



# Wastewater Annual Report Lagoons 2023



March 30, 2024, Version 1.

# 2023 Annual Lagoon Wastewater Report

Version 1.0

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28-Mar-2024

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Date

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28-Mar-2024

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Date

## Contents

Introduction to the Annual Wastewater Report .....	4
Definitions.....	4
Capreol Lagoon.....	6
Chelmsford Lagoon.....	8
Garson Lagoon .....	9
Wahnapitae Lagoon .....	10
Appendices .....	11

# 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 annually report on the values/parameters indicated in the ECA and made available to the District Manager by March 31<sup>st</sup> of the calendar year following the period being reported upon.

The City of Greater Sudbury owns and operates 4 Wastewater Lagoons each having their own distinct annual reporting requirements. To ensure compliance, the city will report on each facility separately. Individual annual lagoon summary reports are attached at the end of the report as appendices.

## 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.

**BOD<sub>5</sub>:** 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.

**cBOD<sub>5</sub>:** 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, which 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, which 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 NO<sub>2</sub><sup>-</sup> anion.

**Nitrate:** the amount of nitrogen present in the effluent as the NO<sub>3</sub><sup>-</sup> 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

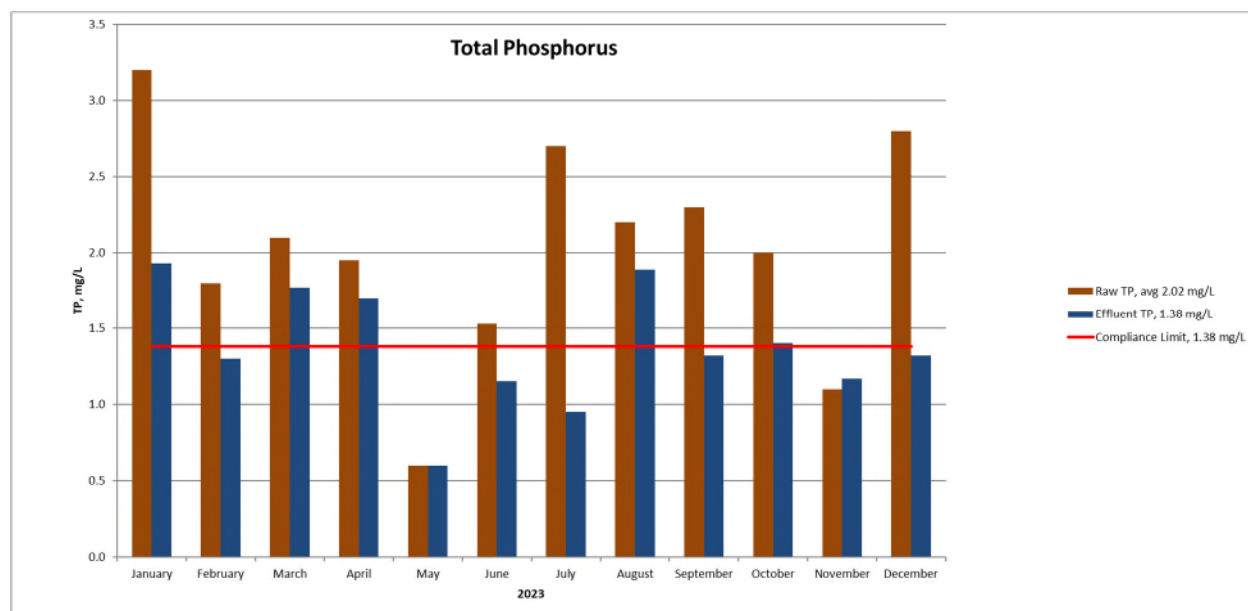
# Capreol Lagoon

## Annual Performance Report

Capreol Lagoon is operated as an exfiltration lagoon system with a rated capacity of 5,000m<sup>3</sup>/d. Natural processes in the lagoon cell provide treatment of the wastewater. Effluent passes over a weir and through a culvert from the North Cell to the South Cell. The effluent then filters through the ground in the South Cell and travels easterly towards the Vermilion River. The system is operated on the conditions of the Ministry of Environment, Certificate of Approval Number 8214-4UVPUZ.

