvements Completed
Azilda WWTP	- 3 New Blower VFD's installed	- No major capital work completed
Chelmsford WPCP	- Rebuilt sludge loading Piping - Replaced blower harmonic filters - Replaced A-plant WAS lines - Installed replacement Raw pump #2 - Cooling pumps and electrical wiring repaired/replaced on UV system	- No major capital work completed
Capreol Lagoons	- Half of Lagoon Dredged, Installed warning signs around lagoon cells	- Rebuilt berm around lagoon
Coniston WWTP	- Replace ditch recirculating pumps	- No major capital work completed
Dowling WWTP	- Replaced comminutor - Sodium Bisulphite lines replaced	- No major capital work completed
Falconbridge WWTP	- Valve chamber grating and cement work - Potable water lines replaced	- No major capital work completed
Levack WWTP	- Installed separate roads office water meter	- No major capital work completed
Lively WWTP	- Repaired collapsed intake pipe - Repaired comminutor	- No major capital work completed
Sudbury WWTP	- Replaced one grit auger - Repaired Clarifier #5 & #6 skimmer arms - Cleaned out Clarifier #5 & #6 mix liquor valve - New glycol pumps installed - Replaced #1 aeration air control actuator - Polymer discharge valves replaced	- No major capital work completed
Valley East WWTP	- Installed new Wasting system piping removed splitterbox - Installed new trash racks - Repaired grit auger liner and repaired piping	- Pump station roof and brickwork repair, Concrete repair on effluent well
Wahnapitae Lagoons	- Outfall gate cleaned and repaired	- No major capital work completed
Walden WWTP	- Seasonal tank cleaning, no other major work	- No major capital work completed

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 neighboring 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 2021, the Sudbury Biosolids facility treated a total of 122,899 m³ of material, containing approximately 4,115 tonnes of solids. Of this total, approximately 17,507 m³ was from septic tanks, 45,294 m³ was sludge from other CGS facilities and 5,218 m³ was sludge received from the Espanola Wastewater Treatment Plant.

5. Customer Complaints (CRM)

Date	Case ID	Location	Issue	Resolution
20-Jan-21	210501-021576	York Lift Station	Power outage	Crew dispatched Hydro restored
4-Feb-21	210502-044251	Landry Lift Station	Inquiry as to what work was being done at site	Called back and explained work
18-Mar-21	210502-035774	Jacob Lift station	Requesting Jersey Barrier install at station trail	Installed barricades
22-Apr-21	210501-008729	Jacob Lift Station	Gate Left Open at Station	Crew dispatched to check site
22-Apr-21	210502-010265	Chelmsford Lagoon	Property Inquiry next to lagoon	Spoke to citizen about property
1-Jun-21	210601-000129	Laurier Lift Station	Loud noise and heat coming from station	Crew advised to investigate

Date	Case ID	Location	Issue	Resolution
10-Jun-21	210610-000036	Paris Lift Station	Broken vent pipe	Crew sent to repair
22-Jun-21	210622-000371	Helen's Point Lift Station	Panel door open	Crew dispatched to investigate
30-Jun-21	210630-000235	Jacob Lift Station	Jersey Barriers not working	Added additional boulders to site
15-Jul-21	210715-000027	Jacob Lift Station	Road safety and & Fence gate position	Additional Boulder added
19-Jul-21	210719-000311	Anderson Lift Station	Door open at station	Crew sent out to close and add lock to door
21-Jul-21	210721-000012	Walden WWTP	Simon Lake Pollution	Staff called to discuss algae blooms
28-Jul-21	210728-000299	Laurier Lift Station	Alarm system going off	Staff sent out to clear and reset alarm
28-Jul-21	210728-000078	Garson Lagoon	Strong odour coming from lagoon	Staff gone to site to investigate
7-Aug-21	210807-000052	Coniston WWTP	Questions about process effluent	Called back and explained process and compliance
9-Aug-21	210809-000306	Nickel Lift Station	Generator Light left on	Staff went to site and shut light
27-Aug-21	210827-000344	Beverly Lift Station	Lifting device left at station	Crew sent to retrieve device
6-Oct-21	211006-000531	Helen's Point Lift Station	Break in at station	Crew sent to investigate
10-Nov-21	211110-000313	Cerilli Lift Station	Water seeping at lift Station	WW Crew and D&C crew checking for leaks
18-Nov-21	211118-000025	Nickel Lift station	Gate at station closed	Sent staff to re-open gate
3-Dec-21	211203-000130	Sudbury WWTP	RV dump cover frozen	Staff thawed and opened cover
10-Dec-21	211210-000050	North Shore Lift Station	Station has not been plowed	Sent plow contractor and Sudbury staff to investigate
16-Dec-21	211216-000590	Walford East Lift Station	Snowbank at lift station	Contractor called to remove bank

6. Plant Bypasses and Overflows

Date	Time (24 HR)	Duration (hrs)	Location	Type of Occurrence
19-Feb-21	18:00	3.5	Sudbury WWTP	Collection system overflow
05-Mar-21	13:20	0.3	Chelmsford WWTP	Sewage Spill
11-Mar-21	12:57	7.6	Walden WWTP	Plant operating over design capacity
11-Mar-21	11:30	13	Coniston WWTP	Plant operating over design capacity
28-Mar-21	10:20	17.5	Coniston WWTP	Plant operating over design capacity
28-Mar-21	12:10	3.5	Sudbury WWTP	Force main break
04-May-21	16:00	18	Capreol Lagoon	Sewage Spill
13-May-21	15:30	1.5	Sudbury WWTP	Collection system overflow

Date	Time (24 HR)	Duration (hrs)	Location	Type of Occurrence
19-May-21	16:45	0.5	Sudbury WWTP	Collection system overflow
21-May-21	09:30	98.8	Azilda WWTP	Force main break
05-May-21	21:30	unknown	Sudbury WWTP	Collection system overflow
14-Jul-21	19:40	1.5	Levack WWTP	Plant operating over design capacity
24-Jul-21	15:00	4	Lively WWTP	Plant operating over design capacity
24-Jul-21	18:30	9	Coniston WWTP	Plant operating over design capacity
29-Jul-21	17:30	2	Valley East WWTP	Collection system overflow
03-Aug-21	16:40	4.5	Chelmsford WWTP	Plant Bypass
10-Aug-21	03:19	2.5	Lively WWTP	Plant operating over design capacity
13-Oct-21	20:04	11.5	Coniston WWTP	Plant operating over design capacity
16-Dec-21	09:15	20	Coniston 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:	1,607 m ³ /day

cBOD ₅		Value		ECA Limit
Annual Average Daily Loading	Influent	203.9	kg/day	< 33 kg/day
	Effluent	3.16	kg/day	
Monthly Effluent Concentration	Average	1.95	mg/L	< 10 mg/L
	Minimum	1.20	mg/L	
	Maximum	3.40	mg/L	
Plant Removal		200.7	kg/day	
		98.32	%	

TSS – Total Suspended Solids		Value		ECA Limit
Annual Average Daily Loading	Influent	186.2	kg/day	< 33 kg/day < 10 mg/L
	Effluent	12.54	kg/day	
Monthly Effluent Concentration	Average	7.49	mg/L	
	Minimum	5.20	mg/L	
	Maximum	11.50	mg/L	
Plant Removal		173.7	kg/day	
		93.30	%	

TP – Total Phosphorous		Value		ECA Limit
Annual Average Daily Loading	Influent	6.61	kg/day	< 2.0 kg/day
	Effluent	0.50	kg/day	
Monthly Effluent Concentration	Average	0.31	mg/L	< 0.6 mg/L
	Minimum	0.19	mg/L	
	Maximum	0.43	mg/L	
Plant Removal		6.11	kg/day	
		92.60%		

Total Ammonia (as Nitrogen)		Value		ECA Limit
Annual Average Daily Loading	Influent	34.99	kg/day	< 16.5 kg/day
	Effluent	3.38	kg/day	
Monthly Effluent Concentration	Average	2.26	mg/L	< 5 mg/L
	Minimum	0.32	mg/L	
	Maximum	5.82	mg/L	
Plant Removal		31.61	kg/day	
		90.50	%	

pH		Value	ECA Limit
Influent Measurements	Average	7.60	6.0 to 9.5 at all times
Effluent Measurements	Average	6.80	
	Minimum	6.50	
	Maximum	7.30	

E. coli		Value	ECA Limit
Monthly Geometric Mean Density	Average	9 CFU/100mL	< 200 CFU/100mL
	Minimum	1 CFU/100mL	< 200 CFU/100mL
	Maximum	31 CFU/100mL	< 200 CFU/100mL

Capreol Lagoon

Influent Flow	
Design Capacity:	5,000 m ³ /day
Average Daily Flow:	2,368 m ³ /day

BOD ₅		Value	ECA Limit
Annual Average Daily Loading	Influent	231.3 kg/day	< 30 mg/L
	Effluent	59.46 kg/day	
Monthly Effluent Concentration	Average	25.78 mg/L	
	Minimum	5.9 mg/L	
	Maximum	51.0 mg/L	
Plant Removal		171.8 kg/day 68.50 %	

TSS – Total Suspended Solids		Value	ECA Limit
Annual Average Daily Loading	Influent	193.3 kg/day	< 40 mg/L
	Effluent	59.80 kg/day	
Monthly Effluent Concentration	Average	25.39 mg/L	
	Minimum	6.00 mg/L	
	Maximum	45.00 mg/L	
Plant Removal		133.5 kg/day 65.1 %	

TP – Total Phosphorous		Value	ECA Limit
Annual Average Daily Loading	Influent	6.76 kg/day	< 1.38 mg/L
	Effluent	4.76 kg/day	
Monthly Effluent Concentration	Average	2.02 mg/L	
	Minimum	1.52 mg/L	
	Maximum	2.48 mg/L	
Plant Removal		2.00 kg/day 27.63 %	

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:	4,215 m ³ /day

cBOD₅				
Seasonal Discharge – November 1 to April 30		Value		ECA Limit
Annual Average Daily Loading	Influent	654.7	kg/day	< 106.5 kg/day < 15 mg/L
	Effluent	14.74	kg/day	
Monthly Effluent Concentration	Average	3.42	mg/L	
	Minimum	2.70	mg/L	
	Maximum	4.30	mg/L	
Plant Removal		640.0	kg/day	
		97.75	%	
Seasonal Discharge – May 1 to October 31		Value		ECA Limit
Annual Average Daily Loading	Influent	411.1	kg/day	< 49.7 kg/day < 7 mg/L
	Effluent	10.20	kg/day	
Monthly Effluent Concentration	Average	2.42	mg/L	
	Minimum	1.90	mg/L	
	Maximum	3.00	mg/L	
Plant Removal		400.9	kg/day	
		97.52	%	

TSS – Total Suspended Solids				
Seasonal Discharge – November 1 to April 30		Value		ECA Limit
Annual Average Daily Loading	Influent	907.2	kg/day	< 106.5 kg/day < 15 mg/L
	Effluent	28.85	kg/day	
Monthly Effluent Concentration	Average	6.63	mg/L	
	Minimum	4.50	mg/L	
	Maximum	8.20	mg/L	
Plant Removal		878.4	kg/day	
		96.80	%	
Seasonal Discharge – May 1 to October 31		Value		ECA Limit
Annual Average Daily Loading	Influent	895.0	kg/day	< 49.7 kg/day < 7 mg/L
	Effluent	18.89	kg/day	
Monthly Effluent Concentration	Average	4.53	mg/L	
	Minimum	3.20	mg/L	
	Maximum	5.60	mg/L	
Plant Removal		876.1	kg/day	
		97.90	%	

TP – Total Phosphorous				
Seasonal Discharge – November 1 to April 30		Value		ECA Limit
Annual Average Daily Loading	Influent	14.14	kg/day	< 3.55 kg/day < 0.5 mg/L
	Effluent	1.00	kg/day	
Monthly Effluent Concentration	Average	0.24	mg/L	
	Minimum	0.15	mg/L	
	Maximum	0.29	mg/L	
Plant Removal		13.14	kg/day	
		92.93%		
Seasonal Discharge – May 1 to October 31		Value		ECA Limit
Annual Average Daily Loading	Influent	12.31	kg/day	< 2.13 kg/day < 0.3 mg/L
	Effluent	0.69	kg/day	
Monthly Effluent Concentration	Average	0.17	mg/L	
	Minimum	0.15	mg/L	
	Maximum	0.21	mg/L	
Plant Removal		11.61	kg/day	
		94.36 %		

Total Ammonia (as Nitrogen)				
Seasonal Discharge – November 1 to April 30		Value		ECA Limit
Annual Average Daily Loading	Influent	89.37	kg/day	< 28.4 kg/day < 4 mg/L
	Effluent	10.94	kg/day	
Monthly Effluent Concentration	Average	2.57	mg/L	
	Minimum	0.56	mg/L	
	Maximum	7.28	mg/L	
Plant Removal		78.43	kg/day	
		87.80 %		
Seasonal Discharge – May 1 to October 31		Value		ECA Limit
Annual Average Daily Loading	Influent	59.90	kg/day	< 14.2 kg/day < 2 mg/L
	Effluent	1.42	kg/day	
Monthly Effluent Concentration	Average	0.32	mg/L	
	Minimum	0.11	mg/L	
	Maximum	0.93	mg/L	
Plant Removal		58.48	kg/day	
		97.60 %		

pH				
Both Seasonal Discharge Periods		Value		ECA Limit
Influent Measurements	Average	7.64		6.0 to 9.5 at all times
Effluent Measurements	Average	7.19		
	Minimum	6.90		
	Maximum	7.50		

<i>E. coli</i>				
Summer Discharge Period Only – May 1 to October 31		Value		ECA Limit
Monthly Geometric Mean Density	Average	28.46	CFU/100mL	< 200 CFU/100mL
	Minimum	8.00	CFU/100mL	< 200 CFU/100mL
	Maximum	60.00	CFU/100mL	< 200 CFU/100mL

Coniston Wastewater Treatment Plant

Influent Flow
Design Capacity: 3,000 m ³ /day

Average Daily Flow: 1,298 m³/day

BOD₅		Value		ECA Limit
Annual Average Daily Loading	Influent	129.1	kg/day	< 35 kg/day < 20 mg/L
	Effluent	6.50	kg/day	
Monthly Effluent Concentration	Average	4.93	mg/L	
	Minimum	1.10	mg/L	
	Maximum	11.0	mg/L	
Plant Removal		122.6	kg/day	
		94.97	%	

TSS – Total Suspended Solids		Value		ECA Limit
Annual Average Daily Loading	Influent	139.4	kg/day	< 35 kg/day < 20 mg/L
	Effluent	7.76	kg/day	
Monthly Effluent Concentration	Average	6.07	mg/L	
	Minimum	4.00	mg/L	
	Maximum	10.40	mg/L	
Plant Removal		131.6	kg/day	
		94.44	%	

pH		Value		ECA Limit
Influent Measurements	Average	7.31		6.0 to 9.5 at all times
Effluent Measurements	Average	7.19		
	Minimum	6.90		
	Maximum	7.50		

<i>E. coli</i>		Value		ECA Limit
Monthly Geometric Mean Density	Average	10	CFU/100mL	< 200 CFU/100mL
	Minimum	2	CFU/100mL	< 200 CFU/100mL
	Maximum	376	CFU/100mL	< 200 CFU/100mL

Dowling Wastewater Treatment Plant

Influent Flow	
Design Capacity:	3,200 m ³ /day
Average Daily Flow:	1,951 m ³ /day

cBOD ₅		Value	ECA Limit
Annual Average Daily Loading	Influent	56.26 kg/day	< 80 kg/day < 25 mg/L
	Effluent	7.18 kg/day	
Monthly Effluent Concentration	Average	3.63 mg/L	
	Minimum	2.80 mg/L	
	Maximum	4.90 mg/L	
Plant Removal		49.08 kg/day	
		87.24 %	

TSS – Total Suspended Solids		Value	ECA Limit
Annual Average Daily Loading	Influent	91.60 kg/day	< 80 kg/day < 25 mg/L
	Effluent	7.54 kg/day	
Monthly Effluent Concentration	Average	3.93 mg/L	
	Minimum	2.50 mg/L	
	Maximum	6.20 mg/L	
Plant Removal		84.06 kg/day	
		90.81 %	

TP – Total Phosphorous		Value	ECA Limit
Annual Average Daily Loading	Influent	1.88 kg/day	< 3.2 kg/day < 1.0 mg/L
	Effluent	0.91 kg/day	
Monthly Effluent Concentration	Average	0.47 mg/L	
	Minimum	0.40 mg/L	
	Maximum	0.53 mg/L	
Plant Removal		0.97 kg/day	
		51.80 %	

pH		Value	ECA Limit
Influent Measurements	Average	6.96	6.0 to 9.5 at all times
Effluent Measurements	Average	6.72	
	Minimum	6.50	
	Maximum	6.90	

E. coli		Value	ECA Limit
Monthly Geometric Mean Density	Average	22 CFU/100mL	< 200 CFU/100mL
	Minimum	4 CFU/100mL	< 200 CFU/100mL
	Maximum	82 CFU/100mL	< 200 CFU/100mL

Falconbridge Wastewater Treatment Plant

Influent Flow	
Design Capacity:	909 m ³ /day
Average Daily Flow:	308 m ³ /day

BOD ₅		Value		ECA Limit
Annual Average Daily Loading	Influent	61.41	kg/day	< 46 kg/day
	Effluent	0.78	kg/day	
Monthly Effluent Concentration	Average	2.79	mg/L	< 15 mg/L
	Minimum	1.10	mg/L	
	Maximum	8.80	mg/L	
Plant Removal		60.63	kg/day	
		98.74	%	

TSS – Total Suspended Solids		Value		ECA Limit
Annual Average Daily Loading	Influent	7.49	kg/day	< 46 kg/day
	Effluent	0.95	kg/day	
Monthly Effluent Concentration	Average	3.13	mg/L	< 15 mg/L
	Minimum	2.00	mg/L	
	Maximum	5.00	mg/L	
Plant Removal		6.54	kg/day	
		87.29	%	

Levack Wastewater Treatment Plant

Influent Flow	
Design Capacity:	2,270 m ³ /day
Average Daily Flow:	831 m ³ /day

CBOD ₅		Value		ECA Limit
Annual Average Daily Loading	Influent	93.0	kg/day	< 56.75 kg/day < 25 mg/L
	Effluent	2.34	kg/day	
Monthly Effluent Concentration	Average	2.73	mg/L	
	Minimum	0.50	mg/L	
	Maximum	8.80	mg/L	
Plant Removal		90.69	kg/day	
		97.49	%	

TSS – Total Suspended Solids		Value		ECA Limit
Annual Average Daily Loading	Influent	144.2	kg/day	< 56.75 kg/day < 25 mg/L
	Effluent	5.59	kg/day	
Monthly Effluent Concentration	Average	6.61	mg/L	
	Minimum	3.20	mg/L	
	Maximum	11.00	mg/L	
Plant Removal		138.60	kg/day	
		96.12	%	

TP – Total Phosphorous		Value		ECA Limit
Annual Average Daily Loading	Influent	5.08	kg/day	< 3.1 kg/day < 1.0 mg/L
	Effluent	0.40	kg/day	
Monthly Effluent Concentration	Average	0.47	mg/L	
	Minimum	0.25	mg/L	
	Maximum	0.73	mg/L	
Plant Removal		4.68	kg/day	
		92.14	%	

pH		Value		ECA Limit
Influent Measurements	Average	6.98		6.0 to 9.5 at all times
Effluent Measurements	Average	6.55		
	Minimum	6.30		
	Maximum	6.90		

<i>E. coli</i>		Value		ECA Limit
Monthly Geometric Mean Density	Average	5	CFU/100mL	< 200 CFU/100mL
	Minimum	1	CFU/100mL	< 200 CFU/100mL
	Maximum	16	CFU/100mL	< 200 CFU/100mL

Lively Wastewater Treatment Plant

Influent Flow	
Design Capacity:	1,600 m ³ /day
Average Daily Flow:	1,252 m ³ /day

CBOD ₅		Value		ECA Limit
Annual Average Daily Loading	Influent	96.94	kg/day	< 40 kg/day < 25 mg/L
	Effluent	2.74	kg/day	
Monthly Effluent Concentration	Average	2.19	mg/L	
	Minimum	0.50	mg/L	
	Maximum	4.80	mg/L	
Plant Removal		94.21	kg/day	
		95.98	%	

TSS – Total Suspended Solids		Value		ECA Limit
Annual Average Daily Loading	Influent	170.8	kg/day	< 40 kg/day < 25 mg/L
	Effluent	10.16	kg/day	
Monthly Effluent Concentration	Average	7.93	mg/L	
	Minimum	4.70	mg/L	
	Maximum	17.70	mg/L	
Plant Removal		160.63	kg/day	
		93.44	%	

