

2025 Year End Report: Huntsville Golden Pheasant Wastewater Treatment Plant (WWTP)



Environmental Compliance Approval: # 6591-&M9LU6 amended under ECA#9847B6KR4X
Jan 14, 2019

Engineering and Public Works Department
70 Pine Street, Bracebridge, Ontario P1L 1N3

Phone: 705-645-6764

Toll-Free: 1-800-281-3483

Fax: 705-645-7599

Email: publicworks@muskoka.on.ca

Website: www.muskoka.on.ca

Introduction

The Huntsville Golden Pheasant Clean Wastewater Treatment Plant, which services the Town of Huntsville, is owned, and operated by the District Municipality of Muskoka. The plant is located at 620 Highway 60, Huntsville. It serves a population of approximately 7,500 people.

The Plant operated under the Ministry of Environment Conservation and Parks (MECP) Environmental Compliance Approval (ECA) # 6591-7M9LU6, issued December 2008 and under MECP Environmental Compliance Approval (ECA) (Air) #66234YLK6T issued August 2001. On January 14, 2019, the ECA #9847-B6KR4X was issued by the Ministry of Environment as an amended ECA to account for upgrades to the UV disinfection system, the installation of a Soda Ash batching system for alkalinity addition and to provide for the construction of a Sludge Thickening System. Also, the amended ECA allows for the addition of an additional process tank and conversion of the aeration/mixing systems from coarse air to fine bubble diffusion which will significantly improve plant efficiency. Under the terms of the ECA, the plant is permitted to treat an average daily flow of 4,456 m³/day, and a peak flow of 13,330 m³/day. Additionally, effluent limit criteria are as follows:

Table 1 Effluent Limit Criteria

Effluent Parameter	Concentration
CBOD	15 mg/L
Total Suspended Solids	15 mg/L
Total Phosphorous	0.30 mg/L 227.9 kg/year (combined with the Huntsville Mountview CWP)
E. coli	80 counts/100mL
pH	6.0 – 9.5 inclusive

The plant is a conventional activated sludge treatment process, consisting of primary and secondary clarifiers with aeration basins. Tertiary filtration and Ultra-Violet disinfection is also part of the treatment process. The facility is also equipped with anaerobic digesters for bio-solids stabilization and a dewatering process for final disposal.

Waste sludge from the plant process is digested anaerobically at the plant and periodically hauled off site for disposal.

General Information

A review of the District of Muskoka's infrastructure needs is conducted annually by the Director of Water and Wastewater Services, Area Manager and Chief Operator, and recommendations for maintenance, rehabilitation and renewal programs are considered.

Efforts to eliminate the discharge of untreated or partially treated wastewater to receiving waters are being accomplished by a long-term financial commitment to correct excessive infiltration into the wastewater collection system by means of sewer main rehabilitation / replacement, manhole rehabilitation and pumping station rehabilitation programs.

The treatment facility is capable of effective operation during emergencies, maintenance shutdowns, and power failures. This is achieved through such measures as preventive maintenance of duty/standby units, the duplication of major treatment components, the provision of standby power sources and extensive use of the SCADA systems. All pumping stations and treatment control systems use SCADA (Supervisor Control and Data Acquisition), in combination with Data Highway Plus, and programmable logic controllers.

All operators are qualified to operate the systems efficiently and effectively in order to achieve the highest level of treatment at all times. A commitment to provide Operator training and certification is being sustained.

Regulatory sampling is carried out to meet the requirements outlined in the ECA, and additional in-house operational sampling beyond these regulatory requirements is being performed on a routine basis. These efforts have resulted in an effective treatment process which ensures that effluent discharges consistently meet effluent objectives and are environmentally safe.

All data in this report is a compilation of test results received from SGS Canada and their accredited laboratory, Lakefield Research. All in-plant sampling, analysis and recording of results conforms, in order of precedence, to the following 3 standards: Ministry's Procedure F-10-1, "Procedures for Sampling and Analysis Requirements for Municipal and Private Sewage Treatment Works", Ministry's publication "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater" and the American Water Works Association/Water Environment Federation (AWWA/WEF) publication "Standard Methods for the Examination of Water and Wastewater".

Executive Summary

In all respects, test results of the treated effluent for the parameters of suspended solids, ammonia, total phosphorous, and E. Coli are in compliance with the limits outlined in the ECA regarding monthly allowable concentrations and total effluent loading throughout the entire year.

Overall, the plant treatment processes performed satisfactorily and are deemed to be adequate. All sample test results of the final effluent were within levels outlined in the plant ECA #9847-B6KR4X.