**a. a summary of all monitoring data including an overview of the success and adequacy of the sewage treatment program.**

All influent and effluent monitoring data is graphed and reviewed annually by compliance and plant supervisory staff. For the Capreol Lagoon, all parameters fell within lagoon design objectives apart from effluent Total Phosphorus which fell right at the 1.38mg/l limit. CGS staff have been conducting a study evaluating the addition of ortho-phosphate for phosphorous control in 2023 that will continue into 2024 to evaluate. If abnormal influent issues occur, CGS Environmental compliance officers can be deployed to investigate and react as needed.



**b. a comprehensive interpretation of all monitoring and analytical data obtained during the reporting period, and a comparison to the "baseline data" described in condition 4.1 for the ECA.**

All analytical data described in condition 4.1 as well as parameters outlined in condition 2.1 are monitored as required. Annual performance report with all information will be included in this report.

**c. a summary of any quality assurance or control measures undertaken during the reporting period.**

Operations conduct rounds which are recorded in lagoon logbook. Lift station flow monitoring record continuous trending for influent flows. Lab analysis is performed several times per week in addition to samples being collected and sent out for third party testing. Lagoon monthly reports are created containing flow, in house lab results and third-party lab results. This data is transferred to monthly and annual performance reports by a data clerk ensuring all information is accounted for. It is then sent to the area supervisor for final review.

- d. **a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism, or thing forming a part of the works.**

The operating and maintenance staff at the Capreol Lagoon conducts scheduled and emergency maintenance of the WWTP equipment. The City of Greater Sudbury utilizes a Computerized Maintenance Management System (CMMS) known as Antero to issue work orders and maintain records for regular maintenance and emergency repair at the WWTP.

- e. **an account of any environmental and operating problems encountered at the site of the sewage treatment plant and the mitigative measures taken during the reporting period.**

The lagoon has experienced issues with effluent phosphorus removal. CGS staff have chemically treated the lagoon since 2022 and continue to study chemical dosing strategies.

- f. **a summary of any alterations, extensions or replacements in the process or operation of the works which are considered for implementation over the next reporting period, especially those which may require approval under the Ontario Water Resources Act.**

Due to annual daily flow averages above 2500 m<sup>3</sup>/day. The City has added Acute Lethality testing and increased sampling regime as per regulations.

- g. **a list of users of Vermillion River, located on the downstream of the sewage works, up to a distance agreed to by the District Manager.**

Attached is a map of flow downstream of the Capreol lagoon with distances. A list of downstream residential property owners is available if required.



- h. **an interpretation of data, opinion on performance of the lagoon treatment plant, impact on the environment and, need for remedial measures, if required based on surface water results.**

Based on annual surface water performance report (included) all ECA parameters have been adhered to for this reporting year. No need for remedial measures for next reporting year.

# Chelmsford Lagoon

## Annual Performance Report

Chelmsford lagoon is operated as an offline emergency storage lagoon for the Chelmsford Water Pollution Control Plant approved under Certificate of Approval No. 3-1572-94-956. The lagoon receives all sewage diverted from the existing Main Street sewage pumping station during extreme wet weather flow events. The sewage held in the lagoon shall be treated and discharged to the Whitson River or returned to the Chelmsford Water Pollution Control Plant via the Main Street sewage pumping station for further treatment and discharge to the Whitson River.

- a. a summary of all monitoring data including an overview of the success and adequacy of the sewage treatment program.**

Samples were collected at the Chelmsford lagoon during high flows requiring emergency storage at various times of the year. All wastewater diverted to the lagoon was stored then brought back to the Chelmsford WWTP for full treatment.

- b. a comprehensive interpretation of all monitoring and analytical data obtained during the reporting period, and a comparison to the effluent quality and quantity criteria stipulated in Conditions 1.1 through 1.6 together with Total Phosphorus loadings discharged to the Whitson River from the Chelmsford Water Pollution Control Plant and from the sewage lagoon during the (lagoon) discharge period.**

There was no lagoon discharge for this reporting year.