TP – Total Phosphorous		Value		ECA Limit
Annual Average Daily Loading	Influent	6.57	kg/day	< 1.6 kg/day < 1.0 mg/L
	Effluent	0.46	kg/day	
Monthly Effluent Concentration	Average	0.37	mg/L	
	Minimum	0.21	mg/L	
	Maximum	0.55	mg/L	
Plant Removal		6.11	kg/day	
		92.69	%	

pH		Value		ECA Limit
Influent Measurements	Average	7.16		6.0 to 9.5 at all times
Effluent Measurements	Average	7.01		
	Minimum	6.60		
	Maximum	7.60		

<i>E. coli</i>		Value		ECA Limit
Monthly Geometric Mean Density	Average	6	CFU/100mL	< 200 CFU/100mL
	Minimum	1	CFU/100mL	< 200 CFU/100mL
	Maximum	15	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:	47,313 m ³ /day

cBOD₅		Value		ECA Limit
Annual Average Daily Loading	Influent	7,008.6	kg/day	< 1990.6 kg/day < 25 mg/L
	Effluent	319.03	kg/day	
Monthly Effluent Concentration	Average	6.82	mg/L	
	Minimum	3.30	mg/L	
	Maximum	10.50	mg/L	
Plant Removal		6689.6	kg/day	
		95.45	%	

TSS – Total Suspended Solids		Value		ECA Limit
Annual Average Daily Loading	Influent	13,478	kg/day	< 1990.6 kg/day < 25 mg/L
	Effluent	493.31	kg/day	
Monthly Effluent Concentration	Average	10.53	mg/L	
	Minimum	6.70	mg/L	
	Maximum	16.4	mg/L	
Plant Removal		12985	kg/day	
		96.06	%	

TP – Total Phosphorous				
Seasonal Discharge – October 1 to May 31		Value		ECA Limit
Annual Average Daily Loading	Influent	172.82	kg/day	< 79.6 kg/day < 1.0 mg/L
	Effluent	26.78	kg/day	
Monthly Effluent Concentration	Average	0.55	mg/L	
	Minimum	0.40	mg/L	
	Maximum	0.68	mg/L	
Plant Removal		146.04	kg/day	
		84.50	%	
Seasonal Discharge – June 1 to September 30		Value		ECA Limit
Annual Average Daily Loading	Influent	112.85	kg/day	< 49.7 kg/day < 0.5 mg/L
	Effluent	17.05	kg/day	
Monthly Effluent Concentration	Average	0.37	mg/L	
	Minimum	0.28	mg/L	
	Maximum	0.56	mg/L	
Plant Removal		95.80	kg/day	
		84.89	%	

pH		Value		ECA Limit
Influent Measurements	Average	7.14		6.0 to 9.5 at all times
Effluent Measurements	Average	6.93		
	Minimum	6.80		
	Maximum	7.30		

E. coli		Value		ECA Limit
Monthly Geometric Mean Density	Average	5	CFU/100mL	< 200 CFU/100mL

Minimum	2	CFU/100mL	< 200 CFU/100mL
Maximum	15	CFU/100mL	< 200 CFU/100mL

Chlorine Residual		Value		WSER Limit
Annual Average Daily Loading	Effluent	0.15	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:	4,571 m ³ /day

CBOD ₅		Value		ECA Limit
Annual Average Daily Loading	Influent	705.39	kg/day	< 284 kg/day < 25 mg/L
	Effluent	19.27	kg/day	
Monthly Effluent Concentration	Average	4.28	mg/L	
	Minimum	0.60	mg/L	
	Maximum	14.90	mg/L	
Plant Removal		686.12	kg/day	
		96.93	%	

TSS – Total Suspended Solids		Value		ECA Limit
Annual Average Daily Loading	Influent	925.3	kg/day	< 284 kg/day < 25 mg/L
	Effluent	44.04	kg/day	
Monthly Effluent Concentration	Average	9.72	mg/L	
	Minimum	5.50	mg/L	
	Maximum	19.50	mg/L	
Plant Removal		881.29	kg/day	
		95.20	%	

TP – Total Phosphorous		Value		ECA Limit
Annual Average Daily Loading	Influent	14.57	kg/day	< 11.4 kg/day < 1.0 mg/L
	Effluent	2.89	kg/day	
Monthly Effluent Concentration	Average	0.63	mg/L	
	Minimum	0.55	mg/L	
	Maximum	0.85	mg/L	
Plant Removal		11.68	kg/day	
		79.96	%	

pH		Value		ECA Limit
Influent Measurements	Average	7.39		6.0 to 9.5 at all times
Effluent Measurements	Average	7.36		
	Minimum	7.00		
	Maximum	9.30		

<i>E. coli</i>		Value		ECA Limit
Monthly Geometric Mean Density	Average	59	CFU/100mL	< 200 CFU/100mL
	Minimum	2	CFU/100mL	< 200 CFU/100mL
	Maximum	144	CFU/100mL	< 200 CFU/100mL

Wahnapitae Lagoon

The Wahnapitae Lagoon is 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 Wahnapitae Lagoon, plant removal values are calculated using the previously 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:	593 m ³ /day

cBOD ₅		Value		ECA Limit
Seasonal Discharge – Fall				
Annual Average Daily Loading	Influent	33.71	kg/day	< 30 mg/L
	Effluent	1.38	kg/day	
Monthly Effluent Concentration	Average	2.74	mg/L	
	Minimum	1.70	mg/L	
	Maximum	3.10	mg/L	
Plant Removal		32.33	kg/day	
		93.98 %		
Seasonal Discharge – Spring				
Annual Average Daily Loading	Influent	28.66	kg/day	< 30 mg/L
	Effluent	1.38	kg/day	
Monthly Effluent Concentration	Average	2.04	mg/L	
	Minimum	n/a	mg/L	
	Maximum	3.10	mg/L	
Plant Removal		27.29	kg/day	
		94.85 %		

TSS – Total Suspended Solids		Value		ECA Limit
Seasonal Discharge – Fall				
Annual Average Daily Loading	Influent	637.6	kg/day	< 40 mg/L
	Effluent	2.93	kg/day	
Monthly Effluent Concentration	Average	6.02	mg/L	
	Minimum	1.30	mg/L	
	Maximum	7.80	mg/L	
Plant Removal		634.63	kg/day	
		99.36%		
Seasonal Discharge – Spring				
Annual Average Daily Loading	Influent	315.8	kg/day	< 40 mg/L
	Effluent	4.34	kg/day	
Monthly Effluent Concentration	Average	6.24	mg/L	
	Minimum	n/a	mg/L	
	Maximum	7.2	mg/L	
Plant Removal		311.47	kg/day	
		95.76 %		

pH		Value		ECA Limit
Effluent Measurements	Average	6.86		6.0 to 9.5 at all times
	Minimum	6.05		
	Maximum	7.29		

Walden Wastewater Treatment Plant

Influent Flow				
		Design Capacity:	4,500 m ³ /day	
		Average Daily Flow:	2,106 m ³ /day	

CBOD ₅		Value		ECA Limit
Annual Average Daily Loading	Influent	242.5	kg/day	< 112.5 kg/day < 25 mg/L
	Effluent	5.26	kg/day	
Monthly Effluent Concentration	Average	2.48	mg/L	
	Minimum	0.80	mg/L	
	Maximum	5.80	mg/L	
Plant Removal		237.3	kg/day	
		97.37	%	

TSS – Total Suspended Solids		Value		ECA Limit
Annual Average Daily Loading	Influent	233.2	kg/day	< 112.5 kg/day < 25 mg/L
	Effluent	17.10	kg/day	
Monthly Effluent Concentration	Average	8.05	mg/L	
	Minimum	3.90	mg/L	
	Maximum	21.30	mg/L	
Plant Removal		216.1	kg/day	
		90.97	%	

TP – Total Phosphorous		Value		ECA Limit
Annual Average Daily Loading	Influent	7.23	kg/day	< 4.5 kg/day < 1.0 mg/L
	Effluent	0.82	kg/day	
Monthly Effluent Concentration	Average	0.40	mg/L	
	Minimum	0.19	mg/L	
	Maximum	0.85	mg/L	
Plant Removal		6.41	kg/day	
		88.19	%	

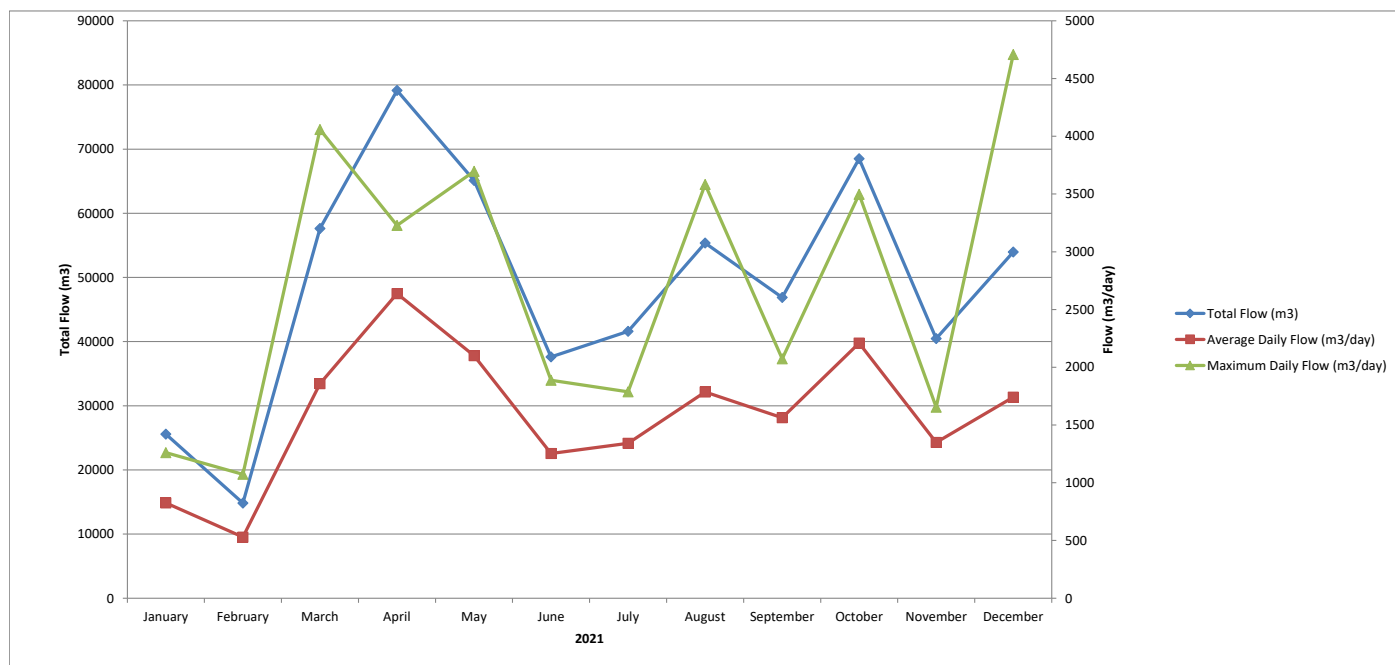
pH		Value		ECA Limit
Influent Measurements	Average	7.19		6.0 to 9.5 at all times
Effluent Measurements	Average	6.91		
	Minimum	6.60		
	Maximum	7.30		

E. coli		Value		ECA Limit
Monthly Geometric Mean Density	Average	3	CFU/100mL	< 200 CFU/100mL
	Minimum	1	CFU/100mL	< 200 CFU/100mL
	Maximum	5	CFU/100mL	< 200 CFU/100mL

8. Individual Plant Annual Data Reports

2021 Azilda Wastewater Treatment Plant Performance

Month	Flows			BOD ₅		CBOD			Total Suspended Solids				Total Phosphorus				Total Ammonia				Un-ionized	TKN		Nitrate	Nitrite	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	25578	825	1260	226	234	1.2	0.99	99.5%	206	5.3	4.37	97.4%	4.7	0.23	0.19	95.1%	30.73	0.32	0.26	99.0%	0.82	37.8	1.0	24.5	0.5	7.3	7.0	275	83.9	400	2.2	8.8	166.0	0.7	8		
February	14833	530	1073	216	198	1.3	0.69	99.3%	112	5.2	2.75	95.4%	5.8	0.36	0.19	93.8%	47.98	4.51	2.39	90.6%	15.74	50.0	3.1	29.8	0.7	7.6	6.7	296	50.8	200	2.6	5.2	87.9	0.9	1		
March	57611	1858	4058	153	113	2.8	5.20	97.5%	97	10.4	19.33	89.3%	5.0	0.43	0.80	91.4%	22.60	2.90	5.39	87.2%	20.50	28.9	5.2	15.0	0.3	7.4	6.9	269	124.2	200	2.9	5.8	89.9	0.7	9		
April	79139	2638	3228	101	82	1.4	3.69	98.3%	76	9.5	25.06	87.5%	4.1	0.43	1.13	89.5%	14.60	1.19	3.14	91.8%	11.99	19.6	2.7	12.20	0.2	7.9	7.3	267	152.2	280	1.9	5.3	136.8	0.8	3		
May	65112	2100	3696	145	133	1.9	3.99	98.6%	96	9.3	19.53	90.3%	3.6	0.29	0.61	91.9%	14.98	3.69	7.75	75.4%	29.68	19.2	3.2	12.94	0.3	7.7	7.0	264	130.3	160	3.0	4.8	112.0	0.7	7		
June	37604	1253	1887	185	151	1.6	2.01	98.9%	166	9.3	11.66	94.4%	6.6	0.35	0.44	94.7%	34.62	5.82	7.30	83.2%	31.16	37.1	4.5	13.04	0.4	7.8	6.8	273	90.8	240	2.7	6.5	95.1	0.8	3		
July	41609	1342	1787	245	308	1.6	2.15	99.5%	193	5.3	7.11	97.3%	5.8	0.34	0.46	94.1%	29.63	0.40	0.54	98.7%	0.82	33.1	0.2	27.00	0.4	7.7	6.5	255	60.2	320	1.9	6.1	129.7	0.7	9		
August	55354	1786	3583	114	107	2.8	5.00	97.4%	125	5.4	9.64	95.7%	3.9	0.24	0.43	93.8%	21.30	2.29	4.09	89.2%	23.32	23.6	3.1	12.48	1.4	7.8	6.8	268	150.8	240		0.0	106.6	0.7	16		
September	46867	1562	2073	145	136	2.2	3.44	98.4%	137	5.6	8.75	95.9%	4.0	0.19	0.30	95.3%	23.56	0.85	1.33	96.4%	6.14	26.3	1.0	20.52	0.7	7.5	6.7	261	134.9	320	2.2	7.0	115.0	0.7	4		
October	68497	2210	3497	75	50	1.3	2.87	97.4%	72	5.3	11.71	92.6%	2.1	0.23	0.51	89.0%	13.58	0.85	1.88	93.7%	11.53	14.2	0.9	15.23	0.6	7.7	6.8	287	207.4	280	2.3	6.4	172.4	0.7	31		
November	40477	1349	1654	133	108	3.4	4.59	96.9%	119	7.8	10.52	93.4%	4.1	0.34	0.46	91.7%	24.33	2.29	3.09	90.6%	11.37	27.3	2.7	16.13	3.2	7.4	6.6	261	157.1	80	2.7	2.2	197.1	0.6	7		
December	53958	1741	4708	125	104	1.9	3.31	98.2%	114	11.5	20.02	89.9%	3.0	0.27	0.47	91.0%	20.84	1.98	3.45	90.5%	3.96	22.7	2.8	13.04	1.088	7.4	6.7	300	147.0	160	2.5	4.0	221.7	0.7	14		
Total	586639							98.5%				93.3%				92.5%				90.3%												2880		62.1			
Average	1607			155	144	1.95	3.16	98.3%	126	7.49	12.54	93.3%	4.39	0.31	0.50	92.6%	24.90	2.26	3.4	90.5%	13.9	28.32	2.53	17.66	0.82	7.60	6.80	273	124		2.45				0.7	9	



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



2021 Azilda Wastewater Treatment Plant Waste Sludge Analysis

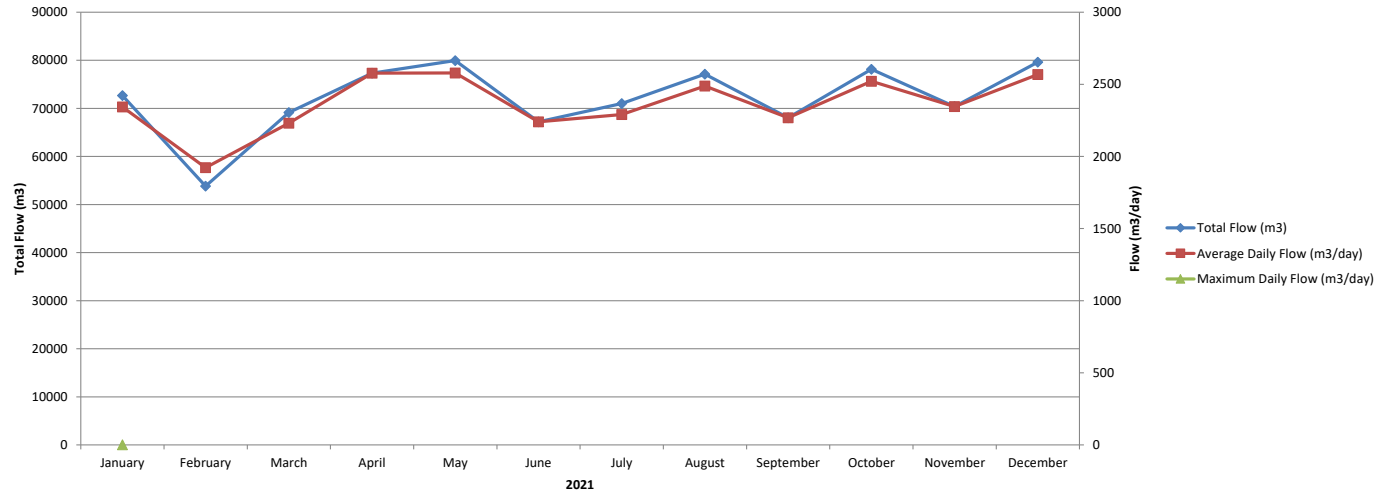
Parameter (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December	Average
Ammonia (as N)	1.03	34.3	24	17.3	18.9	44.6	26.9	0.3	53.5	2.1	58.0	136	35
Nitrate (as N)	10.90	0.50	0.05	0.80	0.50	0.50	0.50	0.06	0.5	7.4	0.05	1.0	1.9
Nitrite (as N)	0.81	0.50	0.05	0.50	1.80	0.50	0.50	0.05	0.5	2.6	0.07	1.0	0.7
Potassium	9	45	45	18	12	78	55	20	74	23	38	70	41
TKN	109	1440	246	555	406	1110	1420	163	1520	158	317	851	691
Total Phosphorus	28.5	392	30.6	35.5	36.8	191	477	62.8	399	28.9	112.0	433	186
Total Solids	2080	20500	5010	9020	7610	22900	26300	4750	24400	3940	5580	14100	12183
Arsenic	0.01	0.05	0.02	0.01	0.01	0.10	0.11	0.01	0.19	0.02	0.04	0.10	0.06
Cadmium	0.0003	0.0086	0.0027	0.0014	0.0013	0.016	0.0219	0.0024	0.0314	0.0035	0.0048	0.0196	0.0095
Chromium	0.01	0.11	0.05	0.02	0.02	0.30	0.34	0.04	0.53	0.08	0.10	0.27	0.16
Cobalt	0.009	0.093	0.031	0.034	0.022	0.172	0.272	0.036	0.387	0.043	0.048	0.137	0.107
Copper	0.24	3.60	1.70	0.89	0.69	7.70	12.00	1.25	12.7	2.9	3.3	7.0	4.5
Lead	0.005	0.091	0.038	0.019	0.015	0.176	0.253	0.031	0.379	0.055	0.071	0.319	0.121
Mercury	0.001	0.002	0.001	0.001	0.001	0.005	0.006	0.001	0.012	0.001	0.001	0.004	0.003
Molybdenum	0.01	0.05	0.02	0.01	0.01	0.09	0.12	0.01	0.18	0.03	0.03	0.08	0.05
Nickel	0.03	0.330	0.13	0.12	0.09	0.09	0.86	0.14	1.20	0.19	0.29	0.75	0.35
Selenium	0.002	0.033	0.006	0.002	0.006	0.078	0.071	0.008	0.122	0.014	0.027	0.074	0.037
Zinc	0.23	4.03	1.19	0.73	0.67	7.60	10.80	1.42	13.10	1.77	2.55	6.40	4.21
Sample Date	Jan.6/21	Feb.3/21	Mar.3/21	Apr.8/21	May.5/21	June.2/21	Jul.14/21	Aug.11/21	Sep.1/21	Oct.6/21	Nov.3/21	Dec.1/21	#DIV/0!