Quantity of Flow Summary

The plant has a daily average flow design capacity of 4,456 m³/day. The actual average daily flow for 2025 was 2626m³/day, however, the 3-year average is 2893m³/day, which represents 65% of the plant capacity. None of the individual system components exceeded the design flow rating.

Plant Operational Upsets or Process Failures

Final effluent pH objective exceeded on 1 occasion on July 9th

Summary of Maintenance in 2025

All equipment information at this plant is entered into a computer database. From this information, a scheduled preventive maintenance program has been established. The maintenance program includes (and not limited to):

- Monthly emergency testing (under load) of the standby generators.
- Annual boiler and digester gas maintenance.
- Annual service of emergency standby generators.
- Annual replacement of U.V. bulbs.
- Periodic infrared inspection of Motor Control panels.
- Annual calibration of flow metering devices.
- Annual cleaning of all sewage pumping stations if required.
- Marine inspection of effluent outfall and diffuser completed in 2022. (5-year cycle)

Evaluation of the Need for Improvement Works

The treatment facility is operating at a plant capacity of 65% and is in compliance with specified effluent parameter criteria. In addition, there has been no significant treatment process upsets nor plant bypasses. As a result, there is no need for improvements to the existing works for these reasons, however, as Mountview Wastewater Treatment Plant is scheduled for conversion to a pump station this year and then decommissioned in 2027, and the flows from Mountview collection area directed then to Golden Pheasant, a suite of phased projects is underway to provide sufficient treatment capacity. Work commenced in 2024 to upgrade capacity at Golden Pheasant to receive these flows from Mountview. Completion of these upgrades is expected later this year.

To achieve the required treatment capabilities required by the ECA, the following upgrades will be necessary:

- Installation of additional high efficiency blowers and aeration diffusers.
- Additional process tankage including one new clarifier unit with provision for a fourth clarifier in future.
- Increase waste activated sludge thickening systems capacity.
- New filtration system
- Increased UV disinfection capacity
- New inlet works equipment

Evaluation Summary of Proposed Work Requiring Approval under OWRA

All upgrade works described are subject to approval under OWRA. An application for amendment to the facility ECA was submitted and approval received in January 2019 which permits alteration/improvement of the works as part of the first phase of contracts which are now complete. Further application was submitted in December of 2023, and approval is underway. Phase two construction activities commenced in spring of 2024 and are expected to be completed late 2026.

Interpretation of Analytical Results

All sample results for Raw Sewage and Final Effluent are reported in this section. Other tables

in this report include Chemical Usage, Biosolids Quality, and Biosolids Quantity.

Raw Sewage

The information reported in the Raw Sewage sample results summary table consists of test results of analysis conducted on composite samples of the plant influent flow as required by the plant ECA. Samples are sent for analysis to Lakefield Research, as well as analysis conducted on site using Standard Methods or equivalent. Weekly analysis has been performed and reported as specified under the terms outline in the ECA.

Influent Analysis

Table 2 Influent Analysis

Influent Parameter	Minimum	4 Week Average Maximum	Annual Average	Average loading kg/day
BOD5 (mg/L)	27	253	144.06	273.04
Suspended Solids (mg/L)	40	354	181.55	344.1
Total Phosphorus (mg/L)	0.57	5.68	3.14	5.95
Total Ammonia Nitrogen (mg/L)	4.5	90.45	32.21	61.05
pH	6.48	8.17	7.60	N/A

Effluent Analysis

The information reported in the Final Effluent sample results summary table 3 consists of test results of analysis conducted on final effluent composite samples. Bacteriological samples, however, consisted of grab samples. Weekly analysis has been performed and reported as specified under the terms outlined in the ECA.

Effluent Objective Analysis

Final effluent pH objective exceeded on 1 occasion within the month of July, with the lowest in-house recorded value of 6.22. Operations adjusted the necessary process controls to overcome the event.

Final Effluent Analysis Summary

All final effluent samples tested for suspended solids, ammonia, E. Coli, and total phosphorous were below non-compliance limits outlined in the ECA.