- c. a summary of any effluent quality assurance or control measures undertaken during the reporting period.**

No effluent has been discharged from lagoon for this reporting year.

- d. a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism, or thing forming a part of the works.**

The operating and maintenance staff at the Chelmsford Lagoon conducts scheduled and emergency maintenance of the Lagoon equipment. The City of Greater Sudbury utilizes a Computerized Maintenance Management System (CMMS) known as Antero to issue work orders and maintain records for regular maintenance and emergency repair at the Lagoon.

- e. an account of any environmental and operating problems encountered at the site of the sewage lagoon and the mitigative measures taken during the reporting period.**

There were no issues or operational problems for this reporting year.

- f. a summary of any alterations, extensions or replacements in the process or operation of the works which are considered for implementation over the next reporting period, especially those which may require approval under the Ontario Water Resources Act.**

There were no alterations, extensions or replacements in the process or operation for this reporting year.



# **Garson Lagoon**

## **Annual Performance Report**

The Garson Lagoons have been converted into a sanitary sewage temporary detention facility to manage peak wet weather flows, located in Lot 7, Concession 2, Greater Sudbury City.

**a. a description of any operating problems encountered, and corrective actions taken.**

There were no operating problems for this reporting year.

**b. a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism, or thing forming part of the Works.**

The operating and maintenance staff at the Garson Lagoon conducts scheduled and emergency maintenance of the Lagoon equipment. The City of Greater Sudbury utilizes a Computerized Maintenance Management System (CMMS) known as Antero to issue work orders and maintain records for regular maintenance and emergency repair at the Lagoon.

**c. a summary of any complaints received during the reporting period and any steps taken to address the complaints.**

No complaints for this reporting year.

**d. a summary of all by-passes, spill, or abnormal discharge events; and**

No bypasses or discharge events for this reporting year.

**e. any other information the District Manager requires from time to time.**

There was no additional information for this reporting year

# Wahnapiatae Lagoon

## Annual Performance Report

The Wahnapiatae Lagoon has a Rated Capacity of 1,246 m<sup>3</sup>/d and consists of a 16.1 ha area waste stabilization pond with three cells, Cell No. 1 (5.4 ha), Cell No. 2 (5.4 ha) and Cell No. 3 (5.3 ha). The lagoon has influent works, interconnecting structures, effluent works, and an effluent ditch from the pond to the Wapapitei River.

- a. a summary and interpretation of all monitoring data and a comparison to the effluent limits outlined in Condition 7, including an overview of the success and adequacy of the Works.**

All influent and effluent monitoring data is graphed and reviewed annually by compliance and plant supervisory staff. For the Wahnapiatae lagoon, all parameters fell within plant design objectives and compliance limits.

- b. a description of any operating problems encountered, and corrective actions taken.**

Issues with beaver dams in the lagoon required intervention by licensed trappers. Capital planning and operations are formulating a plan for lagoon cleaning.

- c. a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism, or thing forming part of the Works.**

The operating and maintenance staff at the Wahnapiatae Lagoon conducts scheduled and emergency maintenance of the Lagoon equipment. The City of Greater Sudbury utilizes a Computerized Maintenance Management System (CMMS) known as Antero to issue work orders and maintain records for regular maintenance and emergency repair at the Lagoon.

- d. a summary of any effluent quality assurance or control measures undertaken in the reporting period.**

Operations conduct rounds which are recorded in lagoon logbook. On site flow monitoring record continuous trending for influent flows from the lift station. Lab analysis is performed several times per week in addition to samples being collected and sent out for third party testing during lagoon discharge periods in the spring and fall. Lagoon monthly reports are created containing flow, in house lab results and third-party lab results. This data is transferred to monthly and annual performance reports by a data clerk ensuring all information is accounted for. It is then sent to the area supervisor for final review.

- e. a summary of the calibration and maintenance carried out on all effluent monitoring equipment.**

The calibration of flow meters was conducted by Induscontrols in accordance with the requirements of the Wahnapiatae Lagoon ECA. Records and certificates are kept electronically.