Work order	420921	422697	424490	426915	429244	432048	436738	426915	441235	444692	447648	449940
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2021 Capreol Wastewater Treatment Lagoon Performance

Month	Flows		BOD ₅						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	72662	2344	120	34.3	80.40	281	201	71.4%	53	21.3	49.93	124	74	59.8%	1.9	1.66	3.89	4.38	0.49	11.2%	19.10	11.40	26.72	44.77	18.05	40.3%	28.56	15.9	11.9
February	53820	1922	110	41.9	80.54	211	131	61.9%	120	26.0	49.98	231	181	78.3%	3.3	2.35	4.52	6.34	1.83	28.8%	20.60	16.10	30.95	39.60	8.65	21.8%	49.60	25.1	14.4
March	69146	2231	100	51.0	113.76	223	109	49.0%	108	32.5	72.49	241	168	69.9%	3.4	2.48	5.53	7.58	2.05	27.1%	18.00	17.40	38.81	40.15	1.34	3.3%	42.61	23.8	17.9
April	77324	2577	140	5.9	15.21	361	346	95.8%	160	34.0	87.63	412	325	78.8%	3.8	2.11	5.44	9.67	4.23	43.7%	19.90	13.10	33.76	51.29	17.53	34.2%	48.49	28.4	16.9
May	79944	2579	25	27.0	69.63	64	-5	-8.0%	43	45.0	116.05	111	-5	-4.7%	1.9	1.64	4.23	4.90	0.67	13.7%	12.70	4.57	11.79	32.75	20.97	64.0%	204.20	13.4	11.2
June	67208	2240	120	19.4	43.46	269	225	83.8%	111	30.5	68.33	249	180	72.5%	3.1	2.06	4.61	6.94	2.33	33.5%	15.30	3.17	7.10	34.28	27.17	79.3%	15.40	18.0	7.8
July	71028	2291	110	45.0	103.11	252	149	59.1%	105	37.7	86.38	241	154	64.1%	3.2	2.32	5.32	7.33	2.02	27.5%	16.20	3.77	8.64	37.12	28.48	76.7%	15.65	26.0	8.3
August	77117	2488	68	8.8	21.89	169	147	87.1%	44	21.0	52.24	109	57	52.3%	3.4	1.98	4.93	8.46	3.53	41.8%	14.60	4.13	10.27	36.32	26.05	71.7%	13.63	14.0	6.6
September	68063	2269	67	11.0	24.96	152	127	83.6%	56	16.0	36.30	127	91	71.4%	3.0	1.73	3.92	6.81	2.88	42.3%	15.00	6.20	14.07	34.03	19.97	58.7%	96.73	18.7	7.6
October	78149	2521	110	17.0	42.86	277	234	84.5%	48	8.7	21.93	121	99	81.9%	3.0	2.41	6.08	7.56	1.49	19.7%	10.20	8.20	20.67	25.71	5.04	19.6%	19.18	18.7	9.6
November	70377	2346	99	25.0	58.65	232	174	74.7%	74	26.0	60.99	174	113	64.9%	1.8	1.52	3.57	4.22	0.66	15.6%	10.40	6.09	14.29	24.40	10.11	41.4%	8.79	10.5	7.2
December	79603	2568	110	23.0	59.06	282	223	79.1%	70	6.0	15.41	180	164	91.4%	2.7	1.98	5.08	6.93	1.85	26.7%	20.60	11.30	29.02	52.90	23.88	45.1%	15.94	20.7	10.6
Total	864441					2775	2062	74.3%				2319	1602	69.1%				81	24	29.6%				453	207	45.7%			
Average		2368	98	25.78	59.46	231	172	68.5%	83	25.39	59.80	193	133	65.1%	2.87	2.02	4.76	6.76	2.00	27.6%	16.05	8.79	20.51	37.78	17.27	46.4%	46.57	19.4	10.8



Lagoon Type: Exfiltration

Design Capacity: 5000 m³/day

Population Served: 3,408

Compliance Parameters:

	Concentration	Annual Avg
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.

2021 Capreol Lagoon Groundwater Monitoring Wells

	May.27/21	Oct.7/21	May.27/21	Oct.7/21	May.27/21	Oct.7/21	May.27/21	Oct.7/21	May.27/21	Oct.7/21	May.27/21	Oct.7/21	May.27/21	Oct.7/21	
Parameter (mg/L)	OW #2		OW #3		OW #5		OW #8		OW #12a		OW #15		OW #16		Average
	May/July	Oct	May/July	Oct	May/July	Oct	May/July	Oct	May/July	Oct	May/July	Oct	May/July	Oct	
E.Coli (CFU/100 mL)															
Total Coliform	4	4	2	0	2	15	6	0	2	17	0	2	1	2	4
Alkalinity	114	124	148	170	14	19	104	98	136	139	15	18	17	15	81
Ammonia (as N)	2.95	3.51	14.9	17.40	0.03	0.02	0.73	3.34	1.11	0.97	0.01	0.08	0.01	0.01	3.22
Nitrate (as N)	0.50	0.05	0.50	0.05	0.05	0.05	4.90	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.46
Nitrite (as N)	0.50	0.05	0.50	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.11
BOD ₅	1.7	2.6	2.4	1.9	1.0	0.5	5.6	2.5	1.4	1.0	1.1	1.6	0.5	0.5	1.7
D.O.C.	4.1	6.3	5.3	4.5	1.0	1.1	4.2	6.0	6.3	5.5	1.4	2.4	1.6	1.0	3.6
Hardness (as CaCO ₃)	73.7	77.3	75.7	80.4	8.5	12.8	82.5	75.6	93.2	98.1	12.7	19.9	10.8	13.5	52.5
Aluminum	0.003	0.013	0.001	0.0	0.012	0.08	0.001	0.021	0.009	0.159	0.008	0.330	0.007	0.051	0.050
Antimony	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0006	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
Arsenic	0.002	0.003	0.005	0.001	0.001	0.001	0.001	0.002	0.005	0.002	0.001	0.001	0.001	0.001	0.002
Barium	0.034	0.049	0.079	0.083	0.006	0.010	0.023	0.035	0.051	0.059	0.007	0.023	0.005	0.0070	0.0336
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	0.0003	0.0001	0.0001	0.0001	0.0001	0.0001
Calcium	20.80	21.40	20.80	21.70	2.29	3.32	22.80	20.80	27.5	28.50	3.33	4.88	2.94	3.41	14.61
Chromium	0.001	0.001	0.001	0.003	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.0010	0.0011
Cobalt	0.0013	0.0001	0.0074	0.0064	0.0001	0.0005	0.0084	0.0136	0.0036	0.0024	0.0001	0.0014	0.0001	0.0001	0.0033
Copper	0.001	0.001	0.001	0.001	0.001	0.002	0.011	0.018	0.002	0.013	0.001	0.009	0.001	0.001	0.005
Iron	5.0	3.80	11.5	1.89	0.02	0.10	0.02	0.63	0.47	0.15	0.02	0.99	0.02	0.04	1.76
Lead	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0001	0.0001	0.0001	0.0002	0.0001	0.0013	0.0001	0.0001	0.0002
Magnesium	5.650	5.790	5.780	6.360	6.70	1.100	6.220	5.750	5.950	6.540	1.070	1.870	0.852	1.200	4.345
Manganese	0.43	0.420	1.01	0.920	0.002	0.011	0.52	0.580	6.86	9.01	0.004	0.113	0.001	0.003	1.420
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	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.001	0.001	0.001	0.0010	0.0011
Nickel	0.002	0.003	0.005	0.003	0.003	0.004	0.013	0.015	0.004	0.004	0.001	0.002	0.001	0.0010	0.0044
Potassium	3.8	5.1	5.1	6.0	0.5	0.6	3.8	6.5	3.9	4.4	0.6	0.9	0.5	0.6	3.0
Selenium	0.0002	0.0002	0.0006	0.0002	0.0003	0.0002	0.0003	0.0002	0.0040	0.0004	0.0002	0.0002	0.0002	0.0002	0.0005
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	43	52.0	44.0	54.0	4.3	6.5	45.0	48.5	40.0	50.0	1.8	3.0	2.5	3.8	28.5
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	0.001	0.001
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	0.001	0.001
Zinc	0.002	0.001	0.003	0.001	0.004	0.004	0.003	0.002	0.002	0.001	0.003	0.003	0.002	0.0040	0.0025
pH															
pH (15 deg. C)	6.28	6.37	6.61	7.36	6.86	7.20	6.52	6.72	6.89	6.82	7.17	7.02	6.98	6.89	6.84
T.K.N.	2.4	3.6	12.6	18.1	0.2	0.2	0.7	3.4	1.0	1.4	0.2	0.2	0.2	0.2	3.2
Total Phosphorus	0.57	1.080	0.281	0.351	0.013	0.002	0.345	0.767	0.109	0.383	0.009	0.166	0.084	0.002	0.297

Work Orders

431451 May
444810 Oct

2021 Vermillion River Sampling

Parameter (mg/L)	May.27/21		Oct.7/21		Annual Average		Monthly Phosphorus Sampling		
	Upstream	Downstream	Upstream	Downstream	Upstream	Downstream	Sample Date	Upstream	Downstream
Alkalinity	17	20	20	20	19	20	Apr.8/21	0.014	0.010
Ammonia (as N)	0.01	0.01	0.01	0.01	0.01	0.01	May.13/21	0.020	19.30
Chloride	0.6	0.8	1.2	1.9	0.9	1.4	May.27/21	0.090	0.046
Sulphate	5.0	5.1	6.1	6.3	5.6	5.7	Jun.17/21	0.002	0.002
BOD ₅	1.3	1.7	0.8	0.9	1.1	1.3	Jul.8/21	0.008	0.016
Aluminum	0.038	0.023	0.024	0.023	0.031	0.023	Aug.24/21	0.033	0.002
Antimony	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	Sep.2/21	0.009	0.002
Arsenic	0.001	0.001	0.001	0.001	0.001	0.001	Oct.7/21	0.005	0.002
Barium	0.010	0.010	0.012	0.013	0.011	0.012	Nov.3/21	0.023	0.016
Beryllium	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	December	NA	
Cadmium	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001			
Calcium	5.06	5.16	6.53	7.04	5.80	6.10			
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	0.001	0.001	0.001	0.001	0.001	Annual Average	0.023	2.155
Iron	0.15	0.16	0.23	0.24	0.19	0.20	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	1.220	1.210	1.960	2.040	1.590	1.625			
Manganese	0.018	0.022	0.014	0.015	0.016	0.019			
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	0.002	0.002	0.001	0.002	0.002	0.002			
Potassium	0.5	0.5	0.7	0.7	0.6	0.6			
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	1.1	1.2	1.7	2.1	1.4	1.7			
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	0.002	0.002	0.001	0.001	0.002	0.002			
pH									
pH (15 deg. C)	7.48	7.36	6.78	6.77	7.13	7.07			
T.D.S.	40	40	100	50	70	45			
T.K.N.	0.2	0.2	0.3	0.2	0.3	0.2			
Total Phosphorus	0.090	0.046	0.005	0.002	0.048	0.024			

2021 Capreol Lagoon Ground/Surface Water Levels

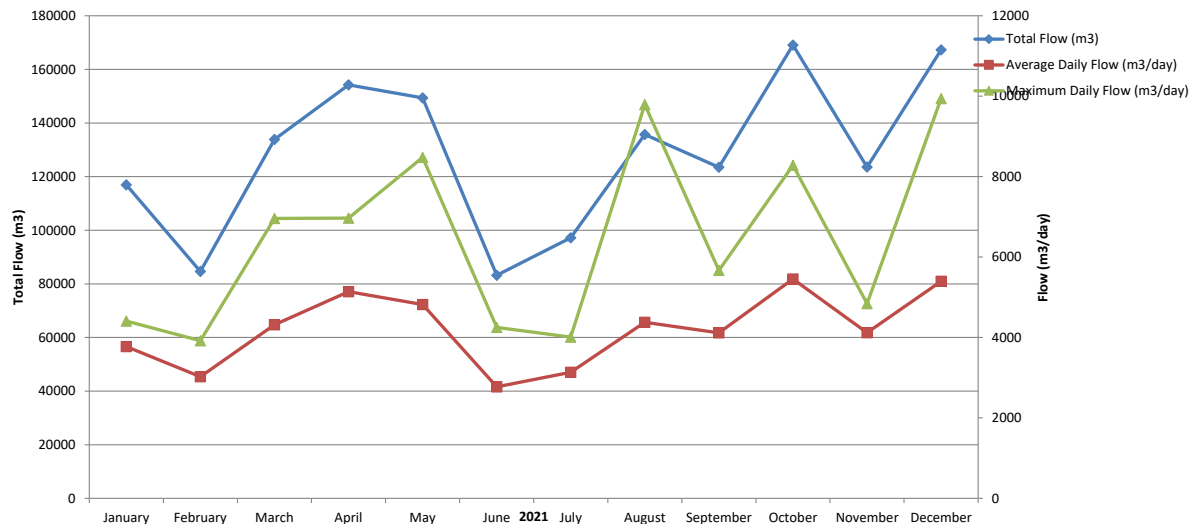
* Depth in metres from top of casing to water

Well I.D.	Water Level (m)*	Measure Date	Water Level (m)*	Measure Date
OW#1	3.7	Jun.18/21		
OW#2	3.2	Jun.18/21		
OW#3	3.6	Jun.18/21		
OW#5	6.7	Jun.18/21		
OW#7	dry 11m depth	Jun.18/21		
OW#8	5.2	Jun.18/21		
OW#10a	6.8	Jun.18/21		
OW#10b	6.3	Jun.18/21		
OW#11	5.4	Jun.18/21		
OW#12	2.6	Jun.18/21		
OW#12a	n/a	Jun.18/21		
OW#13a	5.6	Jun.18/21		
OW#13b	5.6	Jun.18/21		
OW#14	2.3	Jun.18/21		
OW#15	7.0	Jun.18/21		
OW#16	6.0	Jun.18/21		
OW#21	3.4	Jun.18/21		
OW#22	dry	Jun.18/21		
OW#23	6.0	Jun.18/21		
OW#24	3.0	Jun.18/21		
OW#25	4.5	Jun.18/21		
OW#26	6.0	Jun.18/21		
OW#28	2.0	Jun.18/21		
OW#30	2.5	Jun.18/21		
River @ Bridge	0.6	Jun.18/21		



2021 Chelmsford Wastewater Treatment Plant Performance

Month	Flows			BOD ₅	CBOD				Total Suspended Solids				Total Phosphorus				Total Ammonia				Un-ionized	TKN		Nitrate	Nitrite	pH		Alkalinity		Sludge			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		
	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	# Col./100ml						
January	116959	3773	4410	378	190	3.9	14.71	97.9%	254	5.6	21.13	97.8%	3.6	0.18	0.68	95.0%	24.60	0.85	3.21	96.5%	5.63	42.50	3.40	14.2	0.56	7.5	7.1	261	128.0	900	3.2	28.8	4606						
February	84651	3023	3920	404	240	2.7	8.16	98.9%	317	5.5	16.63	98.3%	4.9	0.27	0.82	94.5%	27.60	2.90	8.77	89.5%	13.41	48.00	3.05	17.05	0.39	7.7	7.2	267	113.5	720	1.6	11.5	1667						
March	133856	4318	6960	260	180	3.0	12.95	98.3%	248	8.2	35.41	96.7%	2.9	0.29	1.25	90.0%	30.50	7.28	31.43	76.1%	73.31	43.80	7.70	8.37	0.64	7.9	7.5	258	166.6	1000	1.1	11.0	15277						
April	154224	5141	6970	140	140	2.9	14.91	97.9%	161	4.9	25.19	97.0%	2.1	0.15	0.77	92.9%	13.40	0.56	2.88	95.8%	5.62	26.50	2.10	7.14	0.42	7.7	7.5	287	181.1	1080	3.3	35.6	2397						
May	149367	4818	8480	120	57	3.0	14.45	94.7%	197	5.6	26.98	97.2%	2.2	0.15	0.72	93.2%	6.70	0.93	4.48	86.1%	14.91	12.70	1.15	9.89	0.56	7.2	7.2	257	163.1	1040	1.7	17.7	37						
June	83206	2774	4250	190	160	2.3	6.38	98.6%	293	3.8	10.54	98.7%	5.0	0.20	0.55	96.0%	26.20	0.11	0.31	99.6%	0.61	27.60	0.20	16.43	0.16	7.7	6.9	270	54.1	1040	1.5	15.6	8						
July	97158	3134	4010	190	150	1.9	5.95	98.7%	255	4.9	15.36	98.1%	4.3	0.21	0.66	95.1%	22.00	0.14	0.44	99.4%	0.49	28.50	0.20	15.45	0.45	7.6	7.0	288	77.5	1320	1.0	13.2	26						
August	135722	4378	9790	100	71	2.3	10.07	96.8%	130	5.2	22.77	96.0%	2.2	0.15	0.66	93.2%	6.40	0.32	1.40	95.0%	2.48	11.50	0.50	8.41	0.22	7.7	7.2	274	149	1160	0.7	8.1	46						
September	123507	4117	5670	81	76	2.2	9.06	97.1%	181	3.2	13.17	98.2%	3.2	0.17	0.70	94.7%	20.50	0.18	0.74	99.1%	1.85	23.20	0.97	13.10	0.45	7.9	7.1	290	136.4	1320	1.5	19.8	25						
October	169079	5454	8280	160	120	2.8	15.27	97.7%	274	4.5	24.54	98.4%	2.4	0.16	0.87	93.3%	13.40	0.21	1.15	98.4%	1.32	18.40	0.90	10.48	0.11	7.6	7.4	274	168.9	840	1.6	13.4	60						
November	123589	4120	4840	130	130	4.3	17.71	96.7%	149	7.4	30.49	95.0%	3.6	0.26	1.07	92.8%	14.20	0.99	4.08	93.0%	4.77	15.90	1.30	12.45	0.69	7.7	7.1	283	155.9	880		0.0	3080						
December	167262	5396	9940	120	84	3.7	19.96	95.6%	188	8.2	44.24	95.6%	3.4	0.26	1.40	92.4%	18.70	2.83	15.27	84.9%	6.96	20.40	3.57	9.03	0.10	7.5	7.1	274	174.2	760	1.4	10.6	1215						
Total	1538580							97.7%				97.4%				93.6%				91.7%																12060		185.4	
Average		4215			133	2.92	12.47	97.4%	221	5.58	23.87	97.2%	3.32	0.20	0.85	93.6%	18.68	1.44	6.2	92.8%	10.9	26.58	2.09	11.83	0.39	7.64	7.19	274	139					1.69		2370			
Summer						2.42	10.20	97.5%		4.53	18.89	97.9%		0.17	0.69	94.4%	15.87	0.32	1.42	97.6%																			
Winter						3.42	14.74	97.7%		6.63	28.85	96.8%		0.24	1.00	92.9%	21.50	2.57	10.94	87.8%																			



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.			