Table 3 Final Effluent Analysis Summary

Parameter	Minimum	4 Week Average Maximum	Annual Average	Average Loading kg/day
COBD5 (mg/L)	2	4	2.79	7.82
Suspended Solids (mg/L)	2	3	2.25	5.93
Ammonia (mg/L)	0.1	.675	0.14	0.424
E. Coli (#/100 mL)(Geomean)	0	14.74	2.809	N/A
Total Phosphorus (mg/L)	0.03	0.09	0.04	.11
pH	6.22	7.29	6.94	N/A

Average daily flow comparisons by day of week ensure ECA requirements for scheduled sampling are taken at a time, and in a location characteristic of the quality and quantity of the sewage stream over the period monitored. Average daily flow rates by day of the week compare the flow to the average daily flow for the entire year. This data is used to determine if a particular day of the week is best to ensure samples are taken to meet the requirements of scheduled monitoring sections of the ECA's. Sampling plans are reviewed and updated yearly based on the previous yearly flow data.

Final Effluent Sampling Summary

All samples were collected following the frequency and methods required by the facility approval. For the coming 2026-year, 24-hour composite samples will be collected on Tuesday rather than Monday of each week as was done in 2025.

Biosolids Generation

The quality and volume of biosolids hauled from the facility for disposal is outlined in the table provided. Dewatered biosolids from the plant was hauled to an approved site for additional treatment and re-use. Private contractors were used by the District of Muskoka to transfer all material for disposal in 2025, and this practice will continue in 2026. It is not anticipated that there will be a significant increase in the total volume of bio solids produced in 2026.

Biosolids Co-Treatment

The quality and volume of biosolids hauled from the facility for disposal is outlined in the table provided. Dewatered biosolids from the plant were hauled to an approved landfill site. Private contractors were used by the District of Muskoka to transfer all material for disposal in 2025 and this practice will continue in 2026. It is not anticipated that there will be a significant increase in the total volume of bio solids produced in 2026.

Summary of Complaints received throughout the reporting period:

There were no complaints received in the reporting period.

Huntsville Golden Pheasant Wastewater Collection Summary 2025

New Sewer Services:

30 new customers connected to existing municipal services in 2025.

New Maintenance Holes:

There was no new maintenance holes installed in 2025.

Sewer Main Replacements:

There were no sewer main replacements in 2025.

Low Pressure Sewer Breaks:

There were no low-pressure sewer breaks in 2025.

Sewer Force Main Breaks:

There was one sewer forcemain Break in 2025.

Sewer Force Main Replacement

There was approximately 1070m of new 610mm forcemain installed in 2025.

Main Line Sewer Blockage

There were no main line sewer blockages in 2025.

Sewer Lateral Blockage

There were no main line sewer blockages in 2025.

Service Low Pressure Sewer Blockages:

There were no low-pressure sewer blockages in 2025.

Frozen Sewer Force Mains:

There were no frozen sewer force mains in 2025.

Frozen Sewer Service Laterals:

There were no sewer service lanterns that froze in 2025.

Frozen Low Pressure Sewer Services:

There were no low-pressure sewer services that froze in 2025.

Sewer Flushing/Video:

There was 10497m of sanitary sewer flushed and videoed in 2025.

Sewer Locates:

Field staff addressed 900 written locate requests in 2025.

Air Release Valves:

All 42 air-vacuum release valves were inspected in 2025.
plus 3 new additional ones were installed.

Table 4 Effluent Flow Summary - 2025

Month	Plant Total Monthly (m ³)	Average Day Flow (m ³ /d)	Maximum Day Flow (m ³ /d)	Minimum Day Flow (m ³ /d)	Lagoons Monthly Flow (m ³)	Facility Total Monthly Flow (m ³)
January	94,776	3,057	4,442	2,508	N/A	101882
February	74,362	2,656	2,892	2,376	N/A	78946
March	127,014	4,097	6,582	2,361	N/A	100340
April	130,543	4,351	6,105	3,623	N/A	134455
May	106,511	3,436	4,139	1,957	N/A	94603
June	81,021	2,701	3,453	1,500	N/A	75583
July	58,961	1,902	3,304	1,403	N/A	89154
August	53,357	1,721	2,669	1,308	N/A	82491
September	50,432	1,681	2,448	1,114	N/A	73097
October	57,813	1,865	2,654	2,654	N/A	80410
November	60,249	2,008	2,390	1,708	N/A	81420
December	63,442	2,047	2,462	1,713	N/A	89201

Total Flow: 958,481 m³
Average Day: 2,626 m³
Maximum Day: 6,582 m³
Minimum Day: 1,114 m³

Table 5 Influent Quarterly Analysis Summary – Weekly 24-Hour Composite Sample Part 1