- f. a description of efforts made, and results achieved in meeting the Effluent Objectives of Condition 6.**

A Request for quotes will be sent out for lagoon cleaning for upcoming Calendar year.

- g. a summary of any complaints received during the reporting period and any steps taken to address the complaints.**

Incident Location	System	Subject
Wahnapiatae Wastewater Lagoon	Wahn	Two beaver dams

**h. a summary of all By-pass, spill, or abnormal discharge events**

DATE	DURATION	TYPE OF OCCURRENCE	RECEIVING STREAM ID	VOL (m <sup>3</sup> )	LEVEL OF TREATMENT RECEIVED	REASON FOR EVENT
20-Apr-23	360 hrs	Plant overflow	Wahnapitae River	600.0	none	Heavy rain
03-May-23	51 hrs	Plant overflow	Wahnapitae River	85.0	none	Heavy rain
02-May-23	264.5 hrs	Plant overflow	Wahnapitae River	425.0	none	Heavy rain

**i. any other information the District Manager requires from time to time.**

No other information for this reporting year

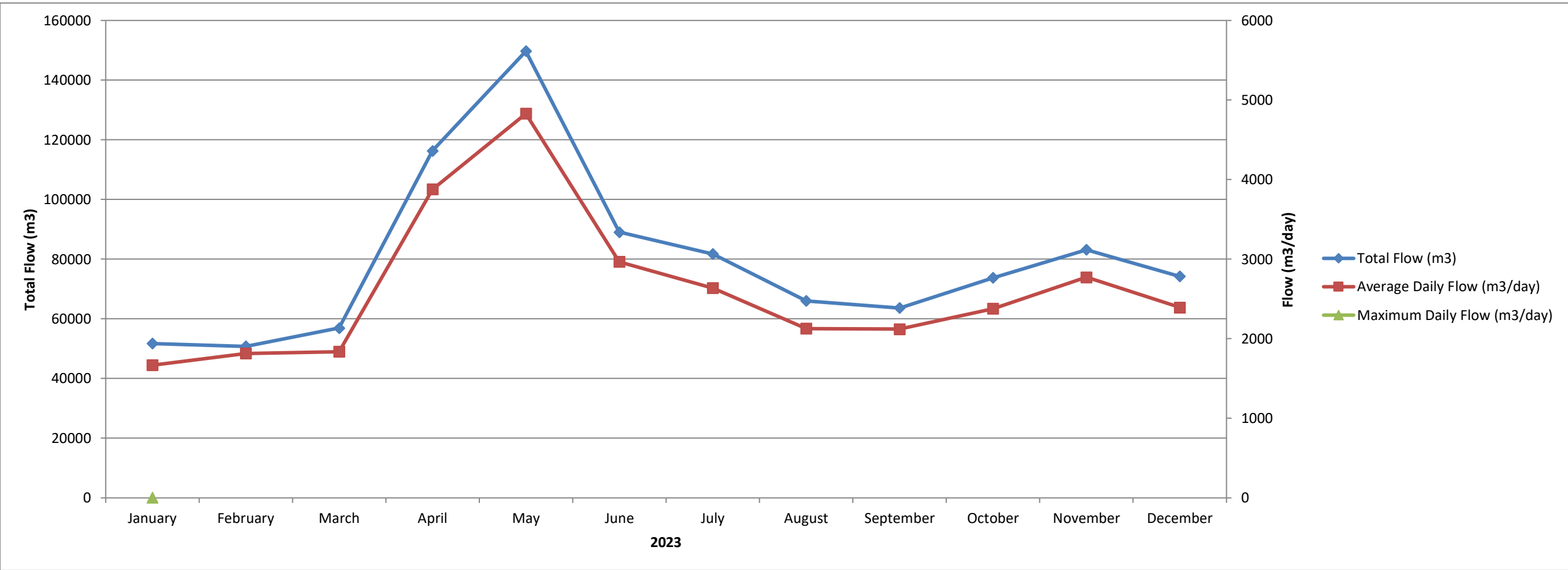
## Appendices

- 2023 Capreol Lagoon Annual Performance Report
- 2023 Capreol Lagoon Vermilion Sampling
- 2023 Capreol Lagoon Water Levels
- 2023 Wahnapitae Lagoon Annual Performance Report