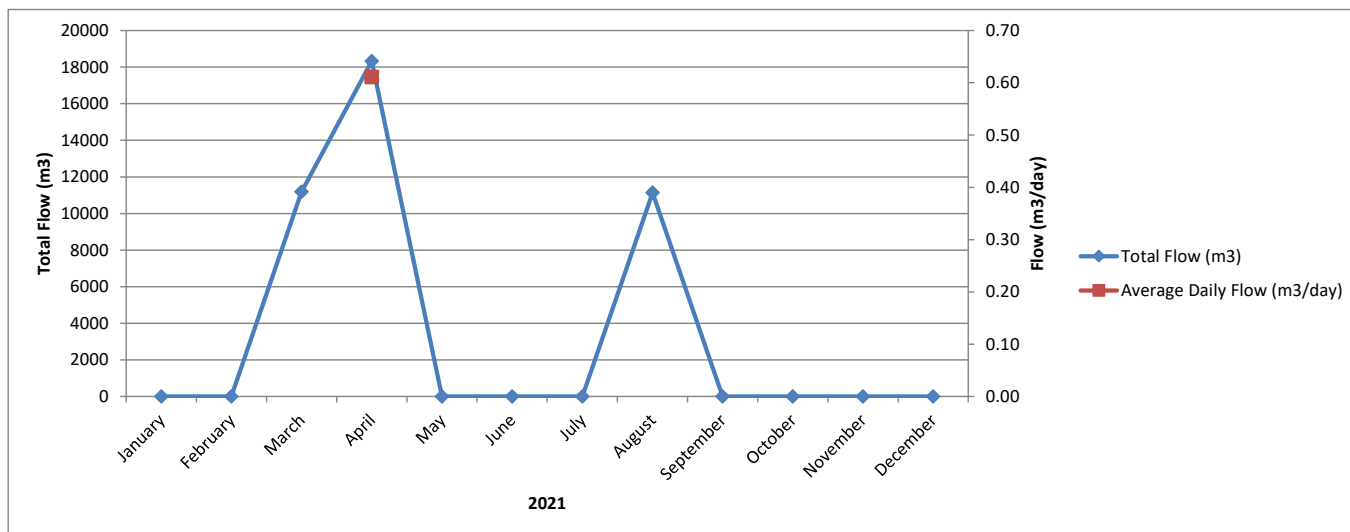
2021 Chelmsford Wastewater Treatment Plant Waste Sludge Analysis

Parameter (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December	Average
Ammonia (as N)	43.2	29.2	28.5	212.0	8.3	29.3	4.0	11.6	16.0	31.6	18.6	23.4	38.0
Nitrate (as N)	0.50	0.50	0.05	0.50	0.50	1.00	0.50	0.50	0.50	0.50	0.13	0.50	0.47
Nitrite (as N)	0.50	0.50	0.22	1.50	0.70	2.60	0.50	0.50	0.50	2.80	0.05	0.50	0.91
Potassium	36	40	92	56	13	72	39	32	41	60	55	78	51.17
TKN	1110	1130	875	2110	146	887	496	48	336	1120	894	973	844
Total Phosphorus	312.0	224	182	96	38	245	165	112	121	139	139	381	179
Total Solids	15400	15000	12000	39000	3230	16600	9780	7380	7670	17800	13500	15400	14397
Arsenic	0.01	0.03	0.09	0.03	0.01	0.06	0.03	0.04	0.09	0.21	0.06	0.10	0.06
Cadmium	0.0013	0.0031	0.0152	0.0062	0.0008	0.0093	0.0054	0.0068	0.0152	0.0422	0.0102	0.0209	0.0114
Chromium	0.03	0.07	0.32	0.09	0.01	0.18	0.11	0.16	0.28	0.69	0.19	0.29	0.20
Cobalt	0.027	0.053	0.164	0.109	0.017	0.203	0.118	0.151	0.275	0.466	0.177	0.153	0.159
Copper	0.85	1.90	9.30	4.20	0.43	4.50	3.00	3.70	6.30	15.00	3.80	8.40	5.12
Lead	0.022	0.059	0.262	0.100	0.012	0.113	0.078	0.132	0.269	0.529	0.119	0.342	0.170
Mercury	0.001	0.002	0.006	0.003	0.001	0.003	0.001	0.003	0.007	0.017	0.007	0.005	0.005
Molybdenum	0.01	0.02	0.06	0.01	0.01	0.04	0.04	0.05	0.07	0.20	0.05	0.08	0.05
Nickel	0.14	0.23	0.81	1.06	0.13	0.68	0.33	0.51	0.90	2.60	0.68	0.83	0.74
Selenium	0.002	0.010	0.036	0.002	0.004	0.041	0.024	0.025	0.056	0.126	0.035	0.074	0.036
Zinc	0.79	1.75	7.13	3.87	0.40	5.82	2.61	2.99	7.00	11.80	3.96	7.40	4.63
Sample Date	Jan.6/21	Feb 3./21	Mar.3/21	Apr.7/21	May.5/21	Jun.2/21	Jul.14/21	Aug.4/21	Sep.1/21	Oct.6/21	Nov.10/21	Dec.1/21	#DIV/0!

Work Order	420926	422695	424486	426912	429243	432047	436737	438614	441234	444690	448219	449933
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2021 Chelmsford Wastewater Treatment Lagoon Performance

Month	Flows		CBOD			Total Suspended Solids			Total Phosphorus			Total Ammonia		TKN	
	Total	Avg Day	Raw	Effluent	Loading	Raw	Effluent	Loading	Raw	Effluent	Loading	Effluent	Loading	Raw	Effluent
	m ³	m ³ /d	mg/L	mg/L	kg/d	mg/L	mg/L	kg/d	mg/L	mg/L	kg/d	mg/L	kg/d	mg/L	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	11182		34		0.00	32		0.00	2.03		0.00		0.00		
April	18330	1	38		0.00	32		0.00	0.60		0.00		0.00		
May	no results				0.00			0.00			0.00		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	11134		8.00		0.00	104		0.00	2.90		0.00	2.25	0.00		
September	no results				0.00			0.00			0.00		0.00		
October	no results				0.00			0.00			0.00		0.00		
November	no results				0.00			0.00			0.00		0.00		
December	no results				0.00			0.00			0.00		0.00		
Total	40646														
Average		111	27	#DIV/0!	0.00	56	#DIV/0!	0.00	1.84	#DIV/0!	0.00	2.25	0.00	#DIV/0!	#DIV/0!



Lagoon Type: Seasonal Retentional

Design Capacity: 824 m³/day

Population Served: Delivery to Chelmsford WWTP

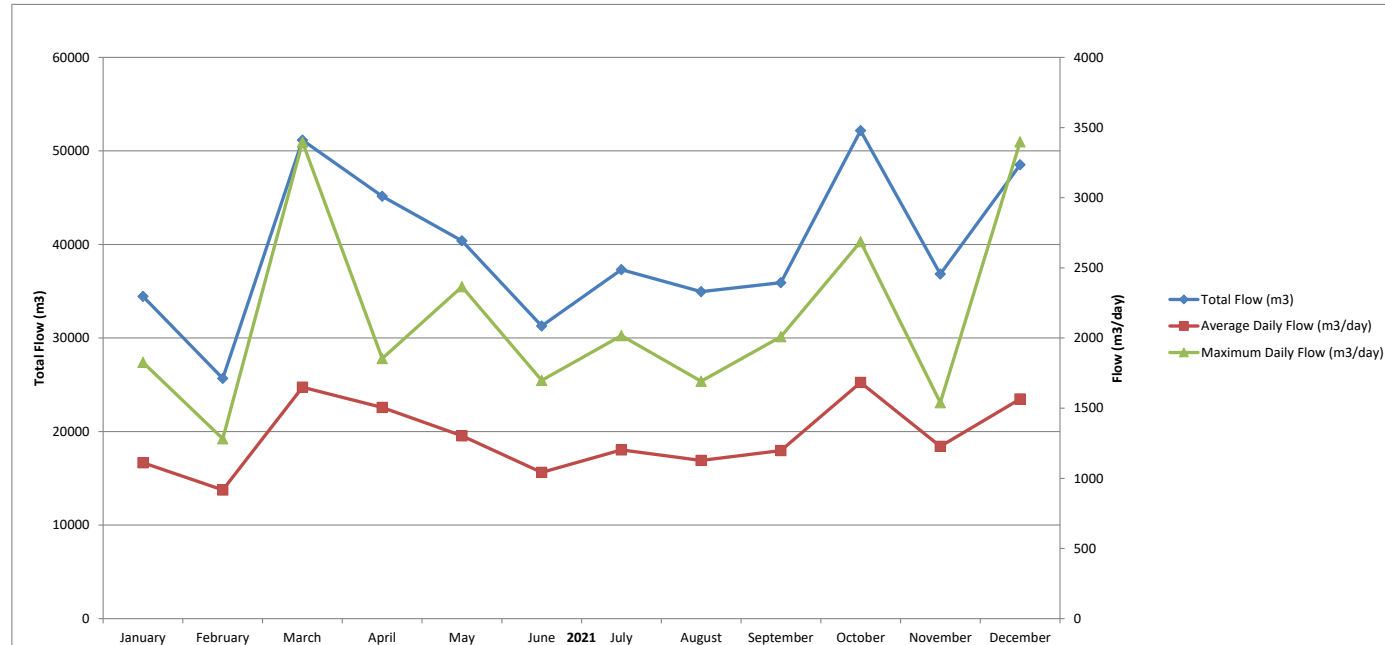
Compliance Parameters:

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

Note:

2021 Coniston Wastewater Treatment Plant Performance

Month	Flows			BOD ₅				Total Suspended Solids				Total Phosphorus				Total Ammonia				Un-ionized	TKN	Nitrate	Nitrite	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	34454	1111	1826	81	6.4	7.11	92.1%	111	7.2	8.00	93.5%	4.6	1.66	1.84	63.9%	20.4	3.22	3.58	84.2%	29.77	5.30	4.32	0.94	7.00	7.0	158	90.0	320	0.7	2.2	37.7	0.65	20	
February	25684	917	1282	76	7.3	6.70	90.4%	116	10.4	9.54	91.0%	4.3	2.26	2.07	47.4%	29.1	0.18	0.17	99.4%	0.49	3.40	11.00	0.05	7.4	7.2	144	64.4	360	0.7	2.5	31.4	0.83	5	
March	51146	1650	3397	51	6.2	10.23	87.8%	116	8.7	14.35	92.5%	3.3	1.43	2.36	56.7%	16.1	2.02	3.33	87.5%	21.91	4.00	1.74	0.16	7.0	6.9	127	75.7	360	0.8	2.9	61.3	0.77	34	
April	45154	1505	1854	45	5.6	8.43	87.6%	117	5.1	7.68	95.6%	1.9	1.17	1.76	38.4%	12.8	0.67	1.01	94.8%	2.06	2.50	3.09	0.05	7.3	7.0	159	109.5	280	0.9	2.5	58.9	0.66	2	
May	40391	1303	2365	98	5.4	7.04	94.5%	130	6.4	8.34	95.1%	3.7	1.37	1.79	63.0%	12.4	1.40	1.82	88.7%	12.09	2.80	1.34	0.05	7.3	6.9	168	115.1	240	0.9	2.2	65.9	0.75	2	
June	31284	1043	1698	78	4.0	4.17	94.9%	143	5.4	5.63	96.2%	4.2	1.34	1.40	68.1%	21.5	2.12	2.21	90.1%	17.89	2.50	0.44	0.12	7.3	7.1	161	118.2	265	1.3	3.4	21.9	0.55	2	
July	37305	1203	2017	150	3.7	4.45	97.5%	132	4.6	5.54	96.5%	4.3	1.04	1.25	75.8%	16.9	6.90	8.30	59.2%	91.84	6.20	0.18	0.24	7.3	7.0	161	140.6	312	0.8	2.5	34.8	0.60	14	
August	34956	1128	1692	76	3.5	3.95	95.4%	91	4.1	4.62	95.5%	3.0	0.86	0.97	71.3%	0.83	0.50	0.56	39.8%	7.12	2.90	0.22	0.29	7.4	7.0	161	112.5	360	0.9	3.2	62.5	0.81	2	
September	35918	1197	2009	310	2.3	2.75	99.3%	82	7.0	8.38	91.5%	3.8	1.17	1.40	69.2%	20.3	1.52	1.82	92.5%	8.70	2.50	0.09	0.05	7.4	9.1	179	120.9	280	0.7	2.0	38.1	0.65	2	
October	52169	1683	2687	80	2.7	4.54	96.6%	77	5.0	8.41	93.5%	3.3	1.05	1.77	68.2%	10.4	0.10	0.17	99.0%	0.22	1.00	1.22	0.05	7.4	7.1	160	97.0	280		0.0	65.7	0.60	108	
November	36845	1228	1539	98	1.1	1.35	98.9%	97	4.0	4.91	95.9%	3.9	0.40	0.49	89.7%	15.0	0.10	0.12	99.3%	0.24	1.00	0.05	0.05	7.4	7.0	163	96	320		0.0	45.5	0.54	10	
December	48526	1565	3398	87	11.0	17.22	87.4%	95	4.9	7.67	94.8%	3.1	0.47	0.74	84.8%	15.4	0.26	0.41	98.3%	0.82	2.30	13.20	0.05	7.5	7.0	157	92.42	400	0.5	2.0	75.5	0.65	376	
Total	473832																										8.2		599.2					
Average		1298		103	4.93	6.50	95.0%	109	6.07	7.76	94.4%	3.62	1.19	1.49	67.5%	15.93	1.58	1.96	0.86	16.10	3.03	2.96	0.11	7.31	7.19	158	103		2.12			0.67	10	



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.



2021 Coniston 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)	3.13	1.6	0.1	18.1	3.9	4.9	7.8	6.5	4.7	1.3	1.8	1.9	4.6
Nitrate (as N)	0.11	0.05	1.80	5.00	0.50	0.50	0.07	0.12	0.05	0.5	0.5	0.24	0.79
Nitrite (as N)	0.19	0.05	0.50	1.30	0.5	0.5	0.12	0.05	0.05	0.5	0.5	0.23	0.37
Potassium	18	19	38	24	26	44	82	50	84	70	51	55	46.8
TKN	483	425	447	619	723	210	441	369	427	512	313	282	438
Total Phosphorus	83.7	77.3	78.8	98.0	129.0	61.8	185.0	134	15.4	111	91.7	141	101
Total Solids	6240	6130	7770	8860	9360	7910	7550	6480	7770	5980	4820	4960	6986
Arsenic	0.01	0.01	0.02	0.02	0.02	0.02	0.04	0.01	0.03	0.04	0.03	0.01	0.02
Cadmium	0.0037	0.0031	0.0066	0.0058	0.0079	0.0092	0.0129	0.0025	0.0119	0.0099	0.0073	0.0082	0.0074
Chromium	0.04	0.02	0.09	0.04	0.06	0.09	0.12	0.04	0.14	0.12	0.10	0.10	0.08
Cobalt	0.061	0.057	0.122	0.094	0.203	0.195	0.137	0.026	0.106	0.126	0.166	0.155	0.121
Copper	1.5	1.1	3.4	2.1	3.1	4.0	4.2	1.4	5.2	3.7	2.4	3.3	3.0
Lead	0.051	0.050	0.119	0.065	0.110	0.125	0.180	0.043	0.220	0.193	0.117	0.125	0.117
Mercury	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.001
Molybdenum	0.01	0.01	0.02	0.01	0.01	0.03	0.01	0.01	0.04	0.04	0.03	0.03	0.02
Nickel	0.78	0.53	0.94	1.40	1.70	2.00	1.80	0.77	3.00	2.00	2.20	1.90	1.59
Selenium	0.009	0.010	0.012	0.002	0.053	0.041	0.051	0.010	0.041	0.030	0.022	0.025	0.026
Zinc	1.32	1.14	2.57	1.70	2.69	3.68	5.79	1.15	5.43	4.05	2.65	2.95	2.93
Sample Date	Jan.6/21	Feb.3/21	Mar.2/21	Apr.7/21	May.4/21	Jun.1/21	Jul.6/21	Aug.5/21	Sep.9/21	Oct.5/21	Nov.1/21	Dec.2/21	

Work Order

420794

422630

424346

426827

429003

431952

435941

438810

441971

444452

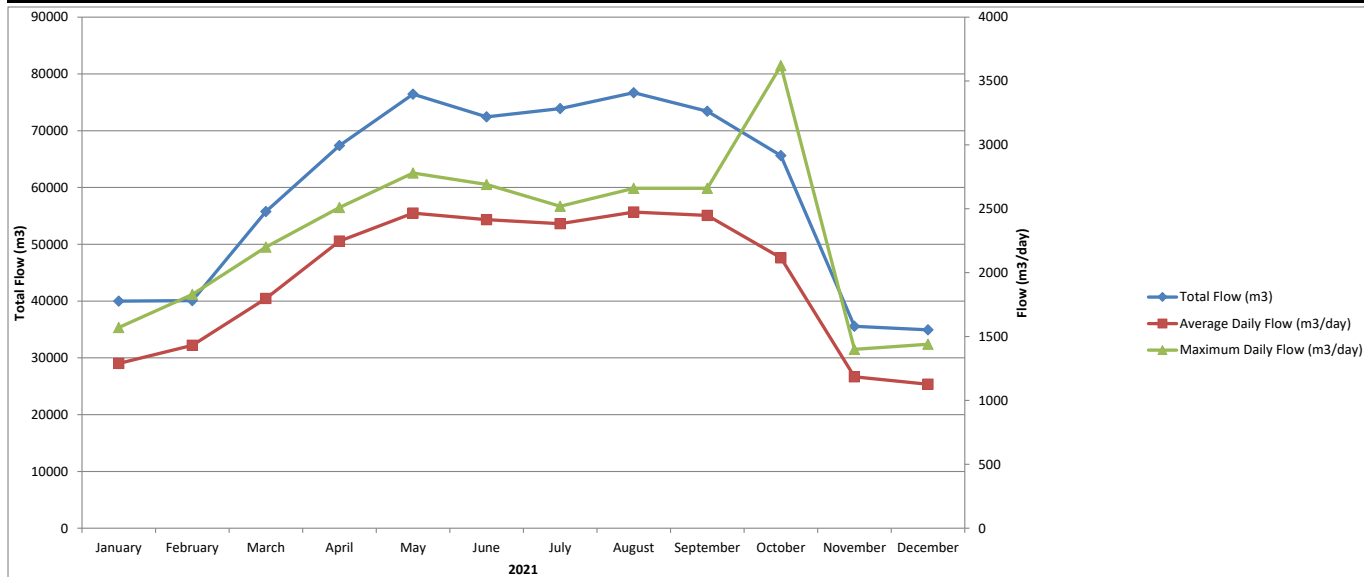
447247

450026



2021 Dowling Wastewater Treatment Plant Performance

Month	Flows			BOD ₅				Total Suspended Solids				Total Phosphorus				Total Ammonia				Un-ionized	TKN	Nitrate	Nitrite	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./100m
January	39987	1290	1570	32	2.8	3.61	91.3%	35	3.1	4.00	91.1%	0.8	0.41	0.53	48.8%	3.60	1.45	1.87	59.7%	4.17	2.90	2.95	0.15	7.0	6.8	73	52.4	160		0.0	156.8	0.67	18
February	40089	1432	1830	27	3.8	5.44	85.9%	37	3.8	5.44	89.7%	1.0	0.46	0.66	54.0%	3.40	0.58	0.83	82.9%	2.15	2.80	4.72	0.47	7.1	6.8	71	49.2	160		0.0	139.9	0.66	6
March	55754	1799	2200	22	3.2	5.76	85.5%	36	3.8	6.83	89.4%	1.0	0.40	0.72	60.0%	2.60	1.44	2.59	44.6%	3.96	3.10	3.78	0.13	7.1	6.8	74	54.1	160		0.0	141.7	0.72	4
April	67400	2247	2510	27	3.7	8.31	86.3%	48	6.2	13.93	87.1%	0.7	0.47	1.06	32.9%	4.20	1.00	2.25	76.2%	2.29	2.90	4.52	0.05	7.1	6.9	71	49.5	200		0.0	131.3	0.53	32
May	76430	2465	2780	24	3.5	8.63	85.4%	42	3.9	9.62	90.7%	1.0	0.42	1.04	58.0%	3.70	0.99	2.44	73.2%	5.29	1.40	1.20	0.50	7.0	6.9	62	45.8	160		0.0	141.3	0.49	40
June	72434	2414	2690	27	3.3	7.97	87.8%	50	3.3	7.97	93.4%	0.9	0.43	1.04	52.2%	6.10	0.78	1.88	87.2%	2.40	1.40	4.10	0.12	7.1	6.8	70	48.8	160		0.0	137.6	0.63	14
July	73905	2384	2520	46	4.9	11.68	89.3%	47	3.3	7.87	93.0%	0.9	0.51	1.22	43.3%	3.20	0.16	0.38	95.0%	0.57	0.60	6.05	0.35	6.8	6.7	76	49.0	160		0.0	154.2	0.69	8
August	76701	2474	2660	36	3.6	8.91	90.0%	83	3.4	8.41	95.9%	1.2	0.51	1.26	57.5%	3.30	0.15	0.37	95.5%	0.38	0.80	5.82	0.24	6.8	6.6	69	45.7	160		0.0	142.2	0.59	36
September	73441	2448	2660	15	4.7	11.51	68.7%	40	4.0	9.79	90.0%	1.0	0.49	1.20	51.0%	3.00	1.27	3.11	57.7%	3.33	2.40	3.71	0.99	7.0	6.7	67	46.8	200		0.0	122.2	0.55	82
October	65608	2116	3620	40	2.8	5.93	93.0%	42	2.5	5.29	94.0%	1.0	0.48	1.02	52.0%	3.00	0.15	0.32	95.0%	0.38	0.80	5.61	0.05	6.9	6.7	70	48.4	160		0.0	153.6	0.69	10
November	35547	1185	1400	15	3.0	3.55	80.0%	53	4.4	5.21	91.7%	1.2	0.53	0.63	55.8%	3.50	0.13	0.15	96.3%	0.19	0.60	6.33	0.05	6.8	6.6	70	49.7	160		0.0	143.6	0.68	11
December	34932	1127	1440	29	4.3	4.85	85.2%	33	5.4	6.08	83.6%	0.9	0.47	0.53	47.8%	3.40	0.42	0.47	87.6%	0.94	2.00	5.11	0.12	6.8	6.5	69	50.0	200		0.0	174.6	0.63	4
Total	712228						87.2%				91.8%				51.8%				80.4%								0		1739				
Average		1951		28	3.63	7.18	87.2%	46	3.93	7.54	90.8%	0.97	0.47	0.91	51.8%	3.58	0.71	1.39	0.79	2.17	1.81	4.49	0.27	6.96	6.72	70	49		0.00		0.63	22	