Sample Date	Sample Identification Number	BOD5 mg/L	Phosphate	Total Phosphorus mg/L	Suspended Solids mg/L
Feb-03-25	CA13062	154	.55	3.54	226
May-06-25	CA12155	80	<0.15	1.44	100
Aug-05-25	CA12221	237	<1.91	3.83	259
Oct-06-25	CA12227	308	< 0.57	8.3	468
Yearly Average		194.8	.795	4.28	263.25
Maximum		308.0	1.91	8.3	468
Minimum		80	.15	1.44	100

Table 6 Influent Quarterly Analysis Summary – Weekly 24-Hour Composite Sample Part 2

Sample Date	Sample Identification Number	Total Kjeldahl Nitrogen mg/L	Nitrate Nitrogen mg/L	Nitrite Nitrogen mg/L	Total Ammonia Nitrogen mg/L
Feb-03-25	CA13062	26.3	<0.06	<0.03	21.3
May-06-25	CA12155	23.7	<0.06	<0.03	17.4
Aug-05-25	CA12221	33.9	<0.06	<0.03	30.6
Oct-06-25	CA12227	63	<0.06	<0.03	39.1
Yearly Average		36.7	<0.06	<0.03	27.1
Maximum		63	<0.06	<0.03	39.1
Minimum		23.7	<0.06	<0.03	17.4

Table 7 Chemical Usage Summary: Clarion A405P / Alum

Month	Average Dosage mg/L	Total kg
January	27.6	5,280
February	29	4,527.6
March	23.7	6,111.6
April	22.7	6,190.8
May	21.5	4,752
June	30.8	4,897.2
July	40.6	4,725.6
August	46	4,923.6
September	51.2	5,095.2
October	47.4	5,530.8
November	37.4	4,659.6
December	49.6	6,428.4

Total Yearly Kilograms: 63,109.2 kg

Table 8 Chemical Usage Summary: Soda Ash

Month	Average Dosage mg/L	Total kg
January	98.2	5,773.1
February	100.5	5,205.9
March	90.2	5,898.6
April	81	6,846.8
May	80.6	5,953.9
June	100.8	6,459.7
July	128.7	6,826.9
August	127.1	6,184.3
September	142.9	5,877.1
October	147.2	5,944.7
November	159.7	6,175.3
December	142.4	5,654.8

Total Yearly Kilograms: 72,801 kg

Table 9 Effluent Quarterly Analysis Summary – Weekly 24-Hour Composite Sample Part 1

Sample Date	Sample Identification Number	CBOD5 mg/L	pH	Phosphate	Total Phosphorus mg/L	Suspended Solids mg/L
Feb-03-25	CA13062	4	7.48	<0.03	0.03	2
May-06-25	CA12155	2	7.74	<0.03	0.03	<2
Aug-05-25	CA12221	2	7.42	<0.03	0.08	2
Oct-06-25	CA12227	2	7.57	<0.03	0.06	<2
Maximum		4	7.74	<0.03	0.08	2
Minimum		2	7.42	<0.03	0.03	2

Table 10 Effluent Quarterly Analysis Summary – Weekly 24-Hour Composite Sample Part 2

Sample Date	Sample Identification Number	Total Kjeldahl Nitrogen mg/L	Nitrate Nitrogen mg/L	Nitrite Nitrogen mg/L	Total Ammonia Nitrogen mg/L
Feb-03-25	CA13062	0.5	19.7	<0.03	<0.1
May-06-25	CA12155	0.5	10.9	<0.03	0.1
Aug-05-25	CA12221	0.5	35.2	0.04	0.1
Oct-06-25	CA12227	0.5	29	<0.03	<0.1
Yearly Average		0.5	23.6	0.0325	0.1
Maximum		0.5	35.2	0.04	0.1
Minimum		0.5	10.9	0.03	0.1

Table 11 Effluent Loading and Concentration Summary 2025: COBD5

Month	Average mg/L	Average kg/day	Maximum Daily kg/day
January	4.00	12.23	17.77
February	4.00	10.62	11.57
March	4.00	16.39	26.33
April	4.00	17.41	24.42
May	2.00	6.87	8.28
June	2.00	5.40	6.91
July	2.40	4.56	7.93
August	2.30	3.96	6.14
September	2.40	4.03	5.87
October	2.25	4.20	5.97
November	2.00	4.02	7.17
December	2.00	4.09	4.92
Annual Average	2.78	7.82	10.91
Effluent Objective	10		
Non-Compliance	15		