2023 Capreol Wastewater Treatment Lagoon Performance

Month	Flows		BOD5						Total Suspended Solids						Total Phosphorus						Total Ammonia						Un-ionized	TKN	
	Total	Avg Day	Raw	Effluent	Loading	Raw Loading	Removed	Plant	Raw	Effluent	Loading	Raw Loading	Removed	Plant	Raw	Effluent	Loading	Raw Loading	Removed	Plant	Raw	Effluent	Loading	Raw Loading	Removed	Plant	Ammonia	Raw	Effluent
	m <sup>3</sup>	m <sup>3</sup> /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	51693	1668	130	20.0	33.35	217	183	84.6%	158	18.0	30.02	263	233	88.6%	3.2	1.93	3.22	5.34	2.12	39.7%	16.10	16.10	26.85	26.85	0.00	0.0%	29.24	16.0	12.0
February	50760	1813	110	54.0	97.89	199	102	50.9%	70	24.7	44.78	127	82	64.7%	1.8	1.30	2.36	3.26	0.91	27.8%	15.80	17.00	30.82	28.64	-2.18	-7.6%	29.49	14.0	14.0
March	56908	1836	150	61.0	111.98	275	163	59.3%	124	20.1	36.90	228	191	83.8%	2.1	1.77	3.25	3.86	0.61	15.7%	16.10	20.20	37.08	29.56	-7.53	-25.5%	28.49	17.0	14.0
April	116290	3876	69	48.0	186.06	267	81	30.4%	58	36.1	139.94	225	85	37.8%	2.0	1.70	6.59	7.56	0.97	12.8%	9.30	17.60	68.22	36.05	-32.17	-89.2%	24.83	12.0	17.0
May	149673	4828	25	9.7	46.83	121	74	61.2%	26	13.9	67.11	126	58	46.5%	0.6	0.60	2.90	2.90	0.00	0.0%	3.21	6.94	33.51	15.50	-18.01	-116.2%	23.44	5.0	6.0
June	89035	2968	54	20.0	59.36	160	101	63.0%	25	15.0	44.52	74	30	40.0%	1.5	1.15	3.41	4.54	1.13	24.8%	7.28	1.09	3.23	21.61	18.37	85.0%	7.49	7.8	3.0
July	81746	2637	77	13.2	34.81	203	168	82.9%	146	12.0	31.64	385	353	91.8%	2.7	0.95	2.51	7.12	4.61	64.8%	10.00	4.05	10.68	26.37	15.69	59.5%	35.78	13.0	3.0
August	65970	2128	47	10.0	21.28	100	79	78.7%	53	24.0	51.07	112	61	54.5%	2.2	1.89	4.02	4.68	0.66	14.1%	10.04	6.50	13.83	21.37	7.53	35.3%	11.54	10.0	6.0
September	63609	2120	47	18.0	38.17	100	61	61.7%	50	29.0	61.49	106	45	42.0%	2.3	1.32	2.80	4.88	2.08	42.6%	14.30	4.80	10.18	30.32	20.14	66.4%	48.62	13.2	5.5
October	73743	2379	140	12.0	28.55	333	304	91.4%	51	28.0	66.61	121	55	45.1%	2.0	1.40	3.33	4.76	1.43	30.0%	11.40	8.20	19.51	27.12	7.61	28.1%	104.29	12.5	7.8
November	83170	2772	25	12.0	33.27	69	36	52.0%	14	12.3	34.10	39	5	12.1%	1.1	1.17	3.24	3.05	-0.19	-6.4%	6.80	7.72	21.40	18.85	-2.55	-13.5%	49.52	7.5	6.0
December	74174	2393	71.4	13.0	31.11	171	140	81.8%	84	8.3	19.93	201	181	90.1%	2.8	1.32	3.16	6.70	3.54	52.9%	14.00	8.25	19.74	33.50	13.76	41.1%	40.21	21.0	10.5
Total	956771					2216	1493	67.4%				2007	1379	68.7%				59	18	30.4%				316	21	6.5%			
Average		2621	79	24.24	60.22	185	124	66.5%	72	20.12	52.34	167	115	58.1%	2.02	1.38	3.40	4.89	1.49	26.6%	11.19	9.87	24.59	26.31	1.72	5.3%	36.08	12.4	8.7



**Lagoon Type:** Exfiltration  
**Design Capacity:** 5000 m<sup>3</sup>/day  
**Population Served:** 3,408

**Compliance Parameters:**

	Concentration	
BOD <sub>5</sub>	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.

