



— Township of —

SEVERN

Wastewater Treatment and Collection System

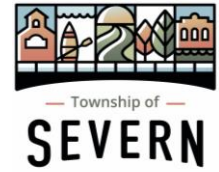
Washago

2023 Annual Report



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Executive Summary

Washago utilizes a dual-cell facultative lagoon system for sewage treatment. The effluent quality is monitored before, during and after treatment to verify compliance with the Ministry of the Environment, Conservation and Parks (MECP) Certificate of Approval (C of A). Only Cell No. 1 is equipped to discharge into the Green River. Cell No. 2 is used for the retention of incoming sewage while Cell No. 1 is for discharging. River samples are taken before and during discharge to monitor the effects of the discharge on water quality.

Cell No. 1 was discharged in the spring and the fall of 2023. The mean concentrations and total loadings of all parameters were below their respective C of A compliance limits.

There was no impact on the quality of the Green River due to the spring and fall discharges. The total volume of effluent discharged was 59,825 cubic metres (m³) approximately 73 per cent of the facility's operating capacity of 81,900 m³/year.

No bypass occurred during the 2023 operating year.

Introduction

Washago is situated approximately 20 kilometres (km) north of Orillia near the intersection of Highway 11 and County Road 169. The lagoon is located approximately 1.5 km northwest of the village core. Treated effluent from the facility is discharged to the Green River.

Facility Technical Information

The lagoon is operated under C of A No. 3-1081-83-006. A copy of the C of A is enclosed in Appendix A.

The lagoon consists of two cells operated in series. Sewage is pumped from the main pumping station in Washago into Cell No. 2. Sewage then flows into Cell No. 1 through a valved transfer pipe located in the berm separating the cells.

Storage and treatment of raw sewage are provided in Cell No. 2 during the treatment of Cell No.1. Cell No. 1 discharges to the Green River via an outfall that runs through the adjacent wetland. According to the C of A, the seasonal operating capacity of the facility is 40,950 m³ based on an average day flow of 227.5 m³/day over 180 days. The configuration of the lagoon and outfall easement are shown on Figure 1.

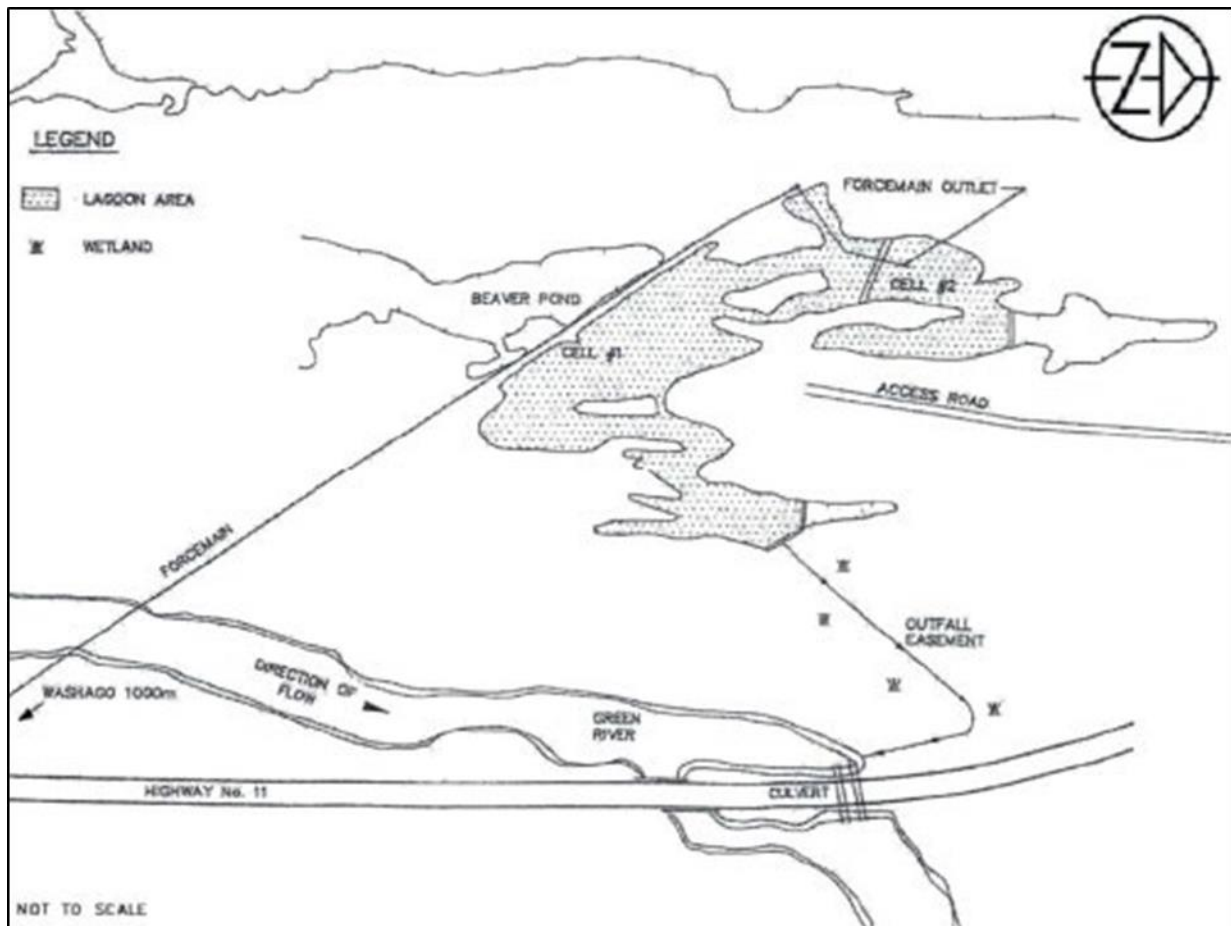


Figure 1: Sewage Treatment Facility Site Plan

Performance Criteria

The C of A objective and compliance limits for effluent quality and the waste loading limits are summarized in Table 1.

Table 1: Performance Criteria

Parameter	Objective Limits Concentration (mg/L)	Objective Limits Semi-Annual Loading (kg)	Compliance Limits Concentration (mg/L)	Compliance Limits Semi-Annual
BOD ₅	15	614	25	1024
TSS	20	815	25	1024
P _t	1	41	1	41

Monitoring and Treatment Protocol

Raw sewage samples were collected from Washago Sewage Pumping Station #1 monthly and analyzed for TSS, BOD₅, P_t and TKN. Results of the analysis are shown on the Municipality Monitoring Program Mechanical Plants forms enclosed in Appendix B and summarized in Table 2.

Raw Sewage Monitoring

Table 2: Raw Sewage Monitoring Results

Date	Date	BOD5 (mg/L)	Pt	TKN (mg/L)
January 10, 2023	155	170	2.30	23.4
February 8, 2023	279	266	5.45	45.2
March 7, 2023	176	215	4.68	39.7
April 4, 2023	185	26	0.78	8.8
May 11, 2023	128	172	4.92	38.5
June 8, 2023	227	238	3.99	40.0
July 12, 2023	120	123	2.73	30.0
August 9, 2023	249	329	3.75	31.6
September 6, 2023	191	163	4.08	39.8
October 11, 2023	73	165	2.76	23.2
November 7, 2023	139	98	2.38	22.2
December 5, 2023	177	140	2.02	17.3

Sewage Flow Monitoring

The volume of sewage pumped from Washago Sewage Pumping Station #1 to the lagoon is estimated monthly by multiplying the elapsed run time of each pump in the station by the capacity of the pump. Draw down tests are completed by Township staff in the spring and the fall to confirm pump capacity. Draw down test

calculations are enclosed in Appendix C. Raw sewage flows are shown on the Municipality Monitoring Program Mechanical Plants forms enclosed in Appendix B.

Based on the influent volumes reported in the Municipal Utility Monitoring Report, the total estimated volume of sewage transferred to the lagoon during the October 18, 2022, to April 18, 2023, winter operating season was 21,929 m³. The total estimated volume of sewage transferred to the lagoon during the April 18, 2023 to October 23, 2023 summer operating season was 24,018 m³. The total volume of sewage transferred to the lagoon during the winter and summer operating seasons was 45,947 m³. Sewage flows are summarized in Table 3 and 4.

Table 2: Sewage Flow to Lagoon Winter Operating Season

Date	Volume (m³)
October 18-31, 2022	806
November 2022	2,780
December 2022	3,456
January 2023	4,819
February 2023	2,827
March 2023	3,245
April 1-18, 2023	3,996
Total	21,929

Table 3: Sewage Flow to Lagoon Summer Operating Season

Date	Volume (m³)
April 18-30, 2023	2,664
May 2023	2,664
June 2023	3,330
July 2023	4,820
August 2023	4,820
September 2023	3,208
October 1-23, 2023	3,058
Total	2,668

Treatment and Sampling Protocol

Final treatment of the sewage begins by isolating Cell No. 1 for a period of approximately 30 days, depending on operational constraints. During this period, all sewage received at the lagoon is retained in Cell No. 2. To ensure adequate storage volume in Cell No. 2 during the treatment period, the operator transfers as much of the volume of Cell No. 2 to Cell No. 1 by pump.

During the treatment period, composite samples are collected to determine the quality of the effluent. If the effluent quality is below the C of A compliance limits, the cell is discharged without further treatment. If treatment is required, it is accomplished by batch chemical treatment with liquid aluminum sulphate (alum). Alum is added to the lagoon contents to initiate precipitation of the suspended matter. Although the treatment is essential to reduce P_t levels, a significant reduction of BOD_5 and TSS is also achieved. The addition of liquid alum is carried out using the procedure outlined and recommended by the MECP in a technical report issued January 16, 1974.



Pre- and post-treatment samples are obtained from representative locations in Cell No. 1 and analyzed for BOD₅, P_t, TSS, pH, TA, TKN and Alkalinity. Discharge samples are collected from the downstream end of the Cell No. 1 discharge pipe and analyzed for the same parameters.

Grab samples are obtained from the Green River, upstream and downstream of the lagoon discharge point to monitor impacts of the discharge on the river. Samples are analyzed for BOD₅, P_t, TSS, pH, TA, TKN and Alkalinity.

Laboratory analysis reports for effluent and river samples are enclosed in Appendix D.

Treatment / Discharge

Spring Discharge

Three pre-discharge samples were taken from Cell No.1 for the spring discharge and three more during discharge to confirm effluent quality. The concentrations of Pt, TSS and BOD₅ reported in the pre-discharge samples were below the compliance limit. Based on the results of the pre-discharge samples, the discharge of Cell No. 1 commenced without batch chemical treatment. Results of the analysis are outlined in Table 5.

Table 4: Pre-Discharge Sampling – Spring Discharge

	Date	TSS (mg/L)	BOD ₅ (mg/L)	P _t (mg/L)
Sample 1	April 27, 2023	8	7	0.05
Sample 2	May 1, 2023	4	12	0.06
Sample 3	May 4, 2023	2	4	0.12
Sample 4	May 11, 2023	2	4	0.19
C of A Objective		20	15	1
C of A Compliance		25	25	1

The spring discharge commenced on May 29, 2023. The total volume of effluent discharged was 22,931 m³ at a mean discharge rate of 5460 m³/day. During the discharge, the mean concentrations of TSS, BOD₅ and P_t were below compliance limits. A summary of the effluent quality and waste loadings is illustrated in Table 6.