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



2021 Dowling Wastewater Treatment Plant Waste Sludge Analysis

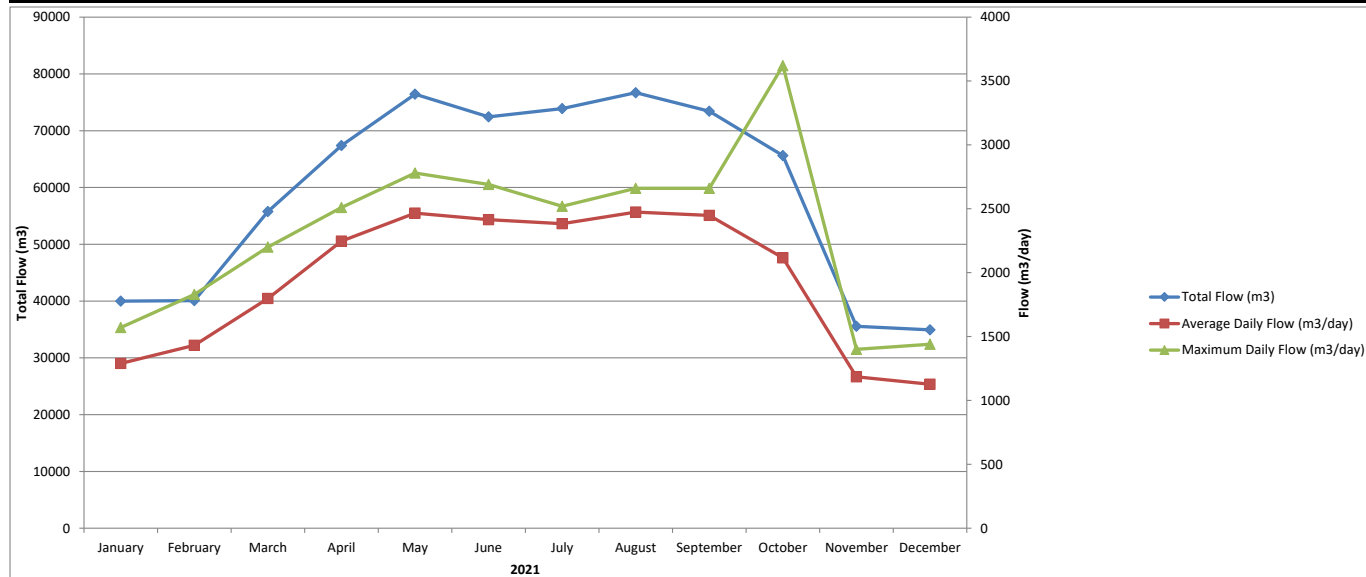
Parameter (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December	Average
Ammonia (as N)	1.74	0.60	0.01	0.10	0.50	1.30	0.79	2.10	2.03	0.40	1.20	4.92	1.31
Nitrate (as N)	0.13	0.05	1.04	0.5	1.2	0.90	1.33	0.52	0.50	1.60	0.50	0.09	0.70
Nitrite (as N)	0.05	2.34	0.39	0.50	0.50	1.30	0.10	0.22	0.50	0.50	0.50	0.26	0.60
Potassium	6	5	8	4	4	17	13	9	10	9	10	9	8.7
TKN	116.0	78.8	92.2	115.0	63.0	106.0	88.0	26.0	11.0	59.8	64.0	12.0	69.3
Total Phosphorus	20.3	13.6	16.5	16.6	11.9	27.7	22.9	21.5	17.0	14.0	31.9	4.6	18.2
Total Solids	1450	1300	1960	1900	1140	2100	2600	2030	1910	1180	1900	340	1651
Arsenic	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Cadmium	0.0003	0.0004	0.0023	0.0002	0.0002	0.0007	0.0009	0.0002	0.0002	0.0002	0.0003	0.0002	0.0005
Chromium	0.01	0.01	0.03	0.01	0.03	0.02	0.03	0.01	0.02	0.01	0.01	0.01	0.02
Cobalt	0.0010	0.0010	0.003	0.001	0.001	0.002	0.002	0.001	0.002	0.001	0.001	0.001	0.001
Copper	0.46	0.45	1.8	0.32	0.21	1.05	1.23	0.25	0.72	0.04	0.42	0.24	0.60
Lead	0.0060	0.0130	0.019	0.004	0.004	0.018	0.018	0.005	0.022	0.001	0.007	0.004	0.010
Mercury	0.0010	0.0010	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Molybdenum	0.010	0.010	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Nickel	0.010	0.010	0.03	0.01	0.03	0.03	0.03	0.01	0.02	0.01	0.01	0.01	0.02
Selenium	0.0020	0.0020	0.002	0.002	0.002	0.003	0.002	0.002	0.002	0.002	0.003	0.002	0.002
Zinc	0.150	0.160	0.34	0.09	0.06	0.72	0.45	0.07	0.31	0.01	0.18	0.08	0.22
Sample Date	Jan.6/21	Feb.3/21	Mar.3/21	Apr.7/21	May.5/21	Jun.2/21	July.7/21	Aug.4/21	Sept.3/21	Oct.6/21	Nov.3/21	Dec.1/21	

Work order	420936	422688	424497	427910	429239	432043	436056	438634	441232	444695	447640	449941
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2021 Dowling Wastewater Treatment Plant Performance

Month	Flows			BOD ₅				Total Suspended Solids				Total Phosphorus				Total Ammonia				Un-ionized	TKN	Nitrate	Nitrite	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./100m
January	39987	1290	1570	32	2.8	3.61	91.3%	35	3.1	4.00	91.1%	0.8	0.41	0.53	48.8%	3.60	1.45	1.87	59.7%	4.17	2.90	2.95	0.15	7.0	6.8	73	52.4	160		0.0	156.8	0.67	18
February	40089	1432	1830	27	3.8	5.44	85.9%	37	3.8	5.44	89.7%	1.0	0.46	0.66	54.0%	3.40	0.58	0.83	82.9%	2.15	2.80	4.72	0.47	7.1	6.8	71	49.2	160		0.0	139.9	0.66	6
March	55754	1799	2200	22	3.2	5.76	85.5%	36	3.8	6.83	89.4%	1.0	0.40	0.72	60.0%	2.60	1.44	2.59	44.6%	3.96	3.10	3.78	0.13	7.1	6.8	74	54.1	160		0.0	141.7	0.72	4
April	67400	2247	2510	27	3.7	8.31	86.3%	48	6.2	13.93	87.1%	0.7	0.47	1.06	32.9%	4.20	1.00	2.25	76.2%	2.29	2.90	4.52	0.05	7.1	6.9	71	49.5	200		0.0	131.3	0.53	32
May	76430	2465	2780	24	3.5	8.63	85.4%	42	3.9	9.62	90.7%	1.0	0.42	1.04	58.0%	3.70	0.99	2.44	73.2%	5.29	1.40	1.20	0.50	7.0	6.9	62	45.8	160		0.0	141.3	0.49	40
June	72434	2414	2690	27	3.3	7.97	87.8%	50	3.3	7.97	93.4%	0.9	0.43	1.04	52.2%	6.10	0.78	1.88	87.2%	2.40	1.40	4.10	0.12	7.1	6.8	70	48.8	160		0.0	137.6	0.63	14
July	73905	2384	2520	46	4.9	11.68	89.3%	47	3.3	7.87	93.0%	0.9	0.51	1.22	43.3%	3.20	0.16	0.38	95.0%	0.57	0.60	6.05	0.35	6.8	6.7	76	49.0	160		0.0	154.2	0.69	8
August	76701	2474	2660	36	3.6	8.91	90.0%	83	3.4	8.41	95.9%	1.2	0.51	1.26	57.5%	3.30	0.15	0.37	95.5%	0.38	0.80	5.82	0.24	6.8	6.6	69	45.7	160		0.0	142.2	0.59	36
September	73441	2448	2660	15	4.7	11.51	68.7%	40	4.0	9.79	90.0%	1.0	0.49	1.20	51.0%	3.00	1.27	3.11	57.7%	3.33	2.40	3.71	0.99	7.0	6.7	67	46.8	200		0.0	122.2	0.55	82
October	65608	2116	3620	40	2.8	5.93	93.0%	42	2.5	5.29	94.0%	1.0	0.48	1.02	52.0%	3.00	0.15	0.32	95.0%	0.38	0.80	5.61	0.05	6.9	6.7	70	48.4	160		0.0	153.6	0.69	10
November	35547	1185	1400	15	3.0	3.55	80.0%	53	4.4	5.21	91.7%	1.2	0.53	0.63	55.8%	3.50	0.13	0.15	96.3%	0.19	0.60	6.33	0.05	6.8	6.6	70	49.7	160		0.0	143.6	0.68	11
December	34932	1127	1440	29	4.3	4.85	85.2%	33	5.4	6.08	83.6%	0.9	0.47	0.53	47.8%	3.40	0.42	0.47	87.6%	0.94	2.00	5.11	0.12	6.8	6.5	69	50.0	200		0.0	174.6	0.63	4
Total	712228						87.2%				91.8%				51.8%				80.4%								0		1739				
Average		1951		28	3.63	7.18	87.2%	46	3.93	7.54	90.8%	0.97	0.47	0.91	51.8%	3.58	0.71	1.39	0.79	2.17	1.81	4.49	0.27	6.96	6.72	70	49		0.00		0.63	22	



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



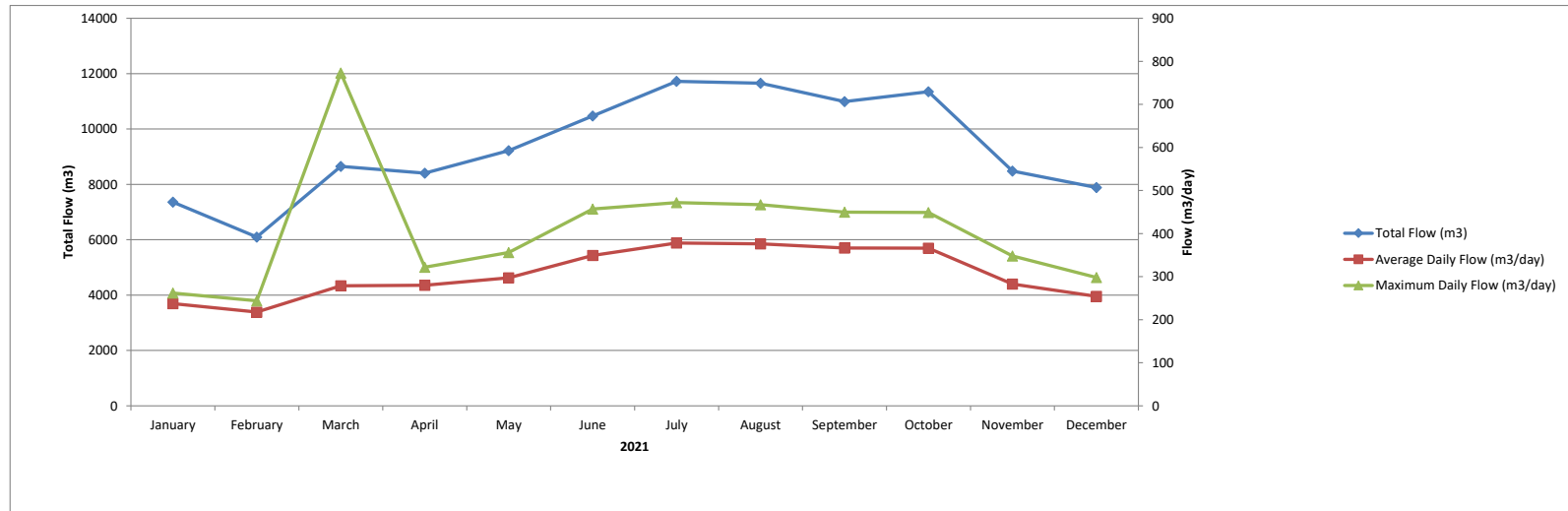
2021 Dowling Wastewater Treatment Plant Waste Sludge Analysis

Parameter (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December	Average
Ammonia (as N)	1.74	0.60	0.01	0.10	0.50	1.30	0.79	2.10	2.03	0.40	1.20	4.92	1.31
Nitrate (as N)	0.13	0.05	1.04	0.5	1.2	0.90	1.33	0.52	0.50	1.60	0.50	0.09	0.70
Nitrite (as N)	0.05	2.34	0.39	0.50	0.50	1.30	0.10	0.22	0.50	0.50	0.50	0.26	0.60
Potassium	6	5	8	4	4	17	13	9	10	9	10	9	8.7
TKN	116.0	78.8	92.2	115.0	63.0	106.0	88.0	26.0	11.0	59.8	64.0	12.0	69.3
Total Phosphorus	20.3	13.6	16.5	16.6	11.9	27.7	22.9	21.5	17.0	14.0	31.9	4.6	18.2
Total Solids	1450	1300	1960	1900	1140	2100	2600	2030	1910	1180	1900	340	1651
Arsenic	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Cadmium	0.0003	0.0004	0.0023	0.0002	0.0002	0.0007	0.0009	0.0002	0.0002	0.0002	0.0003	0.0002	0.0005
Chromium	0.01	0.01	0.03	0.01	0.03	0.02	0.03	0.01	0.02	0.01	0.01	0.01	0.02
Cobalt	0.0010	0.0010	0.003	0.001	0.001	0.002	0.002	0.001	0.002	0.001	0.001	0.001	0.001
Copper	0.46	0.45	1.8	0.32	0.21	1.05	1.23	0.25	0.72	0.04	0.42	0.24	0.60
Lead	0.0060	0.0130	0.019	0.004	0.004	0.018	0.018	0.005	0.022	0.001	0.007	0.004	0.010
Mercury	0.0010	0.0010	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Molybdenum	0.010	0.010	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Nickel	0.010	0.010	0.03	0.01	0.03	0.03	0.03	0.01	0.02	0.01	0.01	0.01	0.02
Selenium	0.0020	0.0020	0.002	0.002	0.002	0.003	0.002	0.002	0.002	0.002	0.003	0.002	0.002
Zinc	0.150	0.160	0.34	0.09	0.06	0.72	0.45	0.07	0.31	0.01	0.18	0.08	0.22
Sample Date	Jan.6/21	Feb.3/21	Mar.3/21	Apr.7/21	May.5/21	Jun.2/21	July.7/21	Aug.4/21	Sept.3/21	Oct.6/21	Nov.3/21	Dec.1/21	

Work order	420936	422688	424497	427910	429239	432043	436056	438634	441232	444695	447640	449941
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2021 Falconbridge Wastewater Treatment Plant Performance

Month	Flows			BOD ₅						Total Suspended Solids						Total Phosphorus				Total Ammonia				Un-Ionized	TKN	Nitrate	Nitrite	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	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	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	7362	237	262	180	8.8	2.09	43	41	95.1%	91	2.0	0.47	4	3	87.2%	6.3	0.03	0.01	99.5%	34.50	0.35	0.08	99.0%	1.52	0.80	0.18	0.05	7.2	7.1	1050
February	6099	218	244	200	5.8	1.26	44	42	97.1%	102	3.9	0.85	4	3	80.3%	4.9	0.05	0.01	99.0%	36.00	0.60	0.13	98.3%	0.51	2.10	0.32	0.05	7.4	7.1	2280
March	8649	279	773	170	3.6	1.00	47	46	97.9%	136	2.6	0.73	6	6	88.5%	6.4	0.06	0.02	99.1%	34.70	0.86	0.24	97.5%	4.39	2.50	0.30	0.05	7.3	6.9	5000
April	8405	280	322	160	1.5	0.42	45	44	99.1%	130	2.7	0.76	6	5	86.9%	7.2	0.16	0.04	97.8%	46.00	0.48	0.13	99.0%	1.78	1.30	0.25	0.05	7.5	7.0	778
May	9217	297	356	240	1.7	0.51	71	71	99.3%	209	2.8	0.83	15	14	94.4%	10.4	0.08	0.02	99.2%	48.50	0.01	0.00	100.0%	0.05	0.80	0.05	0.05	7.4	6.9	108
June	10473	349	457	260	2.1	0.73	91	90	99.2%	176	3.6	1.26	16	15	92.1%	8.8	0.09	0.03	99.0%	49.80	0.14	0.05	99.7%	0.58	0.40	0.05	0.05	7.4	7.0	12
July	11721	378	472	216	1.8	0.68	82	81	99.2%	106	3.0	1.13	9	7	86.8%	7.2	0.05	0.02	99.3%	31.00	0.01	0.00	100.0%	0.03	0.30	0.05	0.05	7.2	6.9	18
August	11657	376	467	180	1.1	0.41	68	67	99.4%	76	3.2	1.20	5	4	76.5%	6.5	0.07	0.03	98.9%	1.44	2.13	0.80	-47.9%	4.05	0.30	0.05	0.05	7.1	6.9	244
September	10993	366	450	230	1.6	0.59	84	84	99.3%	117	2.3	0.84	10	9	91.4%	11.6	0.49	0.18	95.8%	55.90	0.11	0.04	99.8%	0.18	0.20	0.05	0.05	7.3	6.9	78
October	11346	366	449	150	1.4	0.51	55	54	99.1%	95	3.2	1.17	5	4	77.3%	7.4	0.29	0.11	96.1%	38.90	0.19	0.07	99.5%	0.29	0.40	0.05	0.05	7.3	7.0	212
November	8482	283	348	210	2.4	0.68	59	59	98.9%	84	3.2	0.90	5	4	81.6%	6.4	0.09	0.03	98.6%	33.50	0.10	0.03	99.7%	0.03	0.20	0.50	0.50	7.3	7.0	1870
December	7887	254	298	190	1.7	0.43	48	48	99.1%	116	5.0	1.27	6	4	77.1%	7.3	0.04	0.01	99.5%	54.30	0.23	0.06	99.6%	0.11	0.30	0.37	0.05	7.45	6.9	2000
Total	112291						737	728	98.7%				90	78	87.3%				98.2%				98.8%							
Average		308		199	2.79	0.78	61.41	60.63	98.74%	120	3.13	0.95	7.49	6.54	87.29%	7.54	0.13	0.04	98.2%	38.71	0.43	0.14	87.0%	1.13	0.80	0.19	0.09	7.32	6.98	1138