## 2023 Vermillion River Sampling

Capreol Lagoon

Parameter (mg/L)	May.16/23		Nov.2/23		Annual Average		Monthly Phosphorus Sampling		
	Upstream	Downstream	Upstream	Downstream	Upstream	Downstream	Sample Date	Upstream	Downstream
Alkalinity	12	19	19	21	31.0	40.0	May.9/23	0.002	0.002
Ammonia (as N)	0.01	0.01	0.01	0.01	0.02	0.02	May.16/23	0.012	0.010
Chloride	0.8	0.9	0.5	0.6	1.3	1.5	Jun.8/23	0.003	0.010
Sulphate	4.3	4.3	4.8	4.8	9.1	9.1	July.6/23	0.002	0.002
BOD <sub>5</sub>	1.0	1.0	2.5	2.7	3.5	3.7	Aug.2/23	0.006	0.008
Aluminum	0.081	0.081	0.070	0.072	0.151	0.153	Sept.6/23	0.002	0.006
Antimony	0.0005	0.0005	0.0005	0.0005	0.0010	0.0010	Oct.4/23	0.002	0.003
Arsenic	0.001	0.001	0.000	0.001	0.001	0.002	Nov.1/23	0.002	0.002
Barium	0.010	0.011	0.010	0.010	0.020	0.021			
Beryllium	0.0005	0.0005	0.0005	0.0005	0.0010	0.0010			
Cadmium	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002			
Calcium	4.37	4.45	5.13	5.15	9.50	9.60			
Chromium	0.001	0.001	0.001	0.001	0.002	0.002			
Cobalt	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002			
Copper	0.002	0.002	0.002	0.002	0.004	0.004	Annual Average	0.004	0.005
Iron	0.15	0.17	0.26	0.27	0.41	0.44	<b>Compliance Parameters:</b>  <b>Downstream</b> 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	0.0003	0.0002	0.0002	0.0002	0.0005	0.0004			
Magnesium	1.070	1.090	1.310	1.310	2.380	2.400			
Manganese	0.015	0.018	0.015	0.017	0.030	0.035			
Mercury	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002			
Molybdenum	0.001	0.001	0.001	0.001	0.002	0.002			
Nickel	0.003	0.003	0.002	0.002	0.005	0.005			
Potassium	0.4	0.5	0.5	0.6	0.9	1.1			
Selenium	0.0002	0.0002	0.0002	0.0002	0.0004	0.0004			
Silver	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002			
Sodium	1.0	1.2	1.0	1.2	2.0	2.4			
Tellurium	0.001	0.001	0.001	0.001	0.002	0.002			
Tin	0.001	0.001	0.001	0.001	0.002	0.002			
Zinc	0.003	0.003	0.001	0.002	0.004	0.005			
pH	7.01	7.89	6.67	7.34	13.68	15.23			
pH (15 deg. C)	7.01	7.92	6.66	7.35	13.67	15.27			
T.D.S.	140	70	120	70	260.0	140.0			
T.K.N.	0.2	0.2	0.2	0.2	0.4	0.4			
Total Phosphorus	0.012	0.010	0.002	0.002	0.014	0.012			