Table 5: Effluent Discharge Summary – Spring Discharge

	Date	TSS (mg/L)	BOD ₅ (mg/L)	P _t (mg/L)
Sample 1	April 27, 2023	8	7	0.05
Sample 2	May 1, 2023	4	12	0.06
Sample 3	May 4, 2023	2	4	0.12
Sample 4	May 11, 2023	2	4	0.19
C of A Objective		20	15	1
C of A Compliance		25	25	1
Effluent Waste Loading		151	282	4.12

Samples were obtained from the Green River, upstream and downstream of the lagoon discharge point, at the start, middle and end of the discharge. Results of the analysis are illustrated in Table 7. Analysis of the receiving stream samples showed no impact on the Green River due to the discharge of Cell No.1.

Table 6: Green River Monitoring – Spring Discharge

	Date	TSS (mg/L)	BOD₅ (mg/L)	P_t (mg/L)
Start Discharge	May 29, 2023			
Upstream		2	< 4	< 3
Downstream		2	5	< 3
Mid Discharge	May 31, 2023			
Upstream		2	< 4	0.04
Downstream		2	< 4	< 3
End Discharge	June 2, 2023			
Upstream		2	6	0.03
Downstream		2	< 4	< 3

Fall Discharge

Three pre-discharge samples were taken from Cell No. 1 to confirm effluent quality prior to the fall discharge. All parameters were below the C of A compliance limits. Based on these results, the discharge of Cell No. 1 commenced without batch chemical treatment. Results of the analysis are illustrated in Table 8.

Table 7: Pre-Discharge Sampling – Fall Discharge

	Date	TSS (mg/L)	BOD₅ (mg/L)	P_t (mg/L)
Sample 1	November 6, 2023	16	17	0.09
Sample 2	November 13, 2023	17	20	0.08
Sample 3	November 20, 2023	6	16	0.04
C of A Objective		20	15	1
C of A Compliance		25	25	1

The discharge of Cell No. 1 commenced December 4, 2023. The total volume of effluent discharged was 36,894 m³ at a mean discharge rate of 4,611 m³/day.

During the discharge, the mean concentrations of TSS, BOD₅ and P_t were below compliance limits. A summary of the effluent quality and waste loadings is illustrated in Table 9.

Table 9: Effluent Discharge Summary – Fall Discharge

	Date	TSS (mg/L)	BOD₅ (mg/L)	P_t (mg/L)
Start Discharge	Dec 4, 2023	28	32	0.05
Mid Discharge	Dec 7, 2023	16	19	0.04
End Discharge	Dec 11, 2023	19	27	0.04
Mean Concentration		21	26	0.04
C of A Objective		20	15	1
C of A Compliance		25	25	1
Effluent Waste loading		774	9595	1.47

Samples were obtained from the Green River, upstream and downstream of the lagoon discharge point, at the start, middle and end of the discharge. Analysis of the receiving stream samples showed no impact on the Green River due to the discharge of Cell No. 1. The results of the analysis are illustrated in Table 10.

Table 8: Green River Monitoring – Fall Discharge

	Date	TSS (mg/L)	BOD₅ (mg/L)	P_t (mg/L)
Start Discharge	Dec. 4, 2023			
Upstream		< 2	< 4	< 3
Downstream		< 2	< 4	< 3
Mid Discharge	Dec. 7, 2023			
Upstream		< 2	< 4	< 3
Downstream		2	< 4	< 3
End Discharge	Dec. 11, 2023			
Upstream		2	< 4	< 3
Downstream		2	< 4	< 3

Efforts and Results in Meeting Effluent Objectives of Certificate of Approval

The lagoon is operated and maintained such that all effluent quality objectives are strived for. Objectives and limits are based on an average. There was one limit

exceedance during the 2022 – 2023 discharges, which was BOD₅ and one objective exceedance for TSS during the fall discharge. Refer to Table 8: Effluent Discharge Summary – Fall Discharge.

2023 Operating Year Summary

The volumes of influent received, and effluent discharged from the lagoon during the 2023 operating year are summarized in Table 11.

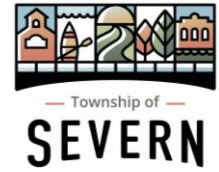
Table 9: Influent and Discharge Volume Summary

Total Influent Volume Sewage	45,947 m ³
Total Effluent Discharged	59,825 m ³
Precipitation Value	13,878 m ³

The waste loadings during the 2023 operating year are summarized in Table 12.

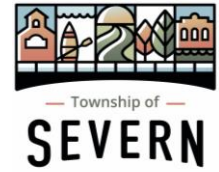
Table 10: Waste Loading Summary

	Spring 2023 (kg)	Fall 2023 (kg)	Total Loading (kg)
TSS	151	774	925
BOD ₅	282	959	1241
P _t	4.12	1.47	5.59



Conclusions and Recommendations

The performance of the Washago Sewage Treatment Works during the 2023 operating year had one objective and one limit exceedance. To ensure that the seasonal operating capacity of the lagoon is not exceeded, the spring and fall discharges should continue to be scheduled as early in the spring and as late in the fall as practical to reduce the length of the winter operating season, when the volume of precipitation accumulation is the greatest and the rate of evaporation is the lowest.

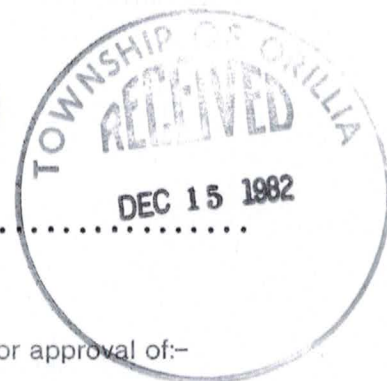


Appendix A

Certificate of Approval



Certificate of Approval (Sewage)



Whereas TOWNSHIP OF ORILLIA

xx

has applied in accordance with Section 24 of the Ontario Water Resources Act for approval of:-

the construction of sanitary sewerage works facilities to service the Community of Washago as follows:

SANITARY SEWERS

<u>STREET</u>	<u>FROM</u>	<u>TO</u>
Quetton Street	Approx. 218 m South of Leith Street	Approx. 29 m North of Leith Street
Quetton Street	Orillia Street (Highway No. 69)	Hamilton Street
Muskoka Street	Approx. 235 m South of Rama Street	Approx. 303 m North of Ramsay Street
Mill Lane	Hamilton Street	Albany Street
Easement	Mill Lane	Approx. 129 m North of Edgar Street
Ramsay Street	Muskoka Street	Approx. 80 m West of Muskoka Street
Edgar Street	Muskoka Street	Approx. 75 m West of Muskoka Street
Edgar Street	Approx. 60 m East of Mill Lane (Easement)	Approx. 100 m East of Mill Lane (Easement)
Albany Street	Muskoka Street	Approx. 75 m West of Muskoka Street
Albany Street	Mill Lane	Approx. 34 m East of Mill Lane (Easement)

...2

Now therefore this is to certify that after due enquiry the said proposed works have been approved under Section 24 of the Ontario Water Resources Act.

DATED AT TORONTO this 8th day of December 19 82

- Attn:-Mr. J.B. Mather, Clerk, Twp. of Orillia
- cc:-Mr. G. Mierzynski, MOE C. Reg. Dir.
- Reid & Assoc. Ltd.
- Mr. W.A.S. Marshall, Project Engrg.
- Mr. N. Embree, MOE Barrie Office
- Mr. J. Toth, Design & Equipment
- Mr. W. Brink, Design & Equipment

Director



Certificate of Approval (Sewage)

- 2 -

Whereas

of
has applied in accordance with Section 24 of the Ontario Water Resources Act for approval of:-

SANITARY SEWERS (Cont'd)

<u>STREET</u>	<u>FROM</u>	<u>TO</u>
Orillia Street	Approx. 72 m North of Quetton Street	Muskoka Street
Rama Street	Muskoka Street	Approx. 51 m East of Muskoka Street
Easement	Muskoka Street	Quetton Street
<u>FORCEMAINS</u>		
Muskoka Street	Approx. 303 m North of Ramsay Street (Proposed Sewage Pumping Station No.3)	Ramsay Street
Albany Street	Approx. 103 m East of Muskoka Street (Proposed Sewage Pumping Station No.2)	Muskoka Street
Muskoka Street	Approx. 235 m South of Orillia Street (Proposed Sewage Pumping Station No.1)	Orillia Street
Orillia Street	Muskoka Street	Quetton Street
Quetton Street	Orillia Street	Hamilton Street (Easement)
Easement	Hamilton Street	Approx. 1700 m North and N.W. of Hamilton Street (Proposed Waste Stabilization Pond)

...3

Now therefore this is to certify that after due enquiry the said proposed works have been approved under Section 24 of the Ontario Water Resources Act.

DATED AT TORONTO this 8th day of December 19 82


Director



Certificate of Approval (Sewage)

- 3 -

Whereas

of

has applied in accordance with Section 24 of the Ontario Water Resources Act for approval of:-

including building sewers from the main sewer to the street line, as shown on the drawing or as may be approved by the operating authority in the future together with three (3) sewage pumping stations as follows:

SEWAGE PUMPING STATION NO.1: to be located on the east side of Muskoka Street approximately 235 m south of Orillia Street and consisting of the construction of a submersible type raw sewage pumping station c/w the installation of two (2) 14.4 L/s @ 15.6 m T.D.H. submersible raw sewage pumps; an emergency forcemain by-pass; an emergency overflow to the Severn River and all necessary appurtenances and controls;

SEWAGE PUMPING STATION NO.2: to be located on the south side of Albany Street approximately 103 m east of Muskoka Street and consisting of a submersible type raw sewage pumping station c/w the installation of two (2) 6.28 L/s @ 8.3 m T.D.H. submersible raw sewage pumps; an emergency forcemain by-pass; an emergency overflow to the Severn River and all necessary appurtenances and controls;

SEWAGE PUMPING STATION NO.3: to be located on the west side of Muskoka Street approximately 303 m north of Ramsay Street and consisting of a submersible type raw sewage pumping station c/w the installation of two (2) 6.76 L/s @ 9.0 m T.D.H. submersible raw sewage pumps; an emergency forcemain by-pass; an emergency overflow sewer to an adjacent watercourse and all necessary appurtenances and controls,

all in accordance with the final plans and specifications prepared by Reid and Associates Limited, Consulting Engineers, at a total estimated cost, including land charges, engineering and contingencies, of NINE HUNDRED FORTY FOUR THOUSAND DOLLARS (\$944,000.00).

Now therefore this is to certify that after due enquiry the said proposed works have been approved under Section 24 of the Ontario Water Resources Act.

DATED AT TORONTO this

8th

day of

December

19 82

/ec



Certificate of Approval (Water)

Whereas TOWNSHIP OF ORILLIA

of

has applied in accordance with Section 23 of the Ontario Water Resources Act for approval of:-

the construction of watermains as follows:

<u>STREET</u>	<u>FROM</u>	<u>TO</u>
Quetton Street	Approx. 48 m South of Orillia Street	Orillia Street
Orillia Street	Quetton Street	Approx. 50 m East of Quetton Street (CNR Right-of-Way)
C.N.R. Right-of-Way	Orillia Street	Hamilton Street

including stub watermains and service connections from the distribution main to the street line, as shown on the drawings or as may be approved by the operating authority in the future, all in accordance with the final plans and specifications prepared by Reid and Associates Limited, Consulting Engineers, at a total estimated cost, including engineering and contingencies, of SEVENTEEN THOUSAND DOLLARS (\$17,000.00).