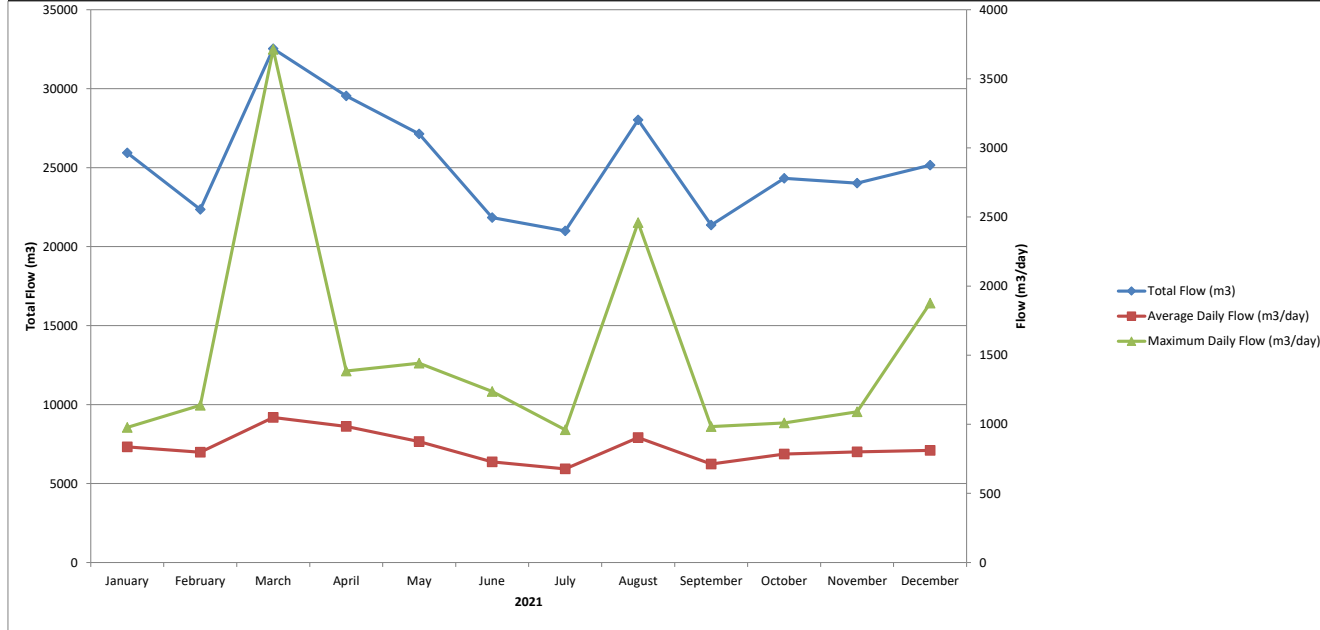
Plant Type: Trickling Filter
Design Capacity: 909 m³/day
Population Served: 754

Compliance Parameters:

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

2021 Levack Wastewater Treatment Plant Performance

Month	Flows			CBOD				Total Suspended Solids				Total Phosphorus				Total Ammonia				Un-ionized	TKN		Nitrate	Nitrite	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	Efficiency	mg/L	Raw	Effluent	Effluent	Effluent	Raw	Effluent	Raw	Effluent	Total m³	Conc.	Total	Total	Residual	Geomean	
	m³	m³/d	m³/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	%	m³	Kg	mg/L	# Col./100mL	
January	25934	837	977	6	0.5	0.42	91.7%	192	3.9	3.26	98.0%	4.8	0.46	0.38	90.4%	27.50	12.10	10.12	56.0%	13.99	33.3	13.00	6.69	0.05	7.0	6.8	167	78.67	160		0.0	31.3	0.68	1	
February	22357	798	1138	160	3.4	2.71	97.9%	206	3.6	2.87	98.3%	5.6	0.55	0.44	90.2%	27.40	3.09	2.47	88.7%	2.57	32.5	1.60	19.30	0.05	6.9	6.7	180	38.90	160		0.0	33.0	0.55	1	
March	32531	1049	3713	190	4.5	4.72	97.6%	226	10.4	10.91	95.4%	11.1	0.68	0.71	93.9%	27.30	3.02	3.17	88.9%	1.58	33.5	3.70	19.10	0.34	6.9	6.7	176	37.17	280		0.0	78.0	0.54	16	
April	29538	985	1386	67	1.8	1.77	97.3%	197	8.2	8.07	95.8%	7.9	0.54	0.53	93.2%	21.30	0.17	0.17	99.2%	0.23	36.6	1.10	19.50	0.05	7.0	6.7	153	41.63	160		0.0	72.6	0.58	6	
May	27134	875	1442	66	0.5	0.44	99.2%	152	4.0	3.50	97.4%	5.0	0.41	0.36	91.8%	14.20	0.24	0.21	98.3%	0.06	18.0	0.20	16.40	0.05	6.9	6.3	146	44.09	240		0.0	94.7	0.58	2	
June	21839	728	1237	14	1.7	1.24	87.9%	181	5.4	3.93	97.0%	5.8	0.33	0.24	94.3%	24.60	2.78	2.02	88.7%	2.26	24.6	0.80	19.30	0.05	7.1	6.7	130	80.11	240	2.0	4.8	105.0	0.84	2	
July	20995	677	960	180	2.5	1.69	98.6%	188	3.2	2.17	98.3%	9.1	0.31	0.21	96.6%	27.80	0.02	0.01	99.9%	0.04	45.1	0.20	22.70	0.20	7.1	6.6	147	56.20	280		0.0	102.6	0.73	1	
August	28020	904	2460	38	8.8	7.95	76.8%	63	6.8	6.15	89.2%	6.7	0.39	0.35	94.2%	5.30	0.33	0.30	93.8%	0.37	8.7	0.90	8.42	0.72	6.9	5.9	105	44.33	160		0.0	159.7	0.72	16	
September	21367	712	984	89	1.8	1.28	98.0%	166	10.0	7.12	94.0%	4.1	0.34	0.24	91.7%	19.80	0.06	0.04	99.7%	0.05	26.4	0.20	21.80	0.05	7.1	6.9	153	95.20	160		0.0	114.7	0.75	3	
October	24323	785	1010	180	1.9	1.49	98.9%	191	3.8	2.98	98.0%	4.1	0.25	0.20	93.9%	24.80	0.11	0.09	99.6%	0.32	33.6	0.20	23.90	0.05	7.1	6.7	177	108.20	160	2.3	3.7	136.3	0.67	6	
November	24019	801	1091	250	3.4	2.72	98.6%	183	11.0	8.81	94.0%	4.1	0.66	0.53	83.9%	28.60	0.15	0.12	99.5%	0.19	31.6	0.20	22.60	0.05	7.0	6.5	182	80.40	200	1.3	2.6	131.2	0.71	2	
December	25151	811	1877	110	2.0	1.62	98.2%	136	9.0	7.30	93.4%	3.4	0.73	0.59	78.5%	29.30	0.30	0.24	99.0%	0.26	31.2	0.50	20.90	0.05	6.8	6.3	179	68.71	160	1.5	2.4	153.1	0.88	2	
Total	303208						97.5%				96.1%				92.1%				91.7%										2360		13.5				
Average		831		113	2.73	2.34	97.5%	173	6.61	5.59	96.1%	5.98	0.47	0.40	92.1%	23.16	1.86	1.58	91.7%	1.83	29.59	1.88	18.38	0.14	6.98	6.55	158	64	178			0.69	5		



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



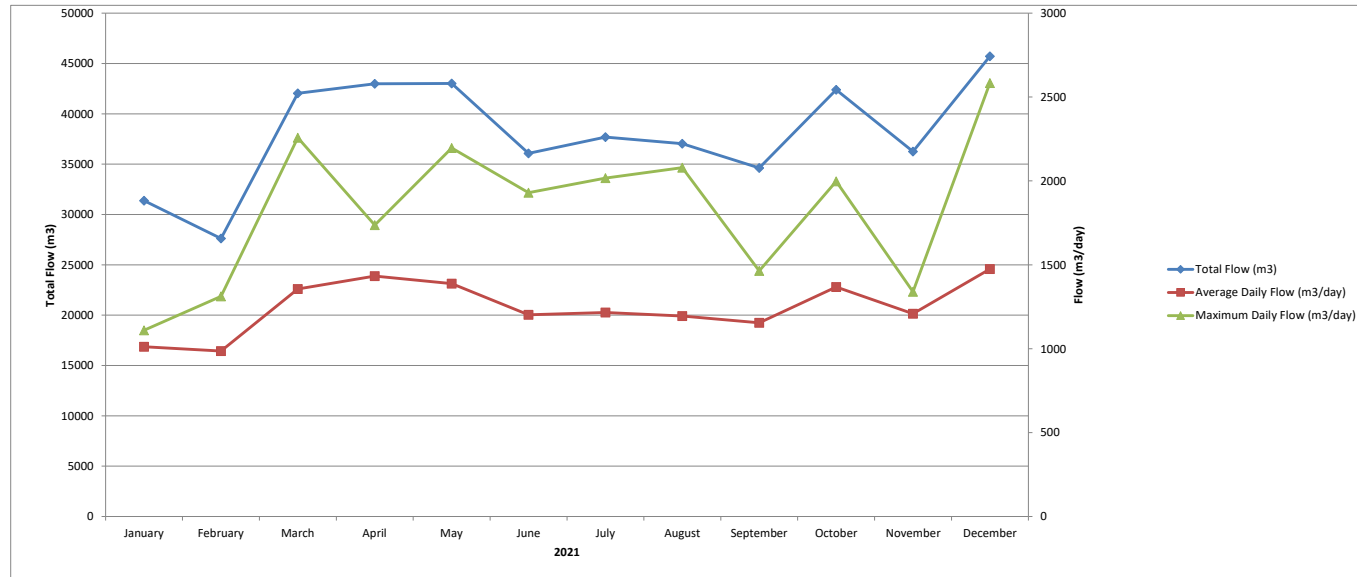
2021 Levack Wastewater Treatment Plant Waste Sludge Analysis

Parameter (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December	Average
Ammonia (as N)	233.00	27.80	50.30	190.00	3.00	143.00	0.19	0.10	0.35	20.1	22.6	108	67
Nitrate (as N)	0.50	2.50	0.50	0.50	4.10	0.50	19.40	7.28	12.90	0.90	32.20	0.50	6.82
Nitrite (as N)	6.90	0.50	2.60	0.80	0.50	0.50	0.94	0.05	0.50	15.50	44.10	0.50	6.12
Potassium	35	30	48	28	7	54	23	9	14	82	44	8	32
TKN	2140	914	1100	1280	88	1080	42	7.5	11.3	1500	656	1040	822
Total Phosphorus	591.0	280.0	366.0	261.0	28.9	140	24.7	19.2	20.9	105.0	196	299	194
Total Solids	19600	11200	14300	17600	1940	19800	2060	1530	1880	21200	11200	14600	11409
Arsenic	0.02	0.01	0.02	0.01	0.01	0.03	0.01	0.01	0.01	0.03	0.03	0.01	0.02
Cadmium	0.0157	0.0055	0.0101	0.0045	0.0005	0.0156	0.0012	0.0013	0.0007	0.0181	0.0160	0.0002	0.0075
Chromium	0.20	0.06	0.14	0.07	0.01	0.26	0.02	0.05	0.02	0.23	0.25	0.01	0.11
Cobalt	0.108	0.049	0.038	0.027	0.003	0.092	0.027	0.025	0.031	0.181	0.229	0.001	0.068
Copper	9.30	2.50	5.40	3.70	0.22	6.40	0.78	1.00	0.48	6.9	4.8	0.27	3.48
Lead	0.489	0.204	0.384	0.251	0.014	0.454	0.035	0.079	0.034	0.448	0.423	0.006	0.235
Mercury	0.008	0.004	0.005	0.003	0.001	0.006	0.001	0.001	0.001	0.007	0.006	0.001	0.004
Molybdenum	0.05	0.02	0.04	0.02	0.01	0.07	0.01	0.01	0.01	0.05	0.06	0.01	0.03
Nickel	1.90	0.65	0.08	0.65	0.07	1.40	0.21	0.33	0.19	1.90	1.30	0.01	0.72
Selenium	0.033	0.014	0.024	0.002	0.002	0.030	0.002	0.003	0.002	0.027	0.040	0.002	0.015
Zinc	5.93	2.48	2.99	1.67	0.10	5.12	0.54	0.47	0.48	5.94	6.53	0.09	2.70
Sample Date	Jan.6/21	Feb.3/21	Mar.3/21	Apr.7/21	May.5/21	Jun.2/21	Jul.7/21	Aug.5/21	Sep.1/21	Oct.6/21	Nov.3/21	Dec.1/21	

Work order	420931	422693	424501	426913	429240	432046	436057	438699	441226	444692	447628	449935
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2021 Lively Wastewater Treatment Plant Performance

Month	Flows				BOD ₅		CBOD				Total Suspended Solids				Total Phosphorus				Total Ammonia				Un-ionized	TKN		Nitrate	Nitrite	pH		Alkalinity		Sludge			Chlorine		E.Coli
	Total	Avg Day	Max Day	Diverted	Raw	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	µg/L	Raw	Effluent	Effluent	Effluent	Raw	Effluent	Raw	mg/L	mg/L	Total m ³	Conc.	Total	Residual	Geomean	
	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	mg/L	mg/L	mg/L	mg/L	mg/L	Hauled	%	m ³	Kg	mg/L	# Col./100mL	
January	31374	1012	1110	453	84	58	2.4	2.43	95.9%	58	4.7	4.76	92.6%	3.6	0.38	0.38	90.4%	23.70	14.50	14.67	44.2%	20.45	27.0	15.30	2.95	0.28	7.0	7.0	172	73	360		0.0	62.8	0.80	7	
February	27614	986	1312	417	82	76	2.9	2.86	96.2%	90	6.1	6.02	94.9%	6.5	0.32	0.32	96.3%	29.00	9.49	9.36	75.4%	4.19	29.8	8.30	14.00	0.05	7.1	7.0	185	55	440		0.0	38.3	0.83	1	
March	42039	1356	2258	3812	78	20	0.5	0.68	97.5%	96	5.4	7.32	96.6%	2.9	0.36	0.49	92.5%	25.50	19.60	26.58	53.8%	469.60	27.3	19.20	1.79	0.05	7.1	6.9	168	78	520		0.0	51.1	0.81	3	
April	42982	1433	1737	2194	89	38	4.8	6.88	87.4%	41	6.2	8.88	87.5%	2.7	0.21	0.30	93.6%	19.60	6.74	9.66	71.6%	11.69	26.7	7.50	9.56	0.05	7.2	6.6	179	43	480		0.0	97.5	0.73	4	
May	43013	1388	2196	2964	84	45	2.4	3.33	94.7%	69	4.9	6.80	95.5%	2.7	0.22	0.31	94.9%	9.42	4.98	6.91	66.6%	10.15	15.8	5.70	9.38	0.68	7.0	7.2	124	53	440		0.0	68.7	0.92	15	
June	36069	1202	1930	2831	74	60	3.0	3.61	95.0%	52	4.7	5.65	94.4%	3.2	0.25	0.30	95.1%	27.40	8.92	10.72	79.7%	5.62	27.8	8.70	9.78	0.20	7.1	7.6	177	33	520		0.0	61.5	0.58	3	
July	37693	1216	2017	4409	250	218	0.6	0.73	99.7%	155	8.8	10.70	96.6%	3.5	0.47	0.57	91.9%	23.60	2.03	2.47	94.8%	0.01	41.8	8.60	13.70	0.66	7.0	7.0	166	44	400		0.0	143.2	0.68	1	
August	37030	1195	2079	3381	69	44	3.2	3.82	92.7%	52	7.8	9.32	91.4%	2.7	0.44	0.53	90.6%	23.60	2.73	3.26	93.4%	3.43	22.2	3.50	16.80	1.34	7.4	6.7	177	35	240		0.0	95.0	0.80	13	
September	34628	1154	1464	1561	97	60	0.9	1.04	98.5%	88	5.6	6.46	95.0%	3.7	0.44	0.51	90.6%	33.10	4.76	5.49	88.7%	5.99	21.1	6.00	13.70	0.05	7.4	6.9	179	34	200		0.0	103.9	0.77	2	
October	42395	1368	1998	1865	89	80	2.5	3.42	96.9%	82	10.7	14.63	91.1%	2.9	0.33	0.45	92.2%	25.70	9.80	13.40	73.9%	8.14	26.2	11.60	8.84	0.05	7.1	7.1	169	55	200		0.0	65.7	0.90	14	
November	36255	1209	1339	785	180	160	1.9	2.30	98.8%	138	12.6	15.23	91.8%	4.6	0.49	0.59	90.4%	26.60	25.60	30.94	13.1%	43.40	18.3	27.00	2.21	2.36	7.0	7.0	176	79	180		0.0	52.1	0.99	2	
December	45719	1475	2584	2504	100	84	1.2	1.77	98.6%	166	17.7	26.10	93.9%	5.0	0.55	0.81	93.7%	31.60	0.31	0.46	99.4%	0.59	19.6	0.20	24.70	0.05	7.5	7.2	194	89	160		0.0	74.5	0.94	4	
Total	456811								97.2%				94.1%				93.0%				75.3%												672		0.0		
Average		1252				106	79	2.19	2.74		91	7.93	10.16	93.4%	3.67	0.37	0.46	92.7%	24.90	9.12	11.2	71.2%	48.61	25.29	10.13	10.62	0.49	7.16	7.01	172	56		345		0.81		6



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	
E.Coli	200 col/100 mL		

* Monthly Average
* Monthly Geometric Mean

* Annual average of any consecutive 12 month period.



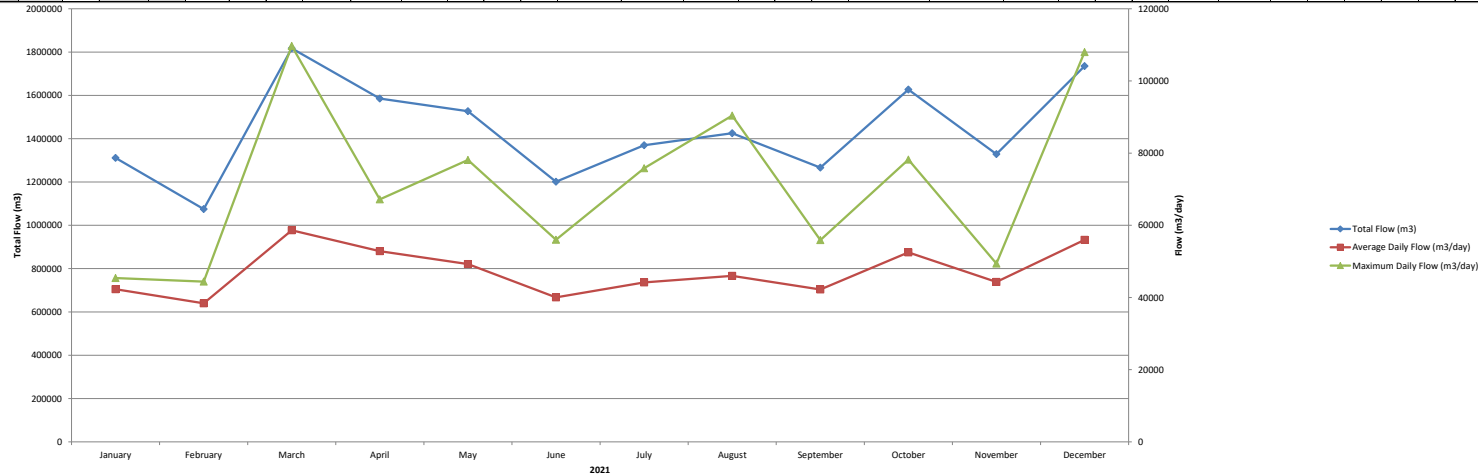
2021 Lively Wastewater Treatment Plant Waste Sludge Analysis

Parameter (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December	Average
Ammonia (as N)	93.8	18.4	105.0	36.9	32.1	22.4	2.4	21.8	50.2	13.3	17.4	7.0	35.1
Nitrate (as N)	0.5	0.5	0.5	0.5	49.0	0.5	11.3	0.5	0.5	0.5	0.5	0.5	5.4
Nitrite (as N)	2.4	0.5	1.6	0.5	2.4	1.5	0.05	2.7	0.5	0.5	0.5	0.5	1.1
Potassium	57	40	60	28	30	62	15	75	45	70	21	86	49
TKN	2230	1290	1120	1130	1200	987	42	1410	898	1670	112	808	1075
Total Phosphorus	757	403	165	152	248	201	29.6	661	496	144	52.1	245	296
Total Solids	27700	19300	17000	18600	21200	18500	1520	27500	24100	31400	3710	12700	18603
Arsenic	0.07	0.03	0.07	0.02	0.03	0.07	0.01	0.06	0.03	0.08	0.01	0.05	0.04
Cadmium	0.0268	0.0098	0.0310	0.0068	0.0092	0.0216	0.0011	0.0137	0.0055	0.0195	0.0029	0.0160	0.0137
Chromium	0.27	0.10	0.33	0.07	0.08	0.24	0.01	0.24	0.10	0.29	0.05	0.15	0.16
Cobalt	0.127	0.050	0.385	0.120	0.058	0.172	0.014	0.093	0.054	0.130	0.039	0.239	0.123
Copper	10.6	3.5	13.1	3.0	2.6	7.3	0.5	6.7	2.2	7.0	1.3	3.7	5.1
Lead	0.344	0.177	0.514	0.118	0.138	0.297	0.024	0.302	0.114	0.419	0.056	0.131	0.220
Mercury	0.005	0.004	0.010	0.002	0.001	0.004	0.001	0.008	0.001	0.006	0.001	0.002	0.004
Molybdenum	0.07	0.04	0.07	0.01	0.04	0.08	0.01	0.05	0.02	0.10	0.01	0.09	0.05
Nickel	2.60	0.76	2.60	0.90	0.92	1.60	0.16	1.22	0.56	1.40	0.34	1.4	1.205
Selenium	0.047	0.024	0.052	0.002	0.016	0.062	0.002	0.034	0.015	0.049	0.010	0.041	0.030
Zinc	9.40	2.87	12.30	2.08	2.90	6.57	0.47	3.84	2.23	4.72	1.08	4.12	4.38
Sample Date	Jan.6/21	Feb.3/21	Mar.2/21	Apr.7/21	May.5/21	Jun.2/21	Jul.7/21	Aug.4/21	Sep.1/21	Oct.6/21	Nov.3/21	Dec.1/21	#DIV/0!