## 2023 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	1.9	May.16/23	3.5	Nov.2/23
OW#2	2.3	May.16/23	2.9	Nov.2/23
OW#3	2.9	May.16/23	3.9	Nov.2/23
OW#5	5.9	May.16/23	6.6	Nov.2/23
OW#7	Dry	May.16/23	Dry	Nov.2/23
OW#8	2.7	May.16/23	4.7	Nov.2/23
OW#10a	5.6	May.16/23	6.7	Nov.2/23
OW#10b	5.1	May.16/23	6.0	Nov.2/23
OW#11	5.1	May.16/23	5.5	Nov.2/23
OW#12	NA	May.16/23		Nov.2/23
OW#12a	2.3	May.16/23	2.4	Nov.2/23
OW#13a	3.7	May.16/23	5.3	Nov.2/23
OW#13b	3.8	May.16/23	5.4	Nov.2/23
OW#14	2.1	May.16/23	2.3	Nov.2/23
OW#15	6.3	May.16/23	7.1	Nov.2/23
OW#16	5.2	May.16/23	5.9	Nov.2/23
OW#21	2.6	May.16/23	3.5	Nov.3/23
OW#22	4.6	May.16/23	Dry	Nov.3/23
OW#23	5.3	May.16/23	6.0	Nov.3/23
OW#24	2.3	May.16/23	3.1	Nov.3/23
OW#25	3.8	May.16/23	4.5	Nov.3/23
OW#26	5.2	May.16/23	5.9	Nov.3/23
OW#28	2.1	May.16/23	2.3	Nov.3/23
OW#30	2.2	May.16/23	2.4	Nov.2/23
River @ Bridge	*2.5	May.16/23	**1.3	Nov.2/23

\* estimate - current too strong/water still high

\*\* estimate - current very strong



2023 Wahnapitae Wastewater Treatment Lagoon Performance

Lagoon Type: Seasonal Retention

Design Capacity: 1,246 m<sup>3</sup>/day

Population Served: 1,136

Month	Raw Flows (Act meter)		Raw					
	Total	Avg Day	CBOD	TSS	TP	TAN	TKN	BOD
	m <sup>3</sup>	m <sup>3</sup> /d	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Nov-22	15013	500						
Dec-22	17397	561						
January	17295	558	20	400	1.3	6.60	8	8
February	14725	526	24	1030	2.9	7.90	18	21
March	21932	707	12	34	0.1	4.53	7	14
April	47969	1599	51	306	2.5	6.70	14	49
May	33103	1068	20	138	1.1	2.19	2	18
June	18575	619	24	1480	4.6	5.30	20	99
July	18773	606	32	37	0.4	21.10	20	43
August	15583	503	30	1080	3.5	6.60	9	38
September	13335	445	8.8	526	1.4	6.10	5	11
October	23443	756	28	2940	4.5	8.30	17	30
November	24073	802	13	18	0.2	3.38	5	19
December	17988	580	11	24	0.2	6.67	11	13
Total	266794							
Average		731	23	668	1.89	7.1	11.4	30.28
Spring EFF	134331							
Fall EFF	122812							
Q1 RAW			19	488	1.4	6.34	11.00	14
Q2 RAW			32	641	2.7	4.73	12.00	55
Q3 RAW			24	548	1.8	11.27	11.33	31
Q4 RAW			17	994	1.6	6.12	11.13	21

Spring Pre Discharge Averages			
	Cell #1	Cell #2	Cell #3
CBOD (mg/L)	1.7	4.7	4.9
TSS (mg/L)	2.00	5.10	3.77
TP (mg/L)	0.017	0.019	0.008
TAN (mg/L)	3.07	3.62	3.97
pH	7.0	7.2	7.1
H <sub>2</sub> S (mg/L)	0.02	0.02	0.02

Fall Pre Discharge Averages			
	Cell #1	Cell #2	Cell #3
CBOD (mg/L)	2.8	4.4	5.1
TSS (mg/L)	13.57	8.23	13.00
TP (mg/L)	0.477	0.047	0.069
TAN (mg/L)	3.19	3.84	0.13
pH	7.0	6.6	7.0
H <sub>2</sub> S (mg/L)	0.02	0.02	0.02

	Spring	Fall	ECA Limits
CBOD (mg/L)	2.6	1.3	30
TSS (mg/L)	12.1	4.4	40
TAN (mg/L)	1.8	2.5	NA
TP (mg/L)	0.1	0.1	NA
pH	7.4	6.8	6.0-9.5
E.Coli	172.9	7.7	NA