DEPARTMENT OF THE ENVIRONMENT
 ONTARIO
 DATE: May 31/83

Now therefore this is to certify that after due enquiry the said proposed works have been approved under Section 23 of the Ontario Water Resources Act.

DATED AT TORONTO this 29th day of April 19 83

- Attn:-Mr. J.B. Mather, Clerk, Twp. of Orillia
- cc:-Mr. J. Ferguson, Road Supt.
- Mr. G. Mierzynski, MOE C. Reg. Dir.
- Reid & Assoc. Ltd.
- Mr. W.A.S. Marshall, Proj. Engrg.
- Mr. A.J. Forsyth, Proj. Engrg.
- Mr. J. Toth, Design & Equipment
- Mr. W. Brink, Design & Equipment

.....
 Director



**Certificate of Approval
 (Sewage)**

Whereas TOWNSHIP OF ORILLIA

XX

has applied in accordance with Section 24 of the Ontario Water Resources Act for approval of:-

the construction of sanitary sewage works facilities as follows:

SANITARY SEWER

<u>STREET</u>	<u>FROM</u>	<u>TO</u>
C.N.R. Right-of-Way	Hamilton Street	Quetton Street

FORCEMAIN

C.N.R. Right-of-Way	Orillia Street	Hamilton Street
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including service connections from the main sewer to the street line, as shown on the drawings or as may be approved by the operating authority in the future, all in accordance with the final plans and specifications prepared by Reid and Associates Limited, Consulting Engineers, at a total estimated cost, including engineering and contingencies, of THIRTY THREE THOUSAND EIGHT HUNDRED DOLLARS (\$33,800.00).

Now therefore this is to certify that after due enquiry the said proposed works have been approved under Section 24 of the Ontario Water Resources Act.

DATED AT TORONTO this 29th day of April 19 83

- Attn:-Mr. J.B. Mather, Clerk, Twp. of Orillia
 cc:-Mr. J. Ferguson, Road Supt.
 -Mr. G. Mierzynski, MOE C. Reg. Dir.
 -Reid & Assoc. Ltd.
 -Mr. W.A.S. Marshall, Proj. Engrg.
 -Mr. A.J. Forsyth, Proj. Engrg.
 -Mr. J. Toth, Design & Equipment
 -Mr. W. Brink, Design & Equipment


 Director



Ministry of the Environment

Ministère de l'Environnement

Certificate of Approval (Sewage) / Certificat d'autorisation (eaux usées)

Number / Numéro 3-1459-87-006

Whereas / Attendu que Hope-Smith Lands Limited

of / d Washago, Ontario

has applied in accordance with Section 24 of the Ontario Water Resources Act for approval of:

a fait, conformément à l'article 24 de la loi sur les ressources en eau de l'Ontario, une demande d'autorisation: Private sanitary pumping station and forcemain to service a commercial development located on Part of Lot 14 and all of Lots 15, 16, 17 & 18 in the Township of Orillia equipped with 2 submersible grinder pumps each rated at 1.9 l/s at a total dynamic head of 6.8m with float switch controls, associated valves, electrical equipment, interconnecting piping, a natural vent, a forcemain and appurtenances.

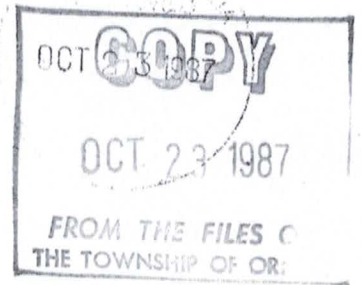
Table with 3 columns: Street, From, To. Row 1: Forcemain, Hamilton St., Approx. 45m E of Cumberland St., Quetton St.

all in accordance with the revised plans received on August 26, 1987 plans and specifications prepared by Marshall Macklin Monaghan Limited, Consulting Engineers, at a total estimated cost, including engineering and contingencies, of FORTY TWO THOUSAND TWO HUNDRED DOLLARS (\$42,200.00).

THIS IS A TRUE COPY OF THE ORIGINAL CERTIFICATE MAILED

ON Oct-16/87

(Signed) [Signature]



Now therefore this is to certify that after due enquiry the said proposed works have been approved under Section 24 of the Ontario Water Resources Act.

Le présent document certifie qu'après vérification en bonne et due forme la construction dudit projet d'ouvrages a été approuvée aux termes de l'article 24 de la loi sur les ressources en eau de l'Ontario.

DATED AT TORONTO this 16 day of October 1987 / DATÉ À TORONTO ce 16 jour d'octobre 1987

- cc: Mr. J.B. Mather, Clerk, Township of Orillia; Mr. A.F. Pelletier, Clerk, County of Simcoe; Mr. N. Embree, Chief Approvals and Planning Unit; Marshall Macklin Monaghan Limited

[Signature]

Certificate of Approval (Sewage)

Whereas TOWNSHIP OF ORILLIA

xx
has applied in accordance with Section 24 of the Ontario Water Resources Act for approval of:-
the construction of a 4.77 ha two celled seasonal discharge waste stabilization pond to be located approximately 1700 m north and northwest of Hamilton Street - Washago (Part of Lots 10 and 11, Concession XV, Township of Orillia) in a natural rock basin and including an influent structure; four (4) berms; inter-connecting piping; and outfall structure and all necessary appurtenances (Total effective storage volume at 1.5 m effective liquid depth = 47,800 m³; BOD loading rate = 8.11 kg/ha/d) with effluent discharge via an existing natural drainage course to the Severn River,

all in accordance with the final plans prepared by Reid and Associates Limited, Consulting Engineers, at a total estimated cost, including land charges, engineering and contingencies, of ONE HUNDRED THOUSAND DOLLARS (\$100,000.00), subject to the following special terms and conditions which are considered necessary by the undersigned.

SPECIAL TERMS AND CONDITIONS

(1) The Township will notify homeowners along the Severn River, in the area immediately east of the Highway No. 11 bridge, prior to the discharge of the waste stabilization pond effluent.

(2) TYPE OF SAMPLE

Grab Sample

a) The waste stabilization pond shall be operated in such a manner and with such facilities as to maintain the following objectives in terms of effluent concentrations and waste loadings:

<u>Effluent Parameter</u>	<u>Effluent Concentration</u>	<u>Effluent Waste Loading</u>
BOD ₅	15 mg/L	614 kg
Suspended Solids	20 mg/L	815 kg
Total Phosphorus	1.0 mg/L	41 kg

.../2

Now therefore this is to certify that after due enquiry the said proposed works have been approved under Section 24 of the Ontario Water Resources Act.

DATED AT TORONTO this 18th day of November 1983

Attn:-Mr. J.B. Mather, Clerk, Twp. of Orillia
cc:-Mr. G. Mierzynski, MOE C, Reg. Dir.
-Reid and Associates Limited
-Mr. W.A.S. Marshall, Project Supervisor
-Mr. J. Toth, Value Engineering
-Mr. C.W. Brink Value Engineering

Certificate of Approval (Sewage)

Whereas

- 2 -

of

has applied in accordance with Section 24 of the Ontario Water Resources Act for approval of:-
Special Terms and Conditions Cont'd.

- b) Non-compliance is deemed to occur when any of the following effluent concentrations and/or waste loadings is exceeded based on the analytical results of the sampling programme described in paragraph 2c).

<u>Effluent Parameter</u>	<u>Effluent Concentration</u>	<u>Effluent Waste Loading</u>
BOD ₅	25 mg/L	1024 kg
Suspended Solids	25 mg/L	1024 kg
Total Phosphorus	1 mg/L	41 kg

NOTE:

The foregoing effluent waste loading objectives and effluent waste loading non-compliance values are based upon an average daily inflow to the waste stabilization pond of 227.5 m³/d over 180 days and represent the total load discharged to the receiving stream over the discharge period.

- c) The minimum sampling programme to be followed in assessing non-compliance of the BOD₅, Suspended Solids and Total Phosphorus effluent parameters is as follows:

The waste stabilization pond must be sampled after treatment prior to discharge for checking compliance against the critical parameter (i.e. Total Phosphorus) as noted in Condition 2b).

The waste stabilization pond must be sampled for the effluent parameters noted in Condition 2a) once during discharge and on the final day of discharge.

- d) Non-compliance with respect to effluent concentrations is considered to occur when the arithmetic mean of either BOD₅, SS or phosphorus concentration of samples collected during the discharge period exceeds the corresponding value as stated in Condition 2b above.

.../3

Now therefore this is to certify that after due enquiry the said proposed works have been approved under Section 24 of the Ontario Water Resources Act.

DATED AT TORONTO this 18th day of November 19 83


 Director

Ontario
**Certificate of Approval
(Sewage)**

Whereas

- 3 -

of

has applied in accordance with Section 24 of the Ontario Water Resources Act for approval of:-

Special Terms and Conditions Cont'd.

- e) Non-compliance with respect to effluent waste loadings is considered to occur when the arithmetic mean of either BOD₅, suspended solids or phosphorus concentration of samples collected during the discharge period incorporated with the total flow over the discharge period exceeds the corresponding value as stated in Condition 2b above.

NOTE:

The total flow referred to above shall be the total flow registered by the magnetic flow meter at the Main Sewage Pumping Station between the end of one discharge period and the end of the next discharge period.

- f) Procedures related to the sampling programme shall be in accordance with the attached Appendix A.
- (3) A routine sampling and analysis programme shall be implemented and maintained in accordance with the following:

SAMPLE LOCATIONS

- Raw Sewage (Main Sewage Pumping Station Wet Well)
- Final Effluent (Waste Stabilization Pond)

ANALYSIS SAMPLING PARAMETERS

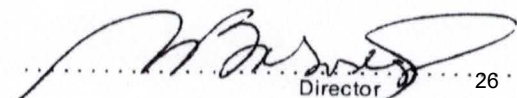
- BOD₅
- Suspended Solids
- Total Phosphorus
- Ammonia plus ammonia nitrogen (effluent stream only)

SAMPLING FREQUENCY

Raw Sewage - minimum one (1) grab sample per month
Final Effluent - as per Condition 2c above.

Now therefore this is to certify that after due enquiry the said proposed works have been approved under Section 24 of the Ontario Water Resources Act.

DATED AT TORONTO this 18th day of November 1983


.....
Director

SAMPLE COLLECTION

- (a) All equipment coming in contact with the sample shall be clean.

SAMPLE PRESERVATION

- (a) If an automatic sampler is used, it should be located in a shaded area, rather than in direct sunlight.
- (b) The sample itself should be refrigerated at 4^o C, if at all possible, throughout the collection period and during the time taken to transport the sample. If plant personnel deliver the samples, a styrofoam cooler can be used for this purpose. Small refreezable ice packs can be placed within the cooler. If, however, the samples must be shipped by courier or express service, it is recommended that a one-day delivery period should be requested.

SAMPLE SIZE

- (a) At least one litre of sample from each sampling location should be submitted for the minimum analysis requirements (BOD₅, SS, Ammonia plus Ammonia Nitrogen and Total Phosphorus). If the effluent sample has less than 1 mm of solid matter when settled, or is almost clear when shaken, provide an extra litre of sample.

SUBMISSION OF ANALYSIS

- (a) Samples should be submitted for analysis as soon as possible following collection. Sample delivery should ideally be made to the laboratory within 24 hours. Allowances should be made to schedule sampling and delivery to coincide with the days on which the analyses are normally performed.