Work Order	420935	422689	424630	426911	429233	432038	436046	438675	441233	444693	447623	449937
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2021 Sudbury Wastewater Treatment Plant Performance

Month	Flows			BOD ₅		CBOD					Total Suspended Solids					Total Phosphorus					Total Ammonia		Un-ionized	TKN	Nitrate	Nitrite	pH		Alkalinity		Sludge		Chlorine		Dechlorination		E.Coli					
	Total m ³ /d	Avg Day m ³ /d	Max Day m ³ /d	Raw mg/L	Effluent mg/L	Loading kg/day	Raw Loading kg/day	Removed kg/day	Plant Efficiency	Raw mg/L	Effluent mg/L	Loading kg/day	Raw Loading kg/day	Removed kg/day	Plant Efficiency	Raw mg/L	Effluent mg/L	Loading kg/day	Raw Loading kg/day	Removed kg/day	Plant Efficiency	Raw mg/L	Effluent mg/L	Loading kg/day	Plant Efficiency	Ammonia µg/L	Raw mg/L	Effluent mg/L	Nitrate mg/L	Nitrite mg/L	Raw Effluent	Raw mg/L	Effluent mg/L	Total m ³	Conc. %	Total Kg	Residual mg/L	Total Loading kg/day	Geometric Mean			
January	1311430	42304	45400	220	165	6.4	270.7	6980	6709	96.1%	181	9.1	385.0	7657	7272	95.0%	2.7	0.40	16.9	114.22	97.30	85.2%	25.80	22.28	942.5	13.6%	259.5	35.12	18.2	0.27	2.12	7.1	7.0	179	128.8	0		2869	0.60	0.001	0.04	3
February	1074900	38389	44400	266	185	10.5	403.1	7102	6699	94.3%	225	14.0	537.5	8638	8100	93.8%	3.6	0.68	26.1	138.20	112.10	81.1%	22.00	23.69	909.4	-7.7%	243.5	28.1	20.9	0.20	0.15	7.2	7.0	187	159.3	0		2618	0.57	0.003	0.12	3
March	1817200	58619	109700	150	130	6.5	381.0	7621	7239	95.0%	219	12.4	726.9	12838	12111	94.3%	2.6	0.50	29.3	152.41	123.10	80.8%	17.30	16.39	960.8	5.3%	136.9	24.9	15.1	0.34	0.12	7.2	7.0	157	144.7	0		2872	0.65	0.003	0.18	4
April	1585200	52840	67200	165	160	6.7	354.0	8454	8100	95.8%	247	10.1	533.7	13051	12518	95.9%	3.1	0.44	23.2	163.80	140.55	85.8%	17.90	16.56	875.0	7.5%	129.0	32.3	15.4	0.58	0.59	7.3	7.0	202	164.6	0		2561	0.54	0.003	0.16	2
May	1526700	49248	78100	190	140	4.2	206.8	6895	6688	97.0%	296	9.7	477.7	14578	14100	96.7%	2.2	0.31	15.3	108.35	93.08	85.9%	15.90	16.86	830.3	-6.0%	136.0	20.6	13.7	0.49	0.92	7.1	6.9	173	141.0	0		2298	0.60	0.001	0.05	5
June	1201100	40037	56000	177	137	9.1	364.3	5485	5121	93.4%	435	16.4	656.6	17416	16759	96.2%	4.1	0.39	15.6	164.15	148.54	90.5%	26.10	21.95	878.8	15.9%	190.3	48.6	17.2	0.37	0.16	7.1	6.9	202	141.8	0		3335	0.48	0.005	0.20	5
July	1369598	44181	75800	163	147	7.0	309.3	6495	6185	95.2%	421	9.9	437.4	18600	18163	97.6%	2.7	0.33	14.6	119.29	104.71	87.8%	17.20	18.21	804.5	-5.9%	139.5	23.5	13.2	0.40	0.09	7.1	6.9	182	138.2	0		3106	0.48	0.002	0.09	4
August	1425500	45984	90400	140	140	7.0	321.9	6438	6116	95.0%	375	8.6	395.5	17244	16848	97.7%	2.9	0.34	15.6	133.35	117.72	88.3%	16.40	16.63	764.7	-1.4%	112.1	20.3	9.1	0.20	0.10	7.0	6.9	175	149.5	0		2717	0.61	0.003	0.14	5
September	1266500	42217	55900	254	217	3.3	139.3	9161	9022	98.5%	410	6.7	282.9	17309	17026	98.4%	3.6	0.28	11.8	151.98	140.16	92.2%	25.90	24.26	1024.2	6.3%	126.5	44.9	17.8	0.49	0.29	7.1	6.9	210	148.8	0		2119	0.57	0.002	0.08	6
October	1626990	52484	78200	160	126	6.5	341.1	6613	6272	94.8%	203	7.4	388.4	10654	10266	96.4%	2.6	0.56	29.4	136.46	107.07	78.5%	17.00	17.44	915.3	-2.6%	77.27	23.47	17.2	0.93	1.76	7.2	7.0	202	176.8	0		2643	0.58	0.004	0.21	15
November	1328900	44297	49400	205	145	6.9	305.6	6423	6117	95.2%	238	11.4	505.0	10543	10038	95.2%	3.7	0.68	30.1	163.90	133.78	81.6%	20.50	30.20	1337.8	-47.3%	90.98	27.5	18.7	0.20	0.18	7.1	6.9	213	173.4	0		2304	0.55	0.003	0.13	6
December	1735300	55977	108000	144	115	7.7	431.0	6437	6006	93.3%	236	10.6	593.4	13211	12617	95.5%	3.0	0.58	32.5	167.93	135.47	80.7%	18.60	14.74	825.1	20.8%	54.63	26.0	14.4	0.45	0.11	7.2	6.8	182	163.1	0		2595	0.57	0.007	0.39	6
Total	1726918						84104	80275	95.4%				161737	155818	96.3%				1714.04	1454	84.8%				0.9%																	
Average	47313				151	6.82	319.03	7008.63	6689.6	95.45%	291	10.53	493.31	13478	12985	96.06%	3.07	0.46	21.71	142.84	121.13	84.80%	20.05	19.93	922.38	0.00	141.37	29.61	15.71	0.41	0.55	7.14	6.93		152.49			2670	0.57	0.00	0.15	5



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 Average			



2021 Sudbury 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)	726	333	297	356	281	374	228	341	275	404	350	409	365
Nitrate (as N)	0.5	0.5	0.5	0.5	0.5	3.3	0.5	0.5	0.5	0.5	0.5	2.0	0.9
Nitrite (as N)	18.1	18.7	10.5	4.7	6.4	16.5	10.5	3.5	6.3	9.8	5.2	16	10.5
Potassium	84	105	134	3	87	132	127	106	116	178	105	91	106
TKN	4300	2970	3180	2610	2070	1610	2540	1960	2940	2290	2350	3260	2673
Total Phosphorus	1150	665	563	0.48	396	505	436	536	390	310	474	478	492
Total Solids	32300	38800	42200	35500	30800	31300	32500	33200	32800	32300	29100	37100	33992
Arsenic	0.16	0.10	0.10	0.06	0.05	0.16	0.20	0.27	0.21	0.26	0.21	0.06	0.15
Cadmium	0.0302	0.0249	0.0238	0.0139	0.0144	0.0302	0.0362	0.0534	0.0339	0.0337	0.0396	0.0188	0.0294
Chromium	0.36	0.26	0.34	0.07	0.17	0.37	0.45	0.75	0.47	0.46	0.53	0.18	0.37
Cobalt	0.232	0.151	0.162	0.071	0.091	0.248	0.338	0.548	0.427	0.331	0.365	0.289	0.271
Copper	12.2	9.5	10.1	6.7	3.6	14.3	12.3	22.1	15.0	14.6	13.5	3.7	11.5
Lead	0.454	0.406	0.399	0.157	0.200	0.536	0.727	1.020	0.712	0.521	0.636	0.154	0.494
Mercury	0.007	0.005	0.007	0.001	0.001	0.006	0.012	0.009	0.007	0.009	0.006	0.003	0.006
Molybdenum	0.09	0.07	0.07	0.02	0.03	0.10	0.12	0.20	0.15	0.15	0.16	0.10	0.11
Nickel	4.5	2.5	2.5	2.1	1.1	4.5	4.4	8.7	5.1	5.2	4.7	1.3	3.9
Selenium	0.081	0.063	0.050	0.002	0.044	0.106	0.128	0.124	0.107	0.100	0.126	0.051	0.082
Zinc	9.80	8.9	9.40	4.18	5.96	13.0	12.6	15.5	13.3	13.00	11.30	4.68	10.14
Sample Date	Jan.6/21	Feb.1/21	Mar.1/21	Apr.7/21	May.3/21	Jun.2/21	Jul.5/21	Aug.3/21	Sep.1/21	Oct.4/21	Nov.1/21	Dec.1/21	

Work Order	420909	422406	424211	426916	428882	432049	435687	438317	441237	444280	447268	449929
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2021 Sudbury Wastewater Treatment Plant - Raw & Effluent Metals Analysis

Parameter (mg/L)	Location	January	February	March	April	May	Jun	July	August	September	October	November	December	Average
Arsenic	Raw	0.0100	0.0100	0.0020	0.0010	0.0010	0.0010	0.0100	0.0100	0.0020	0.0010	0.0010	0.0100	0.0049
	Effluent	0.0100	0.0100	0.0020	0.0010	0.0010	0.0010	0.0100	0.0100	0.0010	0.0010	0.0010	0.0100	0.0048
Cadmium	Raw	0.0010	0.0010	0.0001	0.0002	0.0001	0.0001	0.0004	0.0002	0.0001	0.0001	0.0001	0.0010	0.0004
	Effluent	0.0010	0.0010	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0001	0.0001	0.0001	0.0010	0.0003
Chromium	Raw	0.0100	0.0100	0.0040	0.0020	0.0010	0.0020	0.0100	0.0100	0.0020	0.0010	0.0010	0.0100	0.0053
	Effluent	0.0100	0.0100	0.0030	0.0010	0.0010	0.0010	0.0100	0.0100	0.0010	0.0010	0.0010	0.0100	0.0049
Cobalt	Raw	0.0020	0.0020	0.0023	0.0039	0.0026	0.0023	0.0040	0.0030	0.0033	0.0019	0.0024	0.0010	0.0026
	Effluent	0.0030	0.0020	0.0030	0.0037	0.0030	0.0026	0.0040	0.0030	0.0027	0.0024	0.0023	0.0020	0.0028
Copper	Raw	0.0400	0.0400	0.0160	0.0050	0.0360	0.0100	0.1100	0.0700	0.0050	0.0020	0.0110	0.0100	0.0296
	Effluent	0.0100	0.0100	0.0090	0.0080	0.0080	0.0040	0.0100	0.0100	0.0050	0.0060	0.0070	0.0100	0.0081
Lead	Raw	0.0010	0.0010	0.0002	0.0024	0.0015	0.0003	0.0040	0.0030	0.0012	0.0002	0.0001	0.0010	0.0013
	Effluent	0.0010	0.0010	0.0001	0.0001	0.0004	0.0001	0.0010	0.0010	0.0002	0.0001	0.0012	0.0010	0.0006
Mercury	Raw	0.0010	0.0010	0.0001	0.0001	0.0001	0.0001	0.0010	0.0010	0.0001	0.0001	0.0001	0.0010	0.0005
	Effluent	0.0010	0.0010	0.0001	0.0001	0.0001	0.0001	0.0010	0.0010	0.0001	0.0001	0.0001	0.0010	0.0005
Molybdenum	Raw	0.0100	0.0100	0.0030	0.0010	0.0030	0.0020	0.0100	0.0100	0.0010	0.0010	0.0010	0.0100	0.0052
	Effluent	0.0100	0.0100	0.0030	0.0010	0.0040	0.0010	0.0100	0.0100	0.0060	0.0010	0.0010	0.0100	0.0056
Nickel	Raw	0.0700	0.0600	0.0650	0.1050	0.0700	0.0500	0.1000	0.0700	0.0470	0.0530	0.0530	0.0300	0.0644
	Effluent	0.0800	0.0500	0.0630	0.0860	0.0610	0.0500	0.0700	0.0600	0.0460	0.0540	0.0600	0.0600	0.0617
Selenium	Raw	0.0020	0.0020	0.0009	0.0062	0.0009	0.0009	0.0020	0.0020	0.0018	0.0011	0.0009	0.0020	0.0019
	Effluent	0.0020	0.0020	0.0056	0.0061	0.0008	0.0005	0.0020	0.0020	0.0018	0.0012	0.0010	0.0020	0.0023
Zinc	Raw	0.0200	0.0900	0.0060	0.1020	0.0580	0.0180	0.1100	0.0700	0.0600	0.0190	0.0190	0.0100	0.0485
	Effluent	0.0200	0.0700	0.0220	0.0260	0.0170	0.0210	0.0200	0.0100	0.0150	0.0180	0.0710	0.0300	0.0283

Work Order

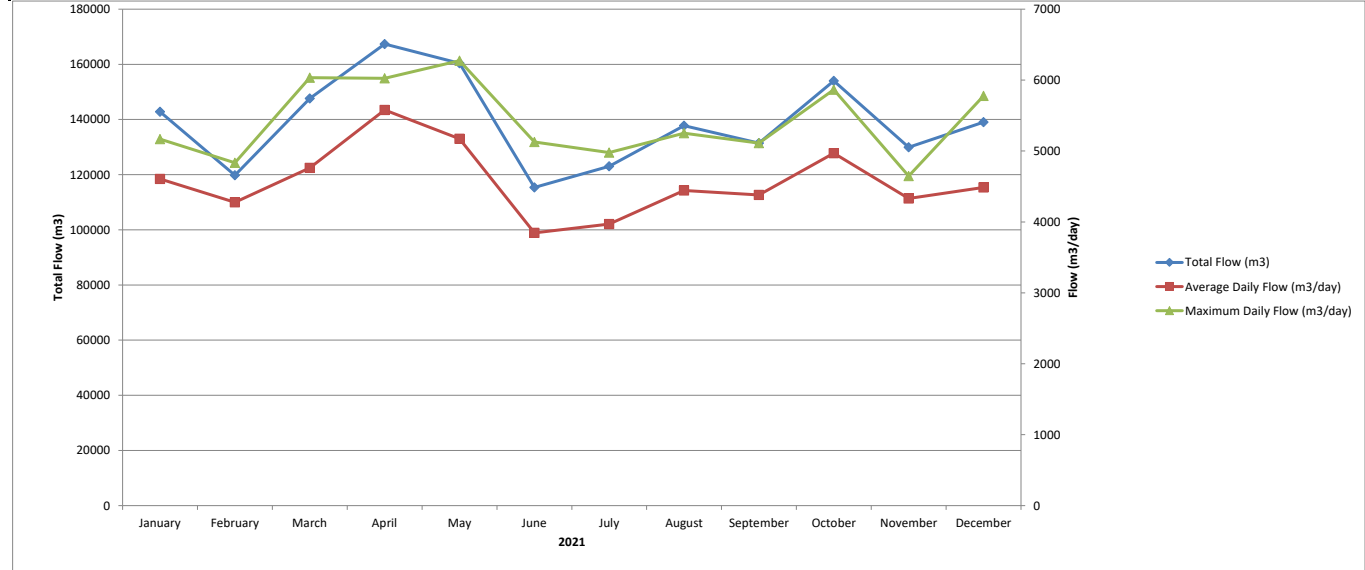
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2021 Valley East Wastewater Treatment Plant Performance

Month	Flows			BOD ₅				CBOD				Total Suspended Solids				Total Phosphorus				Total Ammonia				Un-ionized		TKN		Nitrate	Nitrite	pH		Alkalinity		Sludge		Chlorine		E.Coli
	Total	Avg Day	Max Day	Raw	Raw	Effluent	Loading	Plant	Raw	Raw	Effluent	Loading	Plant	Raw	Raw	Effluent	Loading	Plant	Raw	Raw	Effluent	Loading	Plant	Ammonia	Raw	Effluent	Effluent	Effluent	Raw	Effluent	Raw	Effluent	Total m ³	Total	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	mg/L	kg/d	Efficiency	mg/L	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	mg/L	kg/d	Efficiency	µg/L	mg/L	mg/L	mg/L	mg/L	Raw	Effluent	mg/L	mg/L	Hauled	Conc.	m ³	Kg	mg/L	# Col./100mL
January	142795	4606	5167	200	140	0.6	2.76	99.6%	209	13.7	63.11	93.4%	2.8	0.70	3.22	75.2%	28.80	28.70	132.2	0.3%	488.2	38.5	28.1	2.20	0.50	7.5	7.2	210	170	1120		0.0	266.0	0.87	2			
February	119768	4277	4834	180	140	3.4	14.54	97.6%	248	9.2	39.35	96.3%	3.1	0.57	2.44	81.6%	31.30	32.13	137.4	-2.7%	674.2	36.0	28.4	2.79	0.57	7.6	7.3	205	170	1040		0.0	182.3	0.82	3			
March	147624	4762	6034	200	140	4.5	21.43	96.8%	208	8.2	39.05	96.1%	3.0	0.55	2.62	81.7%	34.00	28.52	135.8	16.1%	525.0	38.8	26.8	2.51	1.02	7.6	7.2	191	168	1520		0.0	191.6	0.79	9			
April	167359	5579	6024	150	140	4.6	25.66	96.7%	223	9.7	54.11	95.7%	3.1	0.68	3.79	78.1%	25.80	23.55	131.4	8.7%	268.1	42.8	23.8	1.71	1.14	7.4	9.3	182	160	1120		0.0	204.0	0.71	16			
May	160368	5173	6274	100	83	2.0	10.35	97.6%	190	8.9	46.04	95.3%	2.6	0.60	3.10	76.9%	23.50	21.98	113.7	6.5%	214.4	25.6	20.4	2.85	5.12	7.3	7.1	192	167	1240		0.0	229.5	0.77	48			
June	115368	3846	5128	130	100	6.1	23.46	93.9%	236	12.8	49.22	94.6%	3.1	0.58	2.23	81.3%	29.80	27.32	105.1	8.3%	369.0	32.9	24.8	2.33	0.73	7.3	7.1	195	165	1400		0.0	176.5	0.66	104			
July	123040	3969	4979	221	219	5.1	20.24	97.7%	195	11.5	45.64	94.1%	3.3	0.63	2.50	80.9%	26.00	25.83	102.52	0.7%	280.6	32.1	22.4	1.95	0.86	7.2	7.0	225	183	440		0.0	205.9	0.72	144			
August	137769	4444	5251	160	130	2.2	9.78	98.3%	191	5.8	25.78	97.0%	2.7	0.54	2.40	80.0%	28.60	26.33	117.03	7.9%	344.7	28.9	20.4	2.01	0.97	7.2	7.1	211	172	520		0.0	197.3	0.96	36			
September	131411	4380	5112	380	25	10.95	99.3%	205	5.6	24.53	97.3%	3.1	0.60	2.63	80.6%	27.50	25.58	112.05	7.0%	297.2	30.4	27.0	1.91	3.07	7.3	7.1	230	185	1160		0.0	185.3	0.74	93				
October	154015	4968	5864	110	97	2.3	11.43	97.6%	186	5.5	27.33	97.0%	3.5	0.56	2.78	84.0%	23.70	16.35	81.23	31.0%	137.2	29.5	18.7	2.38	2.39	7.6	7.4	224	175	1240		0.0	179.6	0.63	86			
November	129952	4332	4647	280	160	3.2	13.86	98.0%	153	6.2	26.86	95.9%	4.7	0.74	3.21	84.3%	28.60	28.28	122.50	1.1%	204.2	32.1	29.3	1.39	6.14	7.4	7.4	223	184	840		0.0	180.3	0.55	46			
December	139059	4486	5776	160	150	14.9	66.84	90.1%	189	19.5	87.47	89.7%	3.4	0.85	3.81	75.0%	33.00	22.93	102.86	30.5%	134.1	33.5	28.6	1.15	0.23	7.3	7.1	227	198	1120		0.0	259.2	0.62	118			
Total	1668528							97.3%				95.2%				80.1%				10.0%																		
Average		4571			157	4.28	19.27	96.9%	203	9.72	44.04	95.2%	3.20	0.63	2.89	80.0%	28.38	25.63	116.1	0.1	328.08	33.43	24.89	2.10	1.89	7.39	7.36	210	175							204.79	0.74	59