Table 12 Effluent Loading and Concentration Summary 2025: Suspended Solids

Month	Average mg/L	Average kg/day	Maximum Daily kg/day
January	2	6.11	8.88
February	2.5	6.64	7.23
March	2.25	9.22	14.81
April	2.20	9.57	13.43
May	2.25	7.73	9.31
June	2.25	6.08	7.77
July	2.00	3.80	6.61
August	2.50	4.30	6.67
September	2.00	3.36	4.90
October	2.25	4.20	5.97
November	3.00	6.02	7.17
December	2.00	4.09	4.92
Annual Average	2.52	5.93	8.14
Effluent Objective	10		
Non-Compliance	15		

Table 13 Effluent Loading and Concentration Summary 2025: Total Ammonia Nitrogen Summer

Month	Average mg/L	Average kg/day	Maximum Daily kg/day
May	0.10	0.34	0.41
June	0.10	0.27	0.35
July	0.10	0.19	0.33
August	0.10	0.17	0.27
September	0.10	0.17	0.24
October	0.10	0.19	0.27
Annual Average	0.10	0.22	0.31
Effluent Objective			
Non-Compliance			

Table 14 Effluent Loading and Concentration Summary 2025: Total Ammonia Nitrogen Winter

Month	Average mg/L	Average kg/day	Maximum Daily kg/day
January	0.10	0.31	0.44
February	0.10	0.27	0.29
March	0.10	0.41	0.66
April	0.56	2.44	3.42
November	0.10	0.20	0.24
December	0.10	0.20	0.25
Annual Average	0.18	0.32	0.44
Effluent Objective			
Non-Compliance			

Table 15 Effluent Loading and Concentration Summary 2025: Fecal Coliform

Month	Geomean (#/100mL)	Maximum Daily (#/100mL)
January	1	0
February	1.19	2
March	1	1
April	1	0.00
May	3.38	13
June	2.32	29
July	14.74	206
August	1	0
September	1.25	3
October	1	1
November	3.92	236
December	1.92	13

Table 16 Effluent Loading and Concentration Summary 2025: Total Phosphorus

Month	Average mg/L	Average kg/day	Maximum Daily kg/day
January	0.032	0.10	0.14
February	0.033	0.09	0.09
March	0.03	0.12	0.20
April	0.03	0.13	0.18
May	0.03	0.10	0.12
June	0.036	0.10	0.13
July	0.066	0.13	0.22
August	0.09	0.15	0.24
September	0.054	0.09	0.13
October	0.063	0.12	0.17
November	0.045	0.09	0.11
December	0.03	0.06	0.07
Annual Average	0.045	0.11	0.15
Effluent Objective	0.30		
Non-Compliance	0.30		

Table 17 Liquid Sludge Production Summary 2025

Month	Hauler	Liquid Volume m ³	Cake Weight kg	Destination
January	ROHES		72,910	ROHES
February	ROHES		63,160	ROHES
March	ROHES		67,450	ROHES
April	ROHES		99,280	ROHES
May	ROHES		98,240	ROHES
June	ROHES		102,530	ROHES
July	ROHES		81,980	ROHES
August	ROHES		95,280	ROHES
September	ROHES		104,220	ROHES
October	ROHES		102,800	ROHES
November	ROHES		85,480	ROHES
December	ROHES		103,320	ROHES

Liquid Yearly Total Volume: 0.00 m3
 Cake Yearly Total Volume: 1,076,650 kg

Table 18 Sludge Quality Analysis 2025

Parameter Sampled (mg/L)	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Date	Feb 03/25	May 05/25	Aug 05/25	Oct 06/25
	CA13057	CA12152	CA12215	CA13303
Nitrate	<3	<3	<3	<3
Mercury	0.003	0.004	0.004	0.005
Chromium	0.11	0.23	0.19	0.19
Cobalt	0.02	0.04	0.03	0.03
Copper	3	4.3	4.7	4.1
Lead	0.1	0.1	0.1	0.10
Molybdenum	0.05	0.07	0.07	0.06
Nickel	0.09	0.15	0.13	0.12
Selenium	<0.1	<0.1	<0.1	<0.1
Arsenic	<0.1	<0.1	<0.1	<0.1
Zinc	4	6	7	6
Cadmium	0.005	0.01	0.041	0.01
Ammonia	411	446	510	480
Total Kjeldahl Nitrogen	832	1030	1090	1020
Total Phosphorus	218	348	340	348
Total Solids	9660	13600	9830	13900
Volatile Acids	52	<40	<40	<40

Certification of Reports

I certify that the information in this document and all attachments is correct, accurate, and complete to the best of my knowledge.

Michael Currie,
Director, Water and Wastewater Services

Darren Ronson
Manager of Water and Wastewater Operations

Glenn Gardiner
Manager of Water and Wastewater Operations