SAMPLE ANALYSIS AND DATA REPORTING

- (a) If the operating authority wishes to use its own analytical equipment or submit samples to commercial laboratories the operating authority shall still submit samples to the Ministry of the Environment Laboratory for purposes of quality control auditing. Until the capability and accuracy of the plant or other laboratory are known, samples shall be submitted as normally required to the Ministry of the Environment Laboratory. As the capability and accuracy of the plant or commercial laboratory become known, the frequency of sample submission to the Ministry Laboratory may be reduced or possibly eliminated entirely. The frequency of such submissions for quality control auditing shall be as determined in writing by the District Officer, Municipal and Private Abatement, Barrie District Office. To allow comparison of analytical results, samples submitted for quality auditing purposes shall be duplicates of the samples analyzed by the plant or commercial laboratory.
- (b) To satisfy all, or a part of, the analytical requirements, operating authorities using their own facilities or commercial laboratories shall submit copies of the analytical results at least once per month to the District Officer, Municipal and Private Abatement, Barrie District Office.

Appendix "A" Cont'd.

- (c) The operating authority shall maintain records of the analysis results for a minimum of five (5) years.



NOTICE

TO: Mr. J.B. Mather, Clerk
Township of Orillia
P.O. Box 159, R.R. #4
West Street North
Orillia, Ontario
L3V 6J3

You are hereby notified that Final Certificate of Approval No. 3-1081-83-006 has been issued to you subject to the conditions outlined therein.

The reasons for the imposition of these conditions are as follows:

Condition 1

Notification of the homeowners is necessary to ensure they are aware of the impending discharge.

Condition 2

The effluent criteria relating BOD₅, Suspended Solids and Ammonia plus Ammonia Nitrogen are being imposed to prevent discharges of inadequately treated sewage. The concentration parameters are compatible with the proposed treatment system under normal operating and loading conditions.

The effluent criteria relating to Total Phosphorus concentration comply with the policy of the Ministry of the Environment to reduce nutrients loading to the Great Lakes Basin so as to minimize the nuisance growth of aquatic plant and algae.

Condition 3

The condition relating to the routine sampling program and analysis is being imposed to ensure that all pertinent data are available for the evaluation of the performance of the system and the water pollution control plant is operated and maintained at the level consistent with the design.

You may by written notice served upon me and the Environmental Appeal Board within 15 days after receipt of this Notice, require a hearing by the Board.

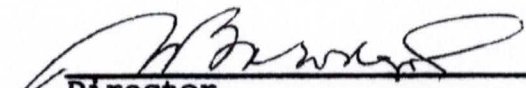
This Notice should be served upon:

**The Secretary,
Environmental Appeal Board,
1 St. Clair Ave. West,
5th Floor,
Toronto, Ontario.
M4V 1K7**

AND

**The Director,
Section 24, O.W.R. Act,
Ministry of the Environment,
135 St. Clair Ave. West,
Toronto, Ontario.
M4V 1P5**

DATED at Toronto this 18th day of November , 19 83.



**Director,
Section 24, O.W.R. Act,
Ministry of the Environment.**



Ministry
of the
Environment
and Energy

Ministère
de
l'Environnement
et de l'Énergie

AMENDMENT TO CERTIFICATE OF APPROVAL
MUNICIPAL SEWAGE

NUMBER 3-1081-83-006

Page 1 of 2



NOTICE OF AMENDMENT

To the Applicant:

The Corporation of the Township of Orillia
R. R. # 4, Box 159
Orillia, Ontario
L3V 6J3

The Applicant is hereby notified that the approval issued under Certificate of Approval No. 3-1081-83-006 dated November 18, 1983 for the construction of a two celled seasonal discharge waste stabilization pond for the Hamlet of Washago on part of Lots 10 and 11, Concession XV, Township of Orillia, is hereby amended as follows:

The Statement, "the magnetic flow meter" of Special Terms and Conditions (2) (e) is hereby revoked;

In substitution for the above revocation, the following is inserted:

"three (3) elapsed time meters with a data logging system and verification of pump rates for the two sewage pumps on a semi-annual basis".

This Notice shall constitute part of the approval issued under Certificate of Approval No. 3-1081-83-006 dated November 18, 1983.

The Applicant may by written notice served upon me and the Environmental Appeal Board within 15 days after receipt of this Notice, require a hearing by the Board. Section 101 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, provides that the Notice requiring the hearing shall state:

1. The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and;
2. The grounds on which the Applicant intends to rely at the hearing in relation to each portion appealed.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the sewage works are located;

And the Notice should be signed and dated by the appellant.



Ontario

Ministry
of the
Environment
and Energy

Ministère
de
l'Environnement
et de l'Énergie

AMENDMENT TO CERTIFICATE OF APPROVAL
MUNICIPAL SEWAGE
NUMBER 3-1081-83-006
Page 2 of 2

This Notice must be served upon:

The Secretary,
Environmental Appeal Board,
112 St. Clair Avenue West,
Suite 502,
Toronto, Ontario.
M4V 1N3

AND

The Director,
Section 53, Ontario Water Resources Act,
Ministry of Environment and Energy,
250 Davisville Avenue, 3rd Floor,
Toronto, Ontario.
M4S 1H2

The above noted sewage works are approved under Section 53 of the Ontario Water Resources Act.

DATED AT TORONTO this 30th day of June, 1993.

W. Gregson, P. Eng.
Director
Section 53
Ontario Water Resources Act

GL/nk

Att: Mr. J. B. Mather, Clerk, Twp. of Orillia
cc: Mr. G. Carpentier, Supervisor, Approvals & Pesticides Management
Mr. D.G. Carr, P. Eng., Ainley and Associates Ltd.



Whereas / Attendu que

TOWNSHIP OF ORILLIA

of / d

has applied in accordance with Section 24 of the Ontario Water Resources Act for approval of:

a fait, conformément à l'article 24 de la loi sur les ressources en eau de l'Ontario, une demande d'autorisation:

a new 250 mm diameter polyethylene effluent outfall from the existing two celled seasonal discharge waste stabilization pond located approximately 1700 m north and northwest of Hamilton Street, Washago (Part of Lots 10 and 11, Concession XV, Township of Orillia) consisting of approximately 225 m of Series 45 butt-fused outfall following the existing ground profile together with a gate valve box shut-off terminations at Highway No. 11 immediately north of the Severn River,

all in accordance with the detailed drawing and supporting information prepared by Reid and Associates Limited, Consulting Engineers, at a total estimated cost, including engineering and contingencies, of SEVENTEEN THOUSAND DOLLARS (\$17,000.00).



Now therefore this is to certify that after due enquiry the said proposed works have been approved under Section 24 of the Ontario Water Resources Act.

Le présent document certifie qu'après vérification en bonne et due forme la construction dudit projet d'ouvrages a été approuvée aux termes de l'article 24 de la loi sur les ressources en eau de l'Ontario.

DATED AT TORONTO this 24th day of April 1986

DATÉ À TORONTO ce

jour d

Attn: Mr. J.B. Mather, Clerk, Township of Orillia

cc: Mr. J.C. Ferguson, Twp. Engineer

Mr. G. Mierzynski, MOE C, Reg. Dir.

Reid & Associates Ltd.

.....
Director / Directeur



RECEIVED

AUG 8 1975

REID & ASSOC. LTD.

Atten: Mr. W.A. Marshall
cc: J.D. Reid and Assoc. Ltd.
Mr. P. Cockburn (MOE Central
Region)
Mr. J. Toth (MOE Tech.
Svc. Br.)

MINISTRY OF THE ENVIRONMENT

SEWAGE WORKS APPROVAL

/aw

Whereas THE PROVINCE OF ONTARIO

of

has applied in accordance with Section 42 of The Ontario Water Resources Act for approval of: -

construction of a sanitary sewerage works system to serve the Township of Orillia (Community of Washago) as follows:

<u>STREET</u>	<u>FROM</u>	<u>TO</u>
Easement	Sanitary sewers Rama St. (Hwy. #69)	approx. 500' S. of Rama St. (Proposed Sewage Pumping Station No.2)
Easement	approx. 160' N. of Rama St.	approx. 1140' N. of Edgar St.
Easement	approx. 300' S. of Hamilton St.	approx. 1700' N. of Hamilton St.
Hamilton St. and Easement	approx. 200' W. of Muskoka St. (Easement)	approx. 300' E. of Muskoka St. (Severn River)
Easement parallel to Severn River	Hamilton St. Easement	Edgar St.
Edgar St.	approx. 200' E. of Muskoka St. (proposed Sewage Pumping Station No. 1)	approx. 630' E. of Muskoka St.
Forcemains		
Easement	Edgar St. (proposed Sewage Pumping Station No. 1)	Hamilton St.
Hamilton Street	Easement	approx. 400' W. of Muskoka St. (Easement)
Easement	Hamilton St.	approx. 1850' N. of Hamilton St. (Proposed Sewage Treatment Plant)

Now Therefore this is to certify that after due enquiry the said proposed works have been approved under Section 42 of The Ontario Water Resources Act.

continued:

DATED AT TORONTO this 1st day of August 19 75

Director

continued:



PRELIMINARY APPROVAL for purpose of facilitating works herein set out - not to be regarded as fulfilling requirements of this Act. Final certificate will be issued when detailed plans and specifications are approved.

MINISTRY OF THE ENVIRONMENT

SEWAGE WORKS APPROVAL

Whereas

of

- 2 -

has applied in accordance with Section 42 of The Ontario Water Resources Act for approval of: -

construction of a sanitary sewerage works system to serve the Township of Orillia (Community of Washago) (continued: -)

<u>STREET</u>	<u>FROM</u>	<u>TO</u>
Easement	Proposed Sewage Pumping Station #2	approx. 180' N.
 <u>Outfall sewer</u>		
Easement	Proposed Sewage Treatment Plant	West Branch of Severn River

including building sewers from the main sewer to the street line together with the construction of two (2) sewage pumping stations as follows:

Sewage Pumping Station No. 1 - to be located at the west end of Edgar Street approx. 400' N. of Albany St. and to be equipped with two (2) 183 IGPM submersible type raw sewage pumps a standby diesel generator, an emergency overflow to the Severn River and all necessary appurtenances and controls,

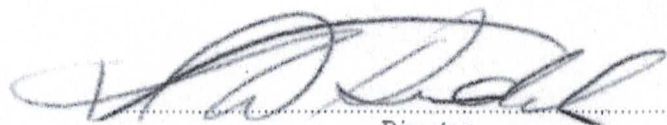
Sewage Pumping Station No. 2 - to be located on the south side of Rama St. approx. 150' E. of Muskoka St. and to be equipped with one (1) 81 IGPM submersible type raw sewage pump, an emergency overflow to the adjacent sanitary sewers and all necessary appurtenances and controls,

Sewage Treatment Plant - to be located approx. 1725' N. of Hamilton St. on the E. side of Hwy. #11 (Part Orillia Island, Twp. of Orillia) and consisting of a 50,000 IGPD extended aeration sewage treatment plant c/w influent works, grit channels, an aeration tank, a final clarifier; effluent chlorination; phosphorus removal facilities, a control building and all necessary appurtenances and controls with effluent discharge to the West Branch Severn River, all in accordance with the report prepared

Now Therefore this is to certify that after due enquiry the said proposed works have been approved under Section 42 of The Ontario Water Resources Act.

continued:

DATED AT TORONTO this 1st day of August 19 75


Director



MINISTRY OF THE ENVIRONMENT
SEWAGE WORKS APPROVAL

Whereas

of

- 3 -

has applied in accordance with Section 42 of The Ontario Water Resources Act for approval of: -

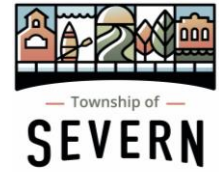
by J.D. Reid and Associates Limited, Consulting Engineers, at a total estimated cost, including land charges, engineering and contingencies, of FIVE HUNDRED FORTY SIX THOUSAND NINE HUNDRED AND SIXTY DOLLARS (\$546,960.00),

PRELIMINARY APPROVAL for purpose of facilitating works herein set out - not to be regarded as fulfilling requirements of this Act. Final certificate will be issued when detailed plans and specifications are approved.

