Warren Lagoon Annual Report 2024

March 2025, Version 1.0

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2024 Annual Report

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March 25, 2025

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Date

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Warren Wastewater Lagoon System Introduction

The City of Greater Sudbury has prepared this annual performance report to satisfy the reporting requirements of Ministry of Environment, Conservation and Parks (MECP) Certificate of Approval (C of A) as outlined in Section 10(6) covering the period of January 1, 2024, to December 31, 2024.

The Warren Lagoon is owned by the Municipality of Markstay-Warren. On April 1st, 2022, the City of Greater Sudbury became the Operating Authority.

Sewage Works Description

The Warren Wastewater works system consists of two ten acre seasonal retention waste stabilization ponds with provision for phosphorus removal discharging to the Veuve River. The collection system has a total of approximately 1128m of existing forcemain, and two sewage pumping stations.

Compliance Reporting Requirement

Under the Certificate of Approval issued by the Ministry of Environment, Conservation & Parks (MECP the City is required to annually report on the values/parameters indicated in the C of A and made available to the District Manager within ninety (90) days following the end of the period being reported upon. Specifically, the Warren Lagoon annual report is to include:

- a summary of all monitoring data, including an overview of the success and adequacy of the Works.
- a description of any operating problems encountered, and corrective actions taken.
- a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism, or thing forming part of the Works.
- a description of efforts made, and results achieved in meeting the Effluent Objectives of the Approval.
- a summary of any complaints received during the reporting period and any steps taken to address the complaints.
- a summary of all by-passes, plant overflow, overflow, spill or abnormal discharge events.

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

Lagoon Performance Report: Monthly results and parameters, including a graphical representation of flows through the plant.

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.

Maintenance & Capital Improvements: All major maintenance, modifications and capital works completed at the lagoon within the reporting period. Details on the calibration and maintenance carried out on all effluent monitoring equipment.

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.

Customer Complaints: Any complaints received regarding the Warren Lagoon through the City of greater Sudbury 311 system during the reporting period and any steps taken to address the complaints.

Plant Bypasses and Overflows: A listing of all bypasses, spills, and overflows at the lagoon during the reporting period.

Lagoon Performance Report

The Warren Lagoon is subject to semi-annual discharges. Discharging is done in the spring and fall as follows:

Spring: discharge commencing after the liquid surface in the lagoon has become free of ice cover, terminating within 60 days thereafter, and continuing for not less than 15 days for each lagoon cell released.

Pre-Discharge Sampling			
SPRING	**EAST CELL**		
Date	**5-Apr**	**17-Apr**	**1-May**
CBOD5 (mg/L)	10.5	18.0	22.0
TSS (mg/L)	11.5	40.0	30.7
TP (mg/L)	1.530	1.250	0.909
TAN (mg/L)	8.89	4.52	1.05
pH	7.6	8.8	9.3
H_2S (mg/L)	NA	NA	NA
TKN (mg/L)	7.30	7.30	3.90

Spring Effluent Discharge - East Cell #2						
Date	**May.10/24**	**May.14/24**	**May.16/24**	**May.22/24**	**May.24/24**	**Seasonal Average**
Depth	**Beginning**				**End**	
CBOD5 (mg/L)	41.0	7.1	8.2	3.0	4.8	12.8
TSS (mg/L)	18.00	10.70	6.00	6.70	9.67	10.2
TAN (mg/L)	0.79	0.84	1.42	2.05	2.52	1.5
TP (mg/L)	0.595	0.476	0.902	1.040	1.010	0.805
pH	10.4	8.9	8.3	6.5	7.6	8.3
E.Coli	0	4	10	10	4	6
BOD5	59	9.2	5.2	5.2	5.7	16.9
TKN	4.7	3.7	3.7	3.4	4.1	3.9
Nitrite as N	0.05	0.05	0.05	0.10	0.05	0.06
Nitrate as N	0.05	0.05	0.05	0.10	0.05	0.06

Approx Spring Discharge Vol	41,147 m3

Fall: discharge commencing not earlier than October 15 and terminating not later than November 30 and continuing for not less than 15 days for each lagoon cell released.

Pre-Discharge Sampling								
FALL	**Date**	**CBOD5 (mg/L)**	**TSS (mg/L)**	**TP (mg/L)**	**TAN (mg/L)**	**pH**	**H_2S (mg/L)**	**TKN (mg/L)**
West Cell	**Oct.7/24**	1.2	9.50	0.765	1.94	7.8	NA	2.8

Fall Effluent Discharge - West Cell #1

Date	**Oct.18/24**	**Oct.20/24**	**Oct.22/24**	**Oct.24/24**	**Oct.26/24**
Depth	**Beginning**				
CBOD5 (mg/L)	1.0	1.0	1.0	1.5	1.0
TSS (mg/L)	113	13.00	2.7	39	6.7
TAN (mg/L)	2.93	3.49	3.39	4.64	5.80
TP (mg/L)	0.800	0.832	0.005	1.390	1.260
pH	7.26	7.21	7.22	7.58	7.65
E.Coli	60	6	28	20	112
BOD5	1.0	1.0	1.0	2.7	1.00
TKN	3.3	3.5	4.6	4.3	4.8
Nitrite as N	0.05	0.10	0.05	0.05	0.05
Nitrate as N	0.10	0.10	0.13	0.05	0.05