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		
E.Coli	200 col/100 mL		Monthly Geometric Mean



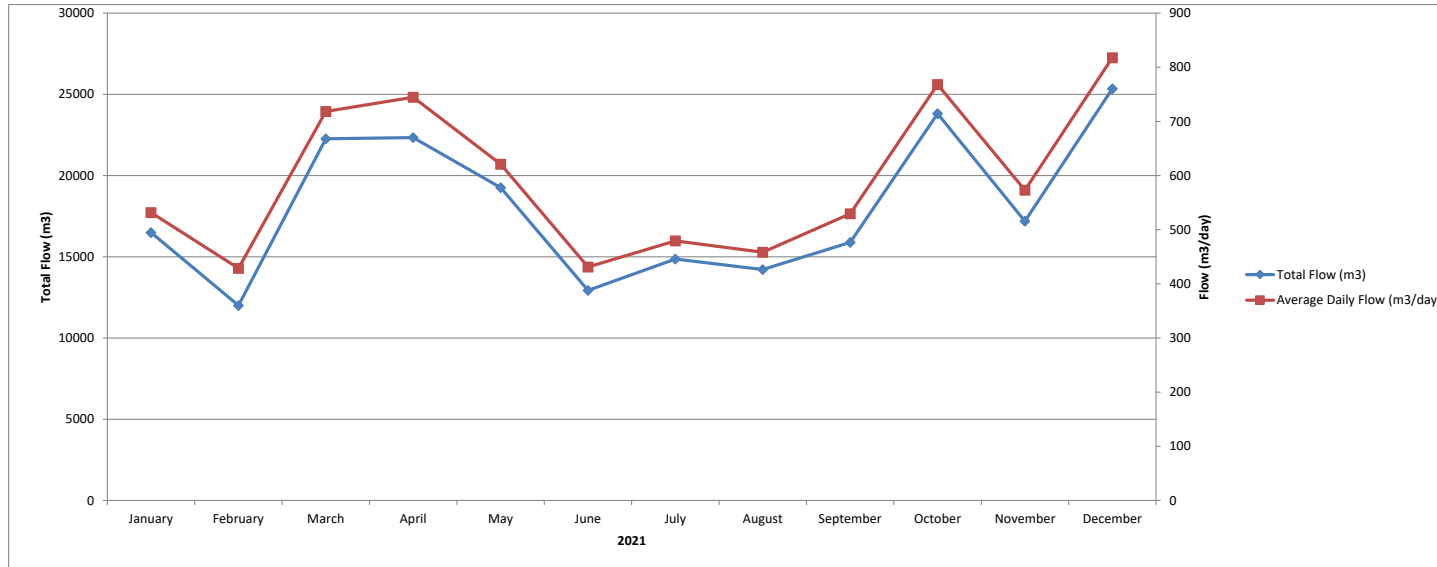
2021 Valley East Wastewater Treatment Plant Waste Sludge Analysis

Parameter (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December	Average
Ammonia (as N)	217	161	140	243	71.3	276	244	293	191	213	222	134	200
Nitrate (as N)	0.5	7.8	0.5	0.05	0.5	0.5	0.5	0.5	0.5	0.5	1.8	0.5	1.2
Nitrite (as N)	9.7	0.5	8.6	0.05	0.5	12.9	11.9	11.7	8.1	19.8	12.0	9.6	8.8
Potassium	31	42	85	46	82	84	113	70	78	68	105	87	74
TKN	2820	1600	1710	1470	768	1350	1770	1770	2000	1360	1640	1410	1639
Total Phosphorus	767	514	456	303	448	615	572	668	587	388	495	545	530
Total Solids	36100	31900	34300	31300	33800	34400	27700	36600	37700	26700	35200	36300	33500
Arsenic	0.03	0.02	0.07	0.02	0.06	0.10	0.10	0.13	0.13	0.10	0.10	0.12	0.08
Cadmium	0.0075	0.0037	0.0155	0.0037	0.0142	0.0184	0.0206	0.0270	0.0336	0.0209	0.0249	0.0386	0.0191
Chromium	0.10	0.04	0.30	0.08	0.17	0.34	0.31	0.52	0.46	0.36	0.44	0.56	0.31
Cobalt	0.025	0.025	0.122	0.042	0.115	0.175	0.202	0.297	0.233	0.172	0.182	0.313	0.2
Copper	4.9	2.6	7.7	2.0	5.8	9.1	10.2	10.7	14.8	10.6	11.0	12.3	8.5
Lead	0.115	0.051	0.228	0.051	0.165	0.238	0.299	0.349	0.433	0.308	0.309	0.456	0.250
Mercury	0.001	0.001	0.001	0.001	0.002	0.005	0.004	0.001	0.009	0.006	0.006	0.008	0.004
Molybdenum	0.02	0.01	0.04	0.01	0.04	0.04	0.03	0.08	0.09	0.09	0.08	0.09	0.05
Nickel	0.20	0.13	0.51	0.23	0.42	0.55	0.56	0.80	0.74	0.61	0.71	0.99	0.54
Selenium	0.010	0.004	0.024	0.002	0.031	0.042	0.059	0.062	0.066	0.055	0.059	0.070	0.040
Zinc	4.35	3.08	9.60	3.30	8.00	11.10	11.80	11.30	23.70	10.40	12.7	13.2	10.2
Sample Date	Jan.6/21	Feb.4/21	Mar.3/21	Apr.7/21	May.12/21	Jun.2/21	Jul.7/21	Aug.18/21	Sep.1/21	Oct.6/21	Nov.3/21	Dec.21/21	

Work Order	420902	422781	424493	426896	429861	432002	436004	439885	441178	444489	447633	451348
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2021 Wahnapiitae 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	Avg Day	Raw	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	Pre-Discharge	Geomean
	m ³	m ³ /d	mg/L	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	mg/L	# Col./100mL
January	16487	532	33	29	1.7	0.89	15	15	94.2%	18	2.4	1.26	10	8	86.9%	0.2	0.43	0.23	0.12	-0.10	-83.8%	5.69	6.10	3.24	3.03	-0.22	-7.2%		9.7			
February	12003	429	no results February																													
March	22269	718	no results March																													
April	22341	745	50	38	3.1	2.31	28	26	91.8%	518	7.2	5.36	386	380	98.6%	2.0	0.06	0.04	1.49	1.44	97.0%	4.78	7.38	5.50	3.56	-1.94	-54.4%	54.97	12.1	7.29	0.02	80
May	19253	621	no results May																													
June	12935	431	59	23	3.1	1.34	10	9	86.5%	518	7.2	3.10	223	220	98.6%	0.1	0.06	0.03	0.05	0.03	52.8%	4.46	7.38	3.18	1.92	-1.26	-65.5%		5.6			
July	14863	479	130	140	3.1	1.49	67	66	97.8%	1430	7.2	3.45	686	682	99.5%	5.3	0.06	0.03	2.54	2.51	98.9%	9.00	7.38	3.54	4.32	0.78	18.0%		25.7			
August	14214	459	53	44	3.1	1.42	20	19	93.0%	1130	7.2	3.30	518	515	99.4%	3.7	0.06	0.03	1.71	1.69	98.4%	10.90	7.38	3.38	5.00	1.61	32.3%		33.0			
September	15885	530	150	68	3.1	1.64	36	34	95.4%	1280	7.2	3.81	678	674	99.4%	3.4	0.06	0.03	1.80	1.77	98.2%	10.70	7.38	3.91	5.67	1.76	31.0%		20.0	7.18		
October	23810	768	61	46	1.3	1.00	35	34	97.2%	1410	1.3	1.00	1083	1082	99.9%	4.2	0.39	0.30	3.23	2.93	90.7%	4.61	0.10	0.08	3.54	3.46	97.8%	0.49	37.0	7.05	0.02	
November	17193	573	81	51	1.9	1.09	29	28	96.3%	624	7.6	4.36	358	353	98.8%	2.9	0.08	0.05	1.66	1.62	97.2%	13.30	2.20	1.26	7.62	6.36	83.5%	4.08	15.1	6.05	0.02	12
December	25350	818	81	51	1.5	1.23	42	40	97.1%	624	7.8	6.38	510	504	98.8%	2.9	0.24	0.20	2.37	2.18	91.7%	13.30	5.26	4.30	10.88	6.57	60.5%	6.71	6.71		24	
Total	216603						283	271	95.6%				4451	4419	99.3%				15	14	93.8%				46	17	37.6%					
Average		593	73		2.43	1.38	31	30	94.4%	839	6.12	3.56	495	491	97.8%	2.76	0.16	0.10	1.66	1.56	71.2%	8.5	5.62	3.15	5.06	1.90	0.22	16.56	19.8	6.86	0.02	39
Fall	100960	548	95.5	64.2	2.7	1.38	34	32	94.0%	1154	6.0	2.93	638	635	99.4%	3.4	0.13	0.08	1.87	1.78	87.8%	7.93	5.92	2.82	4.09	1.27	22.7%					
Spring	115643	636	61.25	42.25	2.0	1.38	29	27	94.9%	446	6.2	4.34	316	311	95.8%	2.0	0.20	0.13	1.41	1.28	50.6%	9.27	5.24	3.58	6.27	2.70	20.6%					



Lagoon Type: Seasonal Retention

Design Capacity: 1,246 m³/day

Population Served: 1,136

Compliance Parameters:

Concentration	
CBOD	2.00 Seasonal Average
TSS	6.00 Seasonal Average
pH	6.86

Spring Discharge:

Cell 2 & 3 - Pre discharge Sample Apr 8, 2021

Cell 2 & 3 Discharge Apr. 15-29,2021.

Cell #2 & 3 Discharge 50% sampled Apr 22,2021

Total amount discharged approximately 95000 m³

Fall Discharge:

Cell 3 Pre-Discharge sampled Oct.25,2021

Cell 1- Pre-Discharge sampled Nov.22,2021

Cell 2 - Pre-Discharge sampled Nov.29,2021

Cell 3 - Discharge Nov 2-19,2021

Cell 1 & 2 - Discharge Nov.29-Dec.14,2021

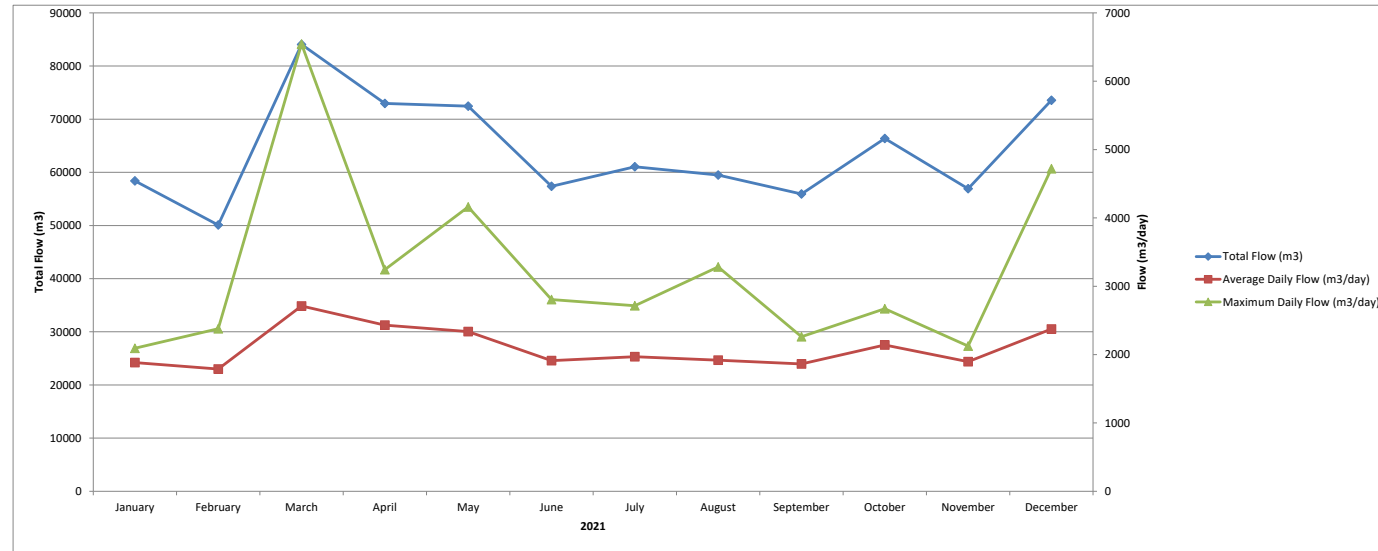
Cell 3 Discharge 50% sampled Nov 9,2021

Cell 1 & 2 Discharge Sampled Dec.6,2021

Total amount discharged approximately 127000 m³

2021 Walden Wastewater Treatment Plant Performance

Month	Flows			BOD ₅		CBOD					Total Suspended Solids					Total Phosphorus					Total Ammonia					Un-ionized		TKN		Nitrate	Nitrite	pH		Alkalinity		Sludge			Chlorine		E.Coli
	Total	Avg Day	Max Day	Raw	Raw	Effluent	Loading	Raw Loading	Removed	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	Residual	E.Coli						
	m ³	m ³ /d	m ³ /d	mg/L	mg/L	mg/L	kg/d	kg/d	kg/day	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	mg/L	mg/L	mg/L	mg/L	Hauled	%	m ³	Tg	Residual	Geoman					
January	58398	1884	2093	94	80	1.1	2.07	151	149	98.6%	173	6.0	11.30	96.5%	4.2	0.38	0.72	91.0%	32.30	0.16	0.30	99.5%	0.39	34.20	1.45	22.90	0.05	7.1	7.0	202	50	400	0.0	179.5	0.88	4					
February	50088	1789	2379	130	120	1.5	2.68	215	212	98.8%	104	8.0	14.31	92.3%	3.5	0.39	0.70	88.9%	34.30	0.15	0.27	99.6%	0.39	37.80	0.55	26.30	0.05	7.3	6.8	229	51	320	0.0	161.2	0.88	1					
March	84063	2712	6545	190	150	1.9	5.15	407	402	98.7%	89	10.3	27.93	88.4%	2.8	0.32	0.87	88.6%	29.20	8.59	23.29	70.6%	42.87	32.00	9.43	10.79	0.05	7.1	7.1	201	71	400	0.0	121.4	0.78	3					
April	72966	2432	3243	72	54	2.1	5.11	131	126	96.1%	64	8.9	21.65	86.1%	3.3	0.41	1.00	87.6%	23.20	0.31	0.75	98.7%	0.59	30.80	1.05	16.16	0.05	7.2	6.9	195	48	360	0.0	169.0	0.65	2					
May	72454	2337	4160	140	110	3.6	8.41	257	249	96.7%	192	9.3	21.74	95.2%	3.3	0.41	0.96	87.6%	12.20	3.64	8.51	70.2%	15.46	20.10	5.70	14.10	1.21	7.0	6.7	126	72	320	0.0	155.5	0.85	7					
June	57364	1912	2805	150	82	2.4	4.59	157	152	97.1%	62	6.8	13.00	89.0%	3.6	0.40	0.76	88.9%	51.70	0.12	0.23	99.8%	0.28	30.80	0.20	24.43	0.05	7.1	6.6	208	38	320	0.0	159.8	0.56	2					
July	61044	1969	2714	230	207	3.2	6.30	408	401	98.5%	100	5.0	9.85	95.0%	4.2	0.44	0.87	89.5%	28.10	0.14	0.28	99.5%	0.31	32.40	0.20	25.45	0.08	7.1	7.3	176	55	360	0.0	172.3	0.71	1					
August	59483	1919	3282	83	56	5.8	11.13	107	96	89.6%	71	21.3	40.87	70.0%	2.8	0.85	1.63	69.6%	25.90	13.69	26.27	47.1%	112.42	25.90	12.80	13.94	0.29	7.5	7.2	201	121	360	0.0	137.8	0.85	5					
September	55926	1864	2262	90	82	1.1	2.05	153	151	98.7%	181	3.9	7.27	97.8%	3.8	0.38	0.71	90.0%	29.80	0.64	1.19	97.9%	0.14	33.60	0.20	24.47	0.05	7.3	7.1	201	39	360	0.0	164.0	0.82	2					
October	66380	2141	2670	95	84	0.8	1.71	180	178	99.0%	89	5.6	11.99	93.7%	2.5	0.19	0.41	92.4%	25.30	0.06	0.13	99.8%	0.10	26.60	0.40	23.00	0.05	7.2	6.9	203	46	320	0.0	161.9	0.65	2					
November	56923	1897	2126	130	130	1.6	3.04	247	244	98.8%	148	4.2	7.97	97.2%	4.6	0.25	0.47	94.6%	30.90	0.07	0.13	99.8%	0.12	31.30	0.30	27.25	0.22	7.1	6.7	202	48	320	0.0	160.9	0.69	5					
December	73569	2373	4720	220	210	4.6	10.92	498	487	97.8%	76	7.3	17.32	90.4%	3.2	0.33	0.78	89.7%	53.60	10.65	25.27	80.1%	40.24	61.50	14.30	14.55	0.10	7.3	6.8	213	61	360	0.0	207.0	0.74	2					
Total	768658							2910	2847	97.8%				92.7%				88.6%				89.0%										4200									
Average		2106		135		2.48	5.26	243	237	97.4%	112	8.05	17.10	91.0%	3.48	0.40	0.82	88.2%	31.38	3.19	7.2	88.5%	17.78	33.08	3.88	20.28	0.19	7.19	6.91	196	58				0.76	3					



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



2021 Walden 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)	1.13	1.89	3.40	15.10	4.40	25.20	2.00	27.80	19.8	14.4	2.1	15.0	11.0
Nitrate (as N)	5.51	0.50	3.88	0.50	0.60	0.50	12.30	0.5	0.5	6.3	0.5	0.25	2.65
Nitrite (as N)	0.39	0.50	0.05	0.50	0.50	2.80	0.87	0.5	0.5	13.5	0.5	0.25	1.74
Potassium	13	46	19	15	11	17	36	76	86	99	23	64	42
TKN	215	1470	176	1130	269	963	179	777	1370	1160	171	276	680
Total Phosphorus	49.6	351.0	44.0	141.0	44.4	339.0	146.0	677.0	440.0	119.0	45.0	103.0	208.3
Total Solids	3170	19700	3570	14800	4320	18400	4750	27400	21600	22500	4310	6530	12588
Arsenic	0.01	0.04	0.01	0.02	0.01	0.10	0.02	0.23	0.25	0.14	0.02	0.04	0.07
Cadmium	0.0024	0.0163	0.0029	0.0074	0.0033	0.0408	0.0088	0.0768	0.0851	0.0380	0.0059	0.0099	0.0248
Chromium	0.02	0.13	0.02	0.04	0.03	0.37	0.07	0.75	0.70	0.48	0.07	0.12	0.23
Cobalt	0.092	0.452	0.109	0.157	0.049	0.671	0.215	1.520	1.860	1.050	0.155	0.191	0.543
Copper	0.65	3.60	0.76	1.60	0.78	10.5	2.1	15.4	15.0	6.3	1.8	3.7	5.2
Lead	0.029	0.178	0.028	0.076	0.033	0.409	0.107	1.000	0.904	0.384	0.054	0.144	0.279
Mercury	0.001	0.003	0.001	0.001	0.001	0.004	0.001	0.012	0.012	0.006	0.001	0.001	0.004
Molybdenum	0.03	0.19	0.02	0.02	0.01	0.25	0.02	0.60	0.42	0.31	0.04	0.04	0.16
Nickel	0.27	2.30	0.42	0.89	0.41	3.80	0.84	7.80	10.30	2.70	0.69	2.10	2.710
Selenium	0.008	0.047	0.005	0.002	0.009	0.109	0.022	0.232	0.231	0.106	0.018	0.026	0.068
Zinc	0.56	4.44	0.74	1.50	0.74	8.70	2.19	11.00	22.60	6.00	1.37	3.48	5.28
Sample Date	Jan.6/21	Feb.3/21	Mar.1/21	Apr.7/21	May.5/21	Jun.2/21	Jul.7/21	Aug.4/12	Sep.1/21	Oct.5/21	Nov.3/21	Dec.1/21	

Work Order	420933	422687	424358	426914	429237	432039	436029	438663	441238	444694	447613	449936
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