Now Therefore this is to certify that after due enquiry the said proposed works have been approved under Section 42 of The Ontario Water Resources Act.

DATED AT TORONTO this **1st** day of **August** 19**75**


Director



Appendix B

Municipality Monitoring Program Mechanical Plants Forms

Fields marked with an asterisk (*) are mandatory.

Project Name
Washago Lagoon

Facility Address

Unit Number	Street Number 1021	Street Name Hurlwood Lane	PO Box 159
Municipality/City/Town Orillia		Province ON - Ontario	Postal Code L3V 6J3
Operating Authority The Corporation of the Township of Severn			

Mailing Address

Unit Number	Street Number 1021	Street Name Hurlwood Lane	PO Box 159
Municipality/City/Town Orillia		Province ON - Ontario	Postal Code L3V 6J3

File No.	Works Number *	Data Period *		Days	Discharge Type	Update Code
4 6	1 2 0 0 0 2 2 7 3	Month	Year	3 1	2	R
1 2	3 11	0 1 2 0 2 3	16 19	20 21	22	80

C.P.						
3 5	Flows		Parameter Code	Dec.	Monthly Results	
12 13	Total Flow (10 ³ m ³)	50010	3	4.819		
	Average Daily Flow (10 ³ m ³ /d)	50015	3	0.115		
	Maximum Daily Flow (10 ³ m ³ /d)	50020	3			
		30 34	35 38	46		
3 5	Bypass					# of Occurrences
12 13	Plant Bypass Volume (10 ³ m ³)	50270	3			
	Duration (hours)	81680	1			
		30 34	35 38			
3 6	Raw Sewage					# of Samples
12 13	BOD ₅ (mg/L)	00001	0	170		1
	Suspended Solids (mg/L)	00006	0	155		1
	TKN (mg/L)	00020	2	23.40		1
	Total Phosphorus (mg/L)	00033	1	2.3		1
		30 34	35 38	48 51		
3 9	Final Effluent					
12 13	Total Effl. Volume To Watercourse (10 ³ m ³)	50280	3			
	Flow Duration (hours)	81680	1			
	Cell Depth (m)	50290	1			
	CBOD ₅ (mg/L)	00002	1			
	BOD ₅ (mg/L)	00001	1			
	Suspended Solids (mg/L)	00006	1			
	Ammonia + Ammonium (mg/L)	00019	2			
	TKN (mg/L)	00020	2			
	Total Phosphorus (mg/L)	00033	2			
		30 34	35 38	48 51		
0 9	Disinfection					
12 13	Chlorine Used (kg as Cl ₂)	50320	1			
	Chlorine Dosage (mg/L as Cl ₂)	80410	1			
	Chlorine Residual (mg/L as Cl ₂)	80420	1			
		30 34	35 38	48 51		

Operator Telephone Number
705-345-1841

Operator Email Address *
tdrouin@severn.ca

Comments

Return completed form to:

- Environmental Monitoring and Reporting Branch, MECP, at WasteWaterReporting@ontario.ca And
 - Your Environmental Officer at your local District/Area MECP Office.
- Ministry Contact Email Address *
Peter.Vreugdenhil@ontario.ca

Fields marked with an asterisk (*) are mandatory.

Project Name
Washago Lagoon

Facility Address

Unit Number	Street Number 1021	Street Name Hurlwood Lane	PO Box 159
Municipality/City/Town Orillia		Province ON - Ontario	Postal Code L3V 6J3
Operating Authority The Corporation of the Township of Severn			

Mailing Address

Unit Number	Street Number 1021	Street Name Hurlwood Lane	PO Box 159
Municipality/City/Town Orillia		Province ON - Ontario	Postal Code L3V 6J3

File No.	Works Number *	Data Period *	Days	Discharge Type	Update Code
4 6	1 2 0 0 0 2 2 7 3	Month: 0 2 2 0 2 3 Year: 0 2 2 0 2 3	2 8	2	R
1 2	3 11	16 19	20 21	22	80

C.P.						
3 5	Flows	Parameter Code	Dec.	Monthly Results		
12 13	Total Flow (10 ³ m ³)	50010	3	2.827		
	Average Daily Flow (10 ³ m ³ /d)	50015	3	0.100		
	Maximum Daily Flow (10 ³ m ³ /d)	50020	3			
3 5	Bypass	Parameter Code	Dec.			# of Occurrences
12 13	Plant Bypass Volume (10 ³ m ³)	50270	3			
	Duration (hours)	81680	1			
3 6	Raw Sewage	Parameter Code	Dec.			# of Samples
12 13	BOD ₅ (mg/L)	00001	0	266		1
	Suspended Solids (mg/L)	00006	0	279		1
	TKN (mg/L)	00020	2	45.20		1
	Total Phosphorus (mg/L)	00033	1	5.4		1
3 9	Final Effluent	Parameter Code	Dec.			
12 13	Total Effl. Volume To Watercourse (10 ³ m ³)	50280	3			
	Flow Duration (hours)	81680	1			
	Cell Depth (m)	50290	1			
	CBOD ₅ (mg/L)	00002	1			
	BOD ₅ (mg/L)	00001	1			
	Suspended Solids (mg/L)	00006	1			
	Ammonia + Ammonium (mg/L)	00019	2			
	TKN (mg/L)	00020	2			
	Total Phosphorus (mg/L)	00033	2			
0 9	Disinfection	Parameter Code	Dec.			
12 13	Chlorine Used (kg as Cl ₂)	50320	1			
	Chlorine Dosage (mg/L as Cl ₂)	80410	1			
	Chlorine Residual (mg/L as Cl ₂)	80420	1			

Operator Telephone Number
705-345-1841

Operator Email Address *
tdrouin@severn.ca

Comments

Return completed form to:

- Environmental Monitoring and Reporting Branch, MECP, at WasteWaterReporting@ontario.ca And
 - Your Environmental Officer at your local District/Area MECP Office.
- Ministry Contact Email Address *
Peter.Vreugdenhil@ontario.ca

Fields marked with an asterisk (*) are mandatory.

Project Name
Washago Lagoon

Facility Address

Unit Number	Street Number 1021	Street Name Hurlwood Lane	PO Box 159
Municipality/City/Town Orillia		Province ON - Ontario	Postal Code L3V 6J3

Operating Authority
The Corporation of the Township of Severn

Mailing Address

Unit Number	Street Number 1021	Street Name Hurlwood Lane	PO Box 159
Municipality/City/Town Orillia		Province ON - Ontario	Postal Code L3V 6J3

File No.	Works Number *										Data Period *					Days	Discharge Type	Update Code		
	1	2	3	4	5	6	7	8	9	10	11	Month	Year						20	21
4 6	1	2	0	0	0	2	2	7	3		0	3	2	0	2	3	3	1	2	R

C.P.

3 5

Flows	Parameter Code	Dec.	Monthly Results
Total Flow (10 ³ m ³)	50010	3	3.245
Average Daily Flow (10 ³ m ³ /d)	50015	3	0.105
Maximum Daily Flow (10 ³ m ³ /d)	50020	3	

3 5

Bypass	Parameter Code	Dec.	# of Occurrences
Plant Bypass Volume (10 ³ m ³)	50270	3	
Duration (hours)	81680	1	

3 6

Raw Sewage	Parameter Code	Dec.	Monthly Results	# of Samples
BOD ₅ (mg/L)	00001	0	215	1
Suspended Solids (mg/L)	00006	0	176	1
TKN (mg/L)	00020	2	39.70	1
Total Phosphorus (mg/L)	00033	1	4.6	1

3 9

Final Effluent	Parameter Code	Dec.	Monthly Results	# of Samples
Total Effl. Volume To Watercourse (10 ³ m ³)	50280	3		
Flow Duration (hours)	81680	1		
Cell Depth (m)	50290	1		
CBOD ₅ (mg/L)	00002	1		
BOD ₅ (mg/L)	00001	1		
Suspended Solids (mg/L)	00006	1		
Ammonia + Ammonium (mg/L)	00019	2		
TKN (mg/L)	00020	2		
Total Phosphorus (mg/L)	00033	2		

0 9

Disinfection	Parameter Code	Dec.	Monthly Results	# of Samples
Chlorine Used (kg as Cl ₂)	50320	1		
Chlorine Dosage (mg/L as Cl ₂)	80410	1		
Chlorine Residual (mg/L as Cl ₂)	80420	1		

Operator Telephone Number
705-345-1841

Operator Email Address *
tdrouin@severn.ca

Comments

Return completed form to:

1. Environmental Monitoring and Reporting Branch, MECP, at WasteWaterReporting@ontario.ca And
2. Your Environmental Officer at your local District/Area MECP Office.

Ministry Contact Email Address *
Peter.Vreugdenhil@ontario.ca

Fields marked with an asterisk (*) are mandatory.

Project Name
Washago Lagoon

Facility Address

Unit Number	Street Number 1021	Street Name Hurlwood Lane	PO Box 159
Municipality/City/Town Orillia		Province ON - Ontario	Postal Code L3V 6J3
Operating Authority The Corporation of the Township of Severn			

Mailing Address

Unit Number	Street Number 1021	Street Name Hurlwood Lane	PO Box 159
Municipality/City/Town Orillia		Province ON - Ontario	Postal Code L3V 6J3

File No.	Works Number *	Data Period *		Days	Discharge Type	Update Code
4 6	1 2 0 0 0 2 2 7 3	Month	Year	3 0	2	R
1 2	3 11	0 4	2 0 2 3	20 21	22	80

C.P.			Dec.		
3 5	Flows	Parameter Code	3	Monthly Results	
12 13	Total Flow (10 ³ m ³)	50010	3	6.662	
	Average Daily Flow (10 ³ m ³ /d)	50015	3	0.222	
	Maximum Daily Flow (10 ³ m ³ /d)	50020	3		
3 5	Bypass			# of Occurrences	
12 13	Plant Bypass Volume (10 ³ m ³)	50270	3		
	Duration (hours)	81680	1		
3 6	Raw Sewage			# of Samples	
12 13	BOD ₅ (mg/L)	00001	0	26	
	Suspended Solids (mg/L)	00006	0	185	
	TKN (mg/L)	00020	2	8.80	
	Total Phosphorus (mg/L)	00033	1	0.7	
3 9	Final Effluent				
12 13	Total Effl. Volume To Watercourse (10 ³ m ³)	50280	3		
	Flow Duration (hours)	81680	1		
	Cell Depth (m)	50290	1		
	CBOD ₅ (mg/L)	00002	1		
	BOD ₅ (mg/L)	00001	1		
	Suspended Solids (mg/L)	00006	1		
	Ammonia + Ammonium (mg/L)	00019	2		
	TKN (mg/L)	00020	2		
	Total Phosphorus (mg/L)	00033	2		
0 9	Disinfection				
12 13	Chlorine Used (kg as Cl ₂)	50320	1		
	Chlorine Dosage (mg/L as Cl ₂)	80410	1		
	Chlorine Residual (mg/L as Cl ₂)	80420	1		

Operator Telephone Number
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Comments

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2. Your Environmental Officer at your local District/Area MECP Office.