Date	**Oct.28/24**	**Oct.30/24**	**Nov.1/24**	**Nov.3/24**	**Nov.5/24**	**Seasonal Average**
Depth					**End**	
CBOD5 (mg/L)	1.0	1.0	4.3	4.5	8.4	2.5
TSS (mg/L)	12.7	6.7	27.3	149	80	45.0
TAN (mg/L)	5.90	6.50	6.65	8.50	7.89	5.57
TP (mg/L)	1.380	1.330	1.500	1.090	0.910	1.050
pH	7.7	7.79	7.67	7.51	7.54	7.51
E.Coli	156	2	98	94	24	60
BOD5	1.1	1.4	4.3	5.7	11.6	3.1
TKN	5.5	5.6	7.4	9.1	11	5.9
Nitrite as N	0.05	0.05	0.05	0.10	0.10	0.07
Nitrate as N	0.05	0.05	0.05	0.10	0.10	0.08
		Approx. Fall Discharge Vol			27,714m3	

	Spring Seasonal Average	Fall Seasonal Average	C of A Limits Seasonally	Annual Avg	FED Limit
CBOD5 (mg/L)	12.8	2.5	30	2.5	25
TSS (mg/L)	10.2	45.0	40	33.4	25
TP (mg/L)	0.805	1.05	1	0.45	NA

Influent Flow Data							
Rated Capacity:			682 m^3/day				
Month	**Raw Flows (Act meter)**		**Raw**				
	Total	**Avg Day**	**CBOD5**	**TSS**	**TP**	**BOD**	
	m^3	**m^3/d**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	
Nov-23	6292	210	90	82	2.1	110	
Dec-23	4856	157	160	125	3.0	170	
January	4400	142	160	93	5.0	160	
February	4724	163	121	134	5.0	180	
March	8189	264	NA	84	2.4	140	
April	12686	423	NA	39	1.3	48	
May	7152	231	70.5	32	1.7	130	
June	4676	156	NA	40	4.4	69	
July	4379	141	NA	114	4.3	84	
August	3612	117	110	74	4.2	95	
September	3827	128	NA	108	6.0	160	
October	4068	131	NA	85	5.3	76	
November	4293	143	160	114	3.6	97	
December	5467	176	NA	104	6.0	160	
Total	67473		621	1021	49	1399	
Average	5623	184	124	85	4.10	117	
Q1 RAW	17313		140	104	4.1	160	
Q2 RAW	24514		71	37	2.5	100	
Q3 RAW	11818		110	99	4.8	113	
Q4 RAW	13828		160	101	5.0	111	
Spring Raw Flows	41147						
Fall Raw Flows	27714				-		

Operating Issues & Corrective Actions

Date	Non-Compliance	Root cause	Corrective Action Plan	Date Reported to Ministry
10-May-24	Total Suspended Solids (TSS)	Poor Sample	Training of operations staff	10-May-24
29-Nov-24	Total Suspended Solids (TSS)	Fall Discharge	Continue to monitor - Discharge slower	02-Dec-24
29-Nov-24	Total Phosphorus (TP)	Fall Discharge	Continue to monitor - Discharge slower	02-Dec-24
29-Nov-24	Total Suspended Solids (TSS)	Spring and Fall Discharge	Continue to monitor - Discharge slower	02-Dec-24

Maintenance & Capital Improvements

The calibration of flow meters is conducted annually by an accredited third-party company in accordance with the requirements of the Warren Lagoon ECA. Records and certificates are kept electronically. Calibrations completed on monitoring equipment is summarized below.

Flow Meter	Date Calibrated	Certificate number
Flow Meter FIT 3401	7/16/2024	CO1544-2406-48

The operating and maintenance staff for the Warren Lagoon and Lift station conducts scheduled and emergency maintenance of the equipment. The City of Greater Sudbury utilizes a database system known as Antero to issue work orders and maintain records for regular maintenance and emergency repair.

Corrective (25)	
Exterior light not working	Repair sump pump

Regular Scheduled Maintenance (190 Completed)		
Lift Station Inspection	Electrical Inspection (Lift Stations)	Exercise Valves
LS Check Valve Inspection	Load Bank Test	Spring Runoff Preparations Lift Stations
Diesel Engine Routine Annual	LS Pump Inspection (submersible)	

Regulated Works Orders (22 Completed)	
K 0183 Anchor Point Inspection	K 0026 Flow Meter Calibration

Effluent Quality & Control Measures

The City of Greater Sudbury's Supervisory Control and Data Acquisition (SCADA) system records influent flow from the Warren lift station. Samples are collected and sent out to a third-party lab for analysis. Lagoon reports contain flow and lab results for supervisors to review. Data is then transferred to monthly and annual performance reports ensuring that all information is accounted for reviewed.

Twice a year, prior to seasonal discharge, lagoon samples are collected and tested for total phosphorus (TP). If TP levels are high, chemical addition is used to treat the lagoon before discharge. This reporting year only the fall discharge required chemical treatment.

Customer Complaints

The City of Greater Sudbury received no complaints for this reporting year.

Plant Bypasses and Overflows

There were no bypasses or overflows reported for the lagoon or lift station for this reporting year.