Pre Discharge Sampling - Spring									
Date	Cell #1			Cell #2			Cell #3		
	May.31/23	May.31/23	May.31/23	27-Apr-23	27-Apr023	27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23
CBOD (mg/L)	1.0	1.0	3.0	4.9	4.5	4.7	4.1	5.0	5.6
TSS (mg/L)	2.0	2.00	2.00	5.30	6.70	3.30	3.30	3.30	4.70
TP (mg/L)	0.006	0.002	0.04	0.016	0.023	0.017	0.012	0.002	0.010
TAN (mg/L)	3.3	3.3	2.56	3.55	3.51	3.81	3.3	4.2	4.4
pH	7.0	7.0	7.1	7.10	7.30	7.20	7.09	7.04	7.20
H <sub>2</sub> S (mg/L)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02

Pre Discharge Sampling - Fall									
Date	Cell #1			Cell #2			Cell #3		
	Oct.26/23	Oct.26/23	Oct.26/23	Nov.22/23	Nov.22/23	Nov.22/23	Oct.25/23	Oct.25/23	Oct.25/23
CBOD (mg/L)	6.0	1.3	1.2	6.9	4.9	1.5	9.2	3.0	3.0
TSS (mg/L)	32.7	1.00	7.00	6.00	16.70	2.00	11.00	14.70	13.30
TP (mg/L)	0.740	0.303	0.387	0.062	0.077	0.002	0.055	0.030	0.122
TAN (mg/L)	3.7	3.1	2.79	7.49	0.70	3.32	0.01	0.17	0.2
pH	7.1	7.1	6.9	6.7	6.6	6.5	7.0	7.0	7.0
H <sub>2</sub> S (mg/L)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02

Spring Dischange									
Date	Cell #1			Cell #2			Cell #3		
	Jun.12/23	Jun.19/23	Jun.27/23	May.5/23	May.12/23	May.26/23	May.5/23	May.12/23	May.26/23
CBOD (mg/L)	1.9	3.0	2	0.5	5.3	3.6	1.4	1.6	4.3
TSS (mg/L)	16.4	16.50	22.00	2	2.70	22.7	0.67	2.00	24.00
TAN (mg/L)	0.07	1.79	1.62	2.5	3.03	0.01	2.52	4.25	0.0
TP (mg/L)	0.037	0.020	0.774	0.016	0.015	0.067	0.010	0.014	0.093
pH	6.9	6.9	7.1	7.4	7.0	8.6	7.3	6.8	8.7
E.Coli	1040	122.00	346.00	2.00	2.00	10.00	0.00	4.00	30.00

Spring Discharge Dates:	
Cell #1	Jun.12/23-Jun.27/23
Cell #2	May.5/23-May.26/23
Cell #3	May.5/23-May.26/23
Approx. Discharge Volume - 134, 863 m <sup>3</sup> .	

Fall Dischange									
Date	Cell #1			Cell #2			Cell #3		
	Nov.3/23	Nov.10/23	Nov.17/23	Nov.29/23	Dec.6/23	Dec.13/23	Nov.1/23	Nov.8/23	Nov.15/23
CBOD (mg/L)	2.5	1.0	1.5	1.20	1.20	1.00	1.3	1.0	1.0
TSS (mg/L)	1.00	6.00	0.67	2.00	6.00	1.00	13.0	3.0	6.50
TAN (mg/L)	3.22	3.49	4.08	3.1	3.77	3.98	0.24	0.07	0.3
TP (mg/L)	0.002	0.010	0.018	0.026	0.239	0.065	0.022	0.002	0.755
pH	6.8	6.7	6.8	6.6	7.0	6.6	6.9	6.9	6.8
E.Coli	2	1	40	2	2	16	2	2	2

Fall Discharge Dates:	
Cell #1	Nov.3/23-Nov.17/23
Cell #2	Nov.29/23-Dec.13/23
Cell #3	Nov.1/23-Nov.15/23
Total amount discharged approximately 93593 m <sup>3</sup> .	