Ministry Contact Email Address *
Peter.Vreugdenhil@ontario.ca

Project Name
Washago Lagoon

Facility Address

Unit Number	Street Number 1021	Street Name Hurlwood Lane	PO Box 159
-------------	-----------------------	------------------------------	---------------

Municipality/City/Town Orillia	Province ON - Ontario	Postal Code L3V 6J3
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 Operating Authority
The Corporation of the Township of Severn

Mailing Address

Unit Number	Street Number 1021	Street Name Hurlwood Lane	PO Box 159
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Municipality/City/Town Orillia	Province ON - Ontario	Postal Code L3V 6J3
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File No.	Works Number *	Data Period *		Days	Discharge Type	Update Code
4 6	1 2 0 0 0 2 2 7 3	Month	Year	3 0	2	R
1 2	3 11	0 4	2 0 2 3	16 19	20 21	22 80

C.P.					
3 6	Raw Sewage	Parameter Code	Dec	Monthly Average Results	# of Samples
12 13					

3 9	Final Effluent	Parameter Code	Dec	Monthly Average Results	# of Samples
12 13					
	Alkalinity, Total (mg/L)	00051	4		
	Conductivity 25°C (µS/cm)	91004	4		
	E. Coli (CT/100ml)	91000	4		
	Nitrate, Unfiltered reactive (mg/L)	00022	4		
	Nitrite, Unfiltered reactive (mg/L)	00021	4		
	pH	80770	4		
	Temperature, Water (°C)	80250	4		
	Un-ionized Ammonia (mg/L)	91012	4		
	Dissolved Oxygen (mg/L)	00003	4		
	Hydrogen Sulphide (mg/L)	83008	4		

 Operator Telephone Number
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 Operator Email Address
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Project Name
Washago Lagoon

Facility Address

Unit Number	Street Number 1021	Street Name Hurlwood Lane	PO Box 159
Municipality/City/Town Orillia		Province ON - Ontario	Postal Code L3V 6J3

Operating Authority
The Corporation of the Township of Severn

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File No.	Works Number *	Data Period *		Days	Discharge Type	Update Code
4 6	1 2 0 0 0 2 2 7 3	Month	Year	3 1	2	R
1 2	3 11	0 5	2 0 2 3	20 21	22	80

C.P.						
3 5	Flows		Parameter Code	Dec.	Monthly Results	
12 13	Total Flow	(10 ³ m ³)	50010	3	4.270	
	Average Daily Flow	(10 ³ m ³ /d)	50015	3	0.137	
	Maximum Daily Flow	(10 ³ m ³ /d)	50020	3		
			30 34	35 38	46	
3 5	Bypass				# of Occurrences	
12 13	Plant Bypass Volume	(10 ³ m ³)	50270	3		
	Duration	(hours)	81680	1		
			30 34	35 38		
3 6	Raw Sewage				# of Samples	
12 13	BOD ₅	(mg/L)	00001	0	172	
	Suspended Solids	(mg/L)	00006	0	128	
	TKN	(mg/L)	00020	2	38.50	
	Total Phosphorus	(mg/L)	00033	1	4.9	
			30 34	35 38	48 51	
3 9	Final Effluent					
12 13	Total Effl. Volume To Watercourse (10 ³ m ³)		50280	3	22.931	
	Flow Duration	(hours)	81680	1	101.0	
	Cell Depth	(m)	50290	1		
	CBOD ₅	(mg/L)	00002	1		
	BOD ₅	(mg/L)	00001	1	6.7	
	Suspended Solids	(mg/L)	00006	1	4.0	
	Ammonia + Ammonium	(mg/L)	00019	2	2.80	
	TKN	(mg/L)	00020	2	4.20	
	Total Phosphorus	(mg/L)	00033	2	0.10	
			30 34	35 38	48 51	
0 9	Disinfection					
12 13	Chlorine Used	(kg as Cl ₂)	50320	1		
	Chlorine Dosage	(mg/L as Cl ₂)	80410	1		
	Chlorine Residual	(mg/L as Cl ₂)	80420	1		
			30 34	35 38	48 51	

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File No.	Works Number *								Data Period *			Days	Discharge Type	Update Code				
4 6 1 2	1	2	0	0	0	2	2	7	3	0	5	2	0	2	3	3 1 20 21	2 22	R 80

C.P.	3 6 12 13	Raw Sewage	Parameter Code	Dec	Monthly Average Results	# of Samples
		PH				
		Temp				

3 9 12 13	Final Effluent	Parameter Code	Dec	Monthly Average Results	# of Samples
	Alkalinity, Total (mg/L)	00051	4	105.0000	4
	Conductivity 25°C (µS/cm)	91004	4		
	E. Coli (CT/100ml)	91000	4		
	Nitrate, Unfiltered reactive (mg/L)	00022	4		
	Nitrite, Unfiltered reactive (mg/L)	00021	4		
	pH	80770	4	7.8300	4
	Temperature, Water (°C)	80250	4	11.5000	4
	Un-ionized Ammonia (mg/L)	91012	4		
	Dissolved Oxygen (mg/L)	00003	4		
	Hydrogen Sulphide (mg/L)	83008	4		

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File No.	Works Number *	Data Period *		Days	Discharge Type	Update Code
4 6	1 2 0 0 0 2 2 7 3	Month	Year	3 0	2	R
1 2	3 11	0 6	2 0 2 3	20 21	22	80

C.P.						
3 5	Flows		Parameter Code	Dec.	Monthly Results	
12 13	Total Flow (10 ³ m ³)		50010	3	3.330	
	Average Daily Flow (10 ³ m ³ /d)		50015	3	0.111	
	Maximum Daily Flow (10 ³ m ³ /d)		50020	3		
			30 34	35 38	38 46	
3 5	Bypass					# of Occurrences
12 13	Plant Bypass Volume (10 ³ m ³)		50270	3		
	Duration (hours)		81680	1		
			30 34	35 38		
3 6	Raw Sewage					# of Samples
12 13	BOD ₅ (mg/L)		00001	0	238	1
	Suspended Solids (mg/L)		00006	0	227	1
	TKN (mg/L)		00020	2	40.00	1
	Total Phosphorus (mg/L)		00033	1	3.9	1
			30 34	35 38	48 51	
3 9	Final Effluent					
12 13	Total Effl. Volume To Watercourse (10 ³ m ³)		50280	3		
	Flow Duration (hours)		81680	1		
	Cell Depth (m)		50290	1		
	CBOD ₅ (mg/L)		00002	1		
	BOD ₅ (mg/L)		00001	1		
	Suspended Solids (mg/L)		00006	1		
	Ammonia + Ammonium (mg/L)		00019	2		
	TKN (mg/L)		00020	2		
	Total Phosphorus (mg/L)		00033	2		
			30 34	35 38	48 51	
0 9	Disinfection					
12 13	Chlorine Used (kg as Cl ₂)		50320	1		
	Chlorine Dosage (mg/L as Cl ₂)		80410	1		
	Chlorine Residual (mg/L as Cl ₂)		80420	1		
			30 34	35 38	48 51	

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File No.	Works Number *	Data Period *	Days	Discharge Type	Update Code
4 6 1 2	1 2 0 0 0 2 2 7 3 3 11	0 6 2 0 2 3 16 19	3 0 20 21	2 22	R 80

C.P.	Raw Sewage	Parameter Code	Dec	Monthly Average Results	# of Samples
3 6 12 13					

3 9 12 13	Final Effluent	Parameter Code	Dec	Monthly Average Results	# of Samples
	Alkalinity, Total (mg/L)	00051	4		
	Conductivity 25°C (µS/cm)	91004	4		
	E. Coli (CT/100ml)	91000	4		
	Nitrate, Unfiltered reactive (mg/L)	00022	4		
	Nitrite, Unfiltered reactive (mg/L)	00021	4		
	pH	80770	4		
	Temperature, Water (°C)	80250	4		
	Un-ionized Ammonia (mg/L)	91012	4		
	Dissolved Oxygen (mg/L)	00003	4		
	Hydrogen Sulphide (mg/L)	83008	4		

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File No.	Works Number *	Data Period *		Days	Discharge Type	Update Code
4 6	1 2 0 0 0 2 2 7 3	Month	Year	3 1	2	R
1 2	3 11	0 7	2 0 2 3	20 21	22	80

C.P.	Flows	Parameter Code	Dec.	Monthly Results
3 5	Total Flow (10 ³ m ³)	50010	3	4.820
12 13	Average Daily Flow (10 ³ m ³ /d)	50015	3	0.160
	Maximum Daily Flow (10 ³ m ³ /d)	50020	3	
		30 34	35	38 46

3 5	Bypass	Parameter Code	Dec.	# of Occurrences
12 13	Plant Bypass Volume (10 ³ m ³)	50270	3	
	Duration (hours)	81680	1	
		30 34	35	38

3 6	Raw Sewage	Parameter Code	Dec.	Monthly Results	# of Samples
12 13	BOD ₅ (mg/L)	00001	0	123	1
	Suspended Solids (mg/L)	00006	0	120	1
	TKN (mg/L)	00020	2	30.00	1
	Total Phosphorus (mg/L)	00033	1	2.7	1
		30 34	35	38	48 51

3 9	Final Effluent	Parameter Code	Dec.	Monthly Results
12 13	Total Effl. Volume To Watercourse (10 ³ m ³)	50280	3	
	Flow Duration (hours)	81680	1	
	Cell Depth (m)	50290	1	
	CBOD ₅ (mg/L)	00002	1	
	BOD ₅ (mg/L)	00001	1	
	Suspended Solids (mg/L)	00006	1	
	Ammonia + Ammonium (mg/L)	00019	2	
	TKN (mg/L)	00020	2	
	Total Phosphorus (mg/L)	00033	2	
		30 34	35	38 48 51

0 9	Disinfection	Parameter Code	Dec.	Monthly Results
12 13	Chlorine Used (kg as Cl ₂)	50320	1	
	Chlorine Dosage (mg/L as Cl ₂)	80410	1	
	Chlorine Residual (mg/L as Cl ₂)	80420	1	
		30 34	35	38 48 51

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File No.	Works Number *	Data Period *		Days	Discharge Type	Update Code
4 6	1 2 0 0 0 2 2 7 3	Month	Year	3 1	2	R
1 2	3 11	0 8	2 0 2 3	20 21	22	80

C.P.						
3 5	Flows	Parameter Code	Dec.	Monthly Results		
12 13	Total Flow (10 ³ m ³)	50010	3	3.208		
	Average Daily Flow (10 ³ m ³ /d)	50015	3	0.103		
	Maximum Daily Flow (10 ³ m ³ /d)	50020	3			
3 5	Bypass	Parameter Code	Dec.			# of Occurrences
12 13	Plant Bypass Volume (10 ³ m ³)	50270	3			
	Duration (hours)	81680	1			
3 6	Raw Sewage	Parameter Code	Dec.			# of Samples
12 13	BOD ₅ (mg/L)	00001	0	329		1
	Suspended Solids (mg/L)	00006	0	249		1
	TKN (mg/L)	00020	2	31.60		1
	Total Phosphorus (mg/L)	00033	1	3.7		1
3 9	Final Effluent	Parameter Code	Dec.			
12 13	Total Effl. Volume To Watercourse (10 ³ m ³)	50280	3			
	Flow Duration (hours)	81680	1			
	Cell Depth (m)	50290	1			
	CBOD ₅ (mg/L)	00002	1			
	BOD ₅ (mg/L)	00001	1			
	Suspended Solids (mg/L)	00006	1			
	Ammonia + Ammonium (mg/L)	00019	2			
	TKN (mg/L)	00020	2			
	Total Phosphorus (mg/L)	00033	2			
0 9	Disinfection	Parameter Code	Dec.			
12 13	Chlorine Used (kg as Cl ₂)	50320	1			
	Chlorine Dosage (mg/L as Cl ₂)	80410	1			
	Chlorine Residual (mg/L as Cl ₂)	80420	1			

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File No.	Works Number *	Data Period *		Days	Discharge Type	Update Code
4 6	1 2 0 0 0 2 2 7 3	Month	Year	3 0	2	R
1 2	3 11	0 9	2 0 2 3	20 21	22	80

C.P.									
3 5	Flows	Parameter Code	Dec.	Monthly Results					
12 13	Total Flow (10 ³ m ³)	50010	3	3.058					
	Average Daily Flow (10 ³ m ³ /d)	50015	3	0.102					
	Maximum Daily Flow (10 ³ m ³ /d)	50020	3						
3 5	Bypass	Parameter Code	Dec.					# of Occurrences	
12 13	Plant Bypass Volume (10 ³ m ³)	50270	3						
	Duration (hours)	81680	1						
3 6	Raw Sewage	Parameter Code	Dec.					# of Samples	
12 13	BOD ₅ (mg/L)	00001	0	163				1	
	Suspended Solids (mg/L)	00006	0	191				1	
	TKN (mg/L)	00020	2	39.80				1	
	Total Phosphorus (mg/L)	00033	1	4.0				1	
3 9	Final Effluent	Parameter Code	Dec.						
12 13	Total Effl. Volume To Watercourse (10 ³ m ³)	50280	3						
	Flow Duration (hours)	81680	1						
	Cell Depth (m)	50290	1						
	CBOD ₅ (mg/L)	00002	1						
	BOD ₅ (mg/L)	00001	1						
	Suspended Solids (mg/L)	00006	1						
	Ammonia + Ammonium (mg/L)	00019	2						
	TKN (mg/L)	00020	2						
	Total Phosphorus (mg/L)	00033	2						
0 9	Disinfection	Parameter Code	Dec.						
12 13	Chlorine Used (kg as Cl ₂)	50320	1						
	Chlorine Dosage (mg/L as Cl ₂)	80410	1						
	Chlorine Residual (mg/L as Cl ₂)	80420	1						

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File No.	Works Number *	Data Period *		Days	Discharge Type	Update Code
4 6	1 2 0 0 0 2 2 7 3	Month	Year	3 1	2	R
1 2	3 11	1 0 2 0 2 3	16 19	20 21	22	80

C.P.	Flows	Parameter Code	Dec.	Monthly Results
3 5	Total Flow (10 ³ m ³)	50010	3	3.621
12 13	Average Daily Flow (10 ³ m ³ /d)	50015	3	0.116
	Maximum Daily Flow (10 ³ m ³ /d)	50020	3	
		30 34	35	38 46

3 5	Bypass	Parameter Code	Dec.	# of Occurrences
12 13	Plant Bypass Volume (10 ³ m ³)	50270	3	
	Duration (hours)	81680	1	
		30 34	35	38

3 6	Raw Sewage	Parameter Code	Dec.	Monthly Results	# of Samples
12 13	BOD ₅ (mg/L)	00001	0	165	1
	Suspended Solids (mg/L)	00006	0	73	1
	TKN (mg/L)	00020	2	23.20	1
	Total Phosphorus (mg/L)	00033	1	2.7	1
		30 34	35	38	48 51

3 9	Final Effluent	Parameter Code	Dec.	Monthly Results
12 13	Total Effl. Volume To Watercourse (10 ³ m ³)	50280	3	
	Flow Duration (hours)	81680	1	
	Cell Depth (m)	50290	1	
	CBOD ₅ (mg/L)	00002	1	
	BOD ₅ (mg/L)	00001	1	
	Suspended Solids (mg/L)	00006	1	
	Ammonia + Ammonium (mg/L)	00019	2	
	TKN (mg/L)	00020	2	
	Total Phosphorus (mg/L)	00033	2	
		30 34	35	38 48 51

0 9	Disinfection	Parameter Code	Dec.	Monthly Results
12 13	Chlorine Used (kg as Cl ₂)	50320	1	
	Chlorine Dosage (mg/L as Cl ₂)	80410	1	
	Chlorine Residual (mg/L as Cl ₂)	80420	1	
		30 34	35	38 48 51

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File No.	Works Number *	Data Period *		Days	Discharge Type	Update Code
4 6	1 2 0 0 0 2 2 7 3	Month	Year	3 0	2	R
1 2	3 11	1 1	2 0 2 3	20 21	22	80

C.P.	Flows	Parameter Code	Dec.	Monthly Results
3 5	Total Flow (10 ³ m ³)	50010	3	2.972
12 13	Average Daily Flow (10 ³ m ³ /d)	50015	3	0.099
	Maximum Daily Flow (10 ³ m ³ /d)	50020	3	
		30 34	35 38	46

3 5	Bypass	Parameter Code	Dec.	# of Occurrences
12 13	Plant Bypass Volume (10 ³ m ³)	50270	3	
	Duration (hours)	81680	1	
		30 34	35 38	

3 6	Raw Sewage	Parameter Code	Dec.	Monthly Results	# of Samples
12 13	BOD ₅ (mg/L)	00001	0	98	1
	Suspended Solids (mg/L)	00006	0	139	1
	TKN (mg/L)	00020	2	22.20	1
	Total Phosphorus (mg/L)	00033	1	2.3	1
		30 34	35 38	46	48 51

3 9	Final Effluent	Parameter Code	Dec.	Monthly Results	# of Samples
12 13	Total Effl. Volume To Watercourse (10 ³ m ³)	50280	3		
	Flow Duration (hours)	81680	1		
	Cell Depth (m)	50290	1		
	CBOD ₅ (mg/L)	00002	1		
	BOD ₅ (mg/L)	00001	1	17.6	3
	Suspended Solids (mg/L)	00006	1	13.0	3
	Ammonia + Ammonium (mg/L)	00019	2	0.20	3
	TKN (mg/L)	00020	2	1.63	3
	Total Phosphorus (mg/L)	00033	2	0.07	3
		30 34	35 38	46	48 51

0 9	Disinfection	Parameter Code	Dec.	Monthly Results	# of Samples
12 13	Chlorine Used (kg as Cl ₂)	50320	1		
	Chlorine Dosage (mg/L as Cl ₂)	80410	1		
	Chlorine Residual (mg/L as Cl ₂)	80420	1		
		30 34	35 38	46	48 51

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File No.	Works Number *	Data Period *	Days	Discharge Type	Update Code
4 6 1 2	1 2 0 0 0 2 2 7 3 3 11	Month Year 1 1 2 0 2 3 16 19	3 0 20 21	2 22	R 80

C.P.	Raw Sewage	Parameter Code	Dec	Monthly Average Results	# of Samples
3 6 12 13					

3 9 12 13	Final Effluent	Parameter Code	Dec	Monthly Average Results	# of Samples
	Alkalinity, Total (mg/L)	00051	4	114.0000	3
	Conductivity 25°C (µS/cm)	91004	4		
	E. Coli (CT/100ml)	91000	4		
	Nitrate, Unfiltered reactive (mg/L)	00022	4		
	Nitrite, Unfiltered reactive (mg/L)	00021	4		
	pH	80770	4	8.1000	3
	Temperature, Water (°C)	80250	4	10.5000	3
	Un-ionized Ammonia (mg/L)	91012	4		
	Dissolved Oxygen (mg/L)	00003	4		
	Hydrogen Sulphide (mg/L)	83008	4		

Operator Telephone Number
705-345-1841

Operator Email Address
tdrouin@severn.ca

Comments

- Return completed form to:**
1. Environmental Monitoring and Reporting Branch, MECP, at WasteWaterReporting@ontario.ca And
 2. Your Environmental Officer at your local District/Area MECP Office. (Find your local MECP office: <https://www.ontario.ca/environment-and-energy/ministry-environment-district-locator>)

Fields marked with an asterisk (*) are mandatory.

Project Name
Washago Lagoon

Facility Address

Unit Number	Street Number 1021	Street Name Hurlwood Lane	PO Box 159
Municipality/City/Town Orillia		Province ON - Ontario	Postal Code L3V 6J3
Operating Authority The Corporation of the Township of Severn			

Mailing Address

Unit Number	Street Number 1021	Street Name Hurlwood Lane	PO Box 159
Municipality/City/Town Orillia		Province ON - Ontario	Postal Code L3V 6J3

File No.	Works Number *	Data Period *		Days	Discharge Type	Update Code
4 6	1 2 0 0 0 2 2 7 3	Month	Year	3 1	2	R
1 2	3 11	1 2	2 0 2 3	20 21	22	80

C.P.			Parameter Code	Dec.	Monthly Results		
3 5	Flows		50010	3	4.952		
12 13	Total Flow	(10 ³ m ³)	50015	3	0.150		
	Average Daily Flow	(10 ³ m ³ /d)	50020	3			
	Maximum Daily Flow	(10 ³ m ³ /d)					
			30 34	35 38	46		
3 5	Bypass		50270	3		# of Occurrences	
12 13	Plant Bypass Volume	(10 ³ m ³)	81680	1			
	Duration	(hours)					
			30 34	35 38			
3 6	Raw Sewage		00001	0	140	# of Samples	
12 13	BOD ₅	(mg/L)	00006	0	177	1	
	Suspended Solids	(mg/L)	00020	2	17.30	1	
	TKN	(mg/L)	00033	1	2.0	1	
	Total Phosphorus	(mg/L)					
			30 34	35 38	48	51	
3 9	Final Effluent		50280	3	36.894		
12 13	Total Effl. Volume To Watercourse (10 ³ m ³)		81680	1	192.0		
	Flow Duration	(hours)	50290	1	1.5		
	Cell Depth	(m)	00002	1			
	CBOD ₅	(mg/L)	00001	1	26.0	3	
	BOD ₅	(mg/L)	00006	1	21.0	3	
	Suspended Solids	(mg/L)	00019	2	0.46	3	
	Ammonia + Ammonium	(mg/L)	00020	2	2.10	3	
	TKN	(mg/L)	00033	2	0.04	3	
	Total Phosphorus	(mg/L)					
			30 34	35 38	48	51	
0 9	Disinfection		50320	1			
12 13	Chlorine Used	(kg as Cl ₂)	80410	1			
	Chlorine Dosage	(mg/L as Cl ₂)	80420	1			
	Chlorine Residual	(mg/L as Cl ₂)					
			30 34	35 38	48	51	

Operator Telephone Number
705-345-1841

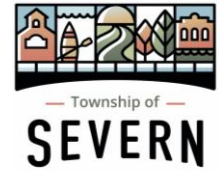
Operator Email Address *
tdrouin@severn.ca

Comments

Return completed form to:

1. Environmental Monitoring and Reporting Branch, MECP, at WasteWaterReporting@ontario.ca And
2. Your Environmental Officer at your local District/Area MECP Office.

Ministry Contact Email Address *
Peter.Vreugdenhil@ontario.ca



Appendix C

Sewage Pump Station Draw Down Tests

Pump Drawdown Test Results at Pumping Station #1 in Washago

Completed: April 20/2023
 Performed By Silas Smith

Data:

Influent

Influent testing completed immediately before and after each trial for the pump drawdown. The increase in waste collected from an initial starting point over a 1 minute period. Results shown are in inches.

Drawdown

Drawdown testing was completed by measuring the drop of waste from an initial starting point over a 1 minute period. Results shown are in inches.

	Trial No.	Influent			Drawdown		
		Initial	Final	Result	Initial	Final	Result
Pump 1	1	0.53	0.57	0.04	0.576	0.39	0.17
	2	0.55	0.58	0.03	0.60	0.47	0.16.13
	3	0.58	0.560	0.02	0.60	0.48	0.12
Pump 2	1	0.54	0.56	0.02	0.59	0.46	0.13
	2	0.56	0.58	0.02	0.60	0.42	0.18
	3	0.54	0.57	0.03	0.59	0.44	0.15

Volume Calculations:

$$\begin{aligned}
 V &= \pi r^2 h, \text{ where } r = 1.2 \text{ m and} \\
 & \quad h = \frac{\text{drawdown result (inches)} \times 0.0254 \text{ m/inch}}{1 \text{ minute}} \\
 &= 4.5216 \text{ h} \times \frac{1000 \text{ litres}}{60 \text{ seconds}} \\
 &= (1.914144) \times \text{result (inches)}
 \end{aligned}$$

Pump Capacity:

$$V_{\text{total}} = V_{\text{pump}} + V_{\text{influent}}$$

Results:

Using the calculations shown above, the results of the average pump capacity of the pumps are indicated in L/s.

	Trial 1	Trial 2	Trial 3	Average
Pump 1	15.90	14.31	10.54	13.55
Pump 2	11.29	15.06	13.55	13.30

Therefore the pump capacity of Pump 1 is 12.76 L/s and Pump 2 is 11.96 L/s.

Prepared On:

Prepared By:

Signature: _____





WASTEWATER COLLECTION

Title:	Pump Station Drawdown
Revision #:	2
Implementation Date:	October 13, 2004
Review/Update Date:	March 1, 2023
Approved By:	Tony Drouin

Pump Station Drawdown Record

Pump Station: Washago PS#1 Date: Sept 27/23

	Trial No.	INFLUENT			DRAWDOWN		
		Initial	Final	Result	Initial	Final	Result
Pump 1	1	109	108.5	0.5	108.5	117	8.5
	2	115	114.5	0.5	114.5	122.5	8.0
	3						
Pump 2	1	105	104	1.0	103.5	110	6.5
	2	111	110.5	0.5	110.5	118.5	8.0
	3						

Completed by: M West / S Smith Measured in: Inches

Pump Station: _____ Date: _____

	Trial No.	INFLUENT			DRAWDOWN		
		Initial	Final	Result	Initial	Final	Result
Pump 1	1						
	2						
	3						
Pump 2	1						
	2						
	3						

Completed by: _____ Measured in: _____

PUMP STATION DRAWDOWN CALCULATIONS

Washago

Areas to be Filled

Volume & Flow Calculations

1 inch = 0.0254 m or 1 m = 39.3701 inches

$$V_{\text{pump}} = \pi r^2 h$$

where r = 1/2 diameter (m)

h = m/min

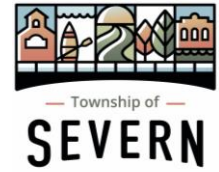
Flow = ## x 1000 litres/60 sec.

Diameter: 2.4 m (94 in) Radius: 1.2 m

Pump	Trial #	Influent		Drawdown		Total (m)	Avg. (m)	Flow (L/s)
		Result (m)	Result (m)	Result (m)	Result (m)			
Pump 1	1	0.01	0.22	0.23				
	2	0.01	0.20	0.22	0.222		16.757	
	3			0.00				
Pump 2	1	0.03	0.17	0.19	0.203			
	2	0.01	0.20	0.22			15.321	
	3			0.00				

Main W/O

$V_{\text{pump}} = 1.005$	m ³ /min
Flow = 16.757	L/s
$V_{\text{pump}} = 0.919$	m ³ /min
Flow = 15.321	L/s



Appendix D

Laboratory Analysis Reports



SGS Canada Inc.

P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - K0L 2H0
Phone: 705-652-2000 FAX: 705-652-6365

04-May-2023

Twp of Severn (Washago STP)

Attn : Tony Drouin

Date Rec. : 28 April 2023
LR Report: CA15895-APR23

P.O. Box 159
Orillia, ON
L3V 6J3, Canada

Copy: #2

Phone: 705-345-1841 (cell)
Fax:705-325-1247

CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Client Limits	6: Washago Lagoon
Sample Date & Time						27-Apr-23 09:25
Temperature Upon Receipt [°C]	---	---	---	---	---	7.0
Biochemical Oxygen Demand (BOD5) [mg/L]	28-Apr-23	13:32	03-May-23	16:08	25	7
Total Suspended Solids [mg/L]	28-Apr-23	15:25	01-May-23	14:58	25	8
pH [No unit]	01-May-23	08:08	02-May-23	09:32		7.90
Alkalinity [mg/L as CaCO3]	01-May-23	08:08	02-May-23	09:32		101
Phosphorus (total) [mg/L]	28-Apr-23	14:33	30-Apr-23	08:18	1	0.05
Total Kjeldahl Nitrogen [as N mg/L]	28-Apr-23	17:34	30-Apr-23	07:14	---	4.3
Ammonia+Ammonium (N) [as N mg/L]	28-Apr-23	15:55	29-Apr-23	13:33		2.7

Patti Stark
Project Specialist,
Environment, Health & Safety



SGS Canada Inc.

P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

10-May-2023

Twp of Severn (Washago STP)

Attn : Tony Drouin

Date Rec. : 05 May 2023
LR Report: CA12298-MAY23

P.O. Box 159
Orillia, ON
L3V 6J3, Canada

Copy: #1

Phone: 705-345-1841 (cell)
Fax:705-325-1247

CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Client Limits	6: Washago Lagoon
Sample Date & Time						04-May-23 11:00
Temperature Upon Receipt [°C]	---	---	---	---	---	13.0
Biochemical Oxygen Demand (BOD5) [mg/L]	05-May-23	15:27	10-May-23	13:42	25	< 4
Total Suspended Solids [mg/L]	07-May-23	14:07	08-May-23	14:53	25	2
pH [No unit]	05-May-23	16:07	08-May-23	13:17		7.99
Alkalinity [mg/L as CaCO3]	05-May-23	16:07	08-May-23	13:17		110
Phosphorus (total) [mg/L]	06-May-23	13:43	08-May-23	12:44	1	0.12
Total Kjeldahl Nitrogen [as N mg/L]	09-May-23	06:40	10-May-23	08:34	---	3.6
Ammonia+Ammonium (N) [as N mg/L]	06-May-23	13:13	08-May-23	10:59		2.8

Patti Stark
Project Specialist,
Environment, Health & Safety



SGS Canada Inc.

P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

08-May-2023

Twp of Severn (Washago STP)

Attn : Tony Drouin

Date Rec. : 01 May 2023
LR Report: CA14030-MAY23

P.O. Box 159
Orillia, ON
L3V 6J3, Canada

Copy: #1

Phone: 705-345-1841 (cell)
Fax:705-325-1247

CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Client Limits	6: Washago Lagoon
Sample Date & Time						01-May-23 09:30
Temperature Upon Receipt [°C]	---	---	---	---	---	7.0
Biochemical Oxygen Demand (BOD5) [mg/L]	02-May-23	16:20	08-May-23	10:41	25	12
Total Suspended Solids [mg/L]	03-May-23	11:04	04-May-23	12:02	25	4
pH [No unit]	02-May-23	07:51	03-May-23	09:47	---	7.79
Alkalinity [mg/L as CaCO3]	02-May-23	07:51	03-May-23	09:47	---	105
Phosphorus (total) [mg/L]	02-May-23	16:13	03-May-23	08:46	1	0.06
Total Kjeldahl Nitrogen [as N mg/L]	03-May-23	14:48	04-May-23	12:18	---	3.8
Ammonia+Ammonium (N) [as N mg/L]	02-May-23	20:30	03-May-23	10:00	---	2.4

Patti Stark
Project Specialist,
Environment, Health & Safety



SGS Canada Inc.

P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - K0L 2H0
Phone: 705-652-2000 FAX: 705-652-6365

24-May-2023

Twp of Severn (Washago STP)

Attn : Tony Drouin

Date Rec. : 12 May 2023
LR Report: CA13469-MAY23

P.O. Box 159
Orillia, ON
L3V 6J3, Canada

Copy: #1

Phone: 705-345-1841 (cell)
Fax:705-325-1247

CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Client Limits	6: Washago Lagoon
Sample Date & Time						11-May-23 09:20
Temperature Upon Receipt [°C]	---	---	---	---	---	19.0
Biochemical Oxygen Demand (BOD5) [mg/L]	12-May-23	17:54	17-May-23	14:22	25	< 4
Total Suspended Solids [mg/L]	18-May-23	08:33	19-May-23	09:50	25	2
pH [No unit]	15-May-23	06:17	15-May-23	13:44		7.65
Alkalinity [mg/L as CaCO3]	15-May-23	06:17	15-May-23	13:44		105
Phosphorus (total) [mg/L]	16-May-23	08:17	17-May-23	09:26	1	0.19
Total Kjeldahl Nitrogen [as N mg/L]	16-May-23	08:17	17-May-23	09:36	---	5.2
Ammonia+Ammonium (N) [as N mg/L]	15-May-23	19:27	16-May-23	14:33		3.3

Patti Stark
Project Specialist,
Environment, Health & Safety



SGS Canada Inc.

P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - K0L 2H0
Phone: 705-652-2000 FAX: 705-652-6365

06-June-2023

Twp of Severn (Washago STP)

Attn : Tony Drouin

Date Rec. : 30 May 2023
LR Report: CA19745-MAY23

P.O. Box 159
Orillia, ON
L3V 6J3, Canada

Copy: #1

Phone: 705-345-1841 (cell)
Fax:705-325-1247

CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Client Limits	6: Lagoon Effluent	7: Green River Upstream	8: Green River Downstream
Sample Date & Time						29-May-23 09:03	29-May-23 09:15	29-May-23 09:23
Temperature Upon Receipt [°C]	---	---	---	---	---	14.0	14.0	14.0
Biochemical Oxygen Demand (BOD5) [mg/L]	30-May-23	16:15	05-Jun-23	11:14	25	< 4	< 4	5
Total Suspended Solids [mg/L]	01-Jun-23	08:47	02-Jun-23	10:28	25	2	2	2
Phosphorus (total) [mg/L]	30-May-23	15:28	31-May-23	10:16	1	0.33	< 0.03	< 0.03
Total Kjeldahl Nitrogen [as N mg/L]	30-May-23	16:04	01-Jun-23	10:05	---	4.4	< 0.5	< 0.5
Alkalinity [mg/L as CaCO3]	31-May-23	07:58	02-Jun-23	10:12	---	109	92	< 2
Ammonia+Ammonium (N) [as N mg/L]	30-May-23	20:11	31-May-23	10:46	---	3.4	< 0.1	< 0.1
Unionized Ammonia [mg/L as N]	30-May-23	20:11	02-Jun-23	10:29	---	0.074	<0.003	< 0.001
pH [No unit]	31-May-23	07:58	02-Jun-23	10:12	---	7.75	8.13	5.99
Temperature @ pH [°C]	31-May-23	07:58	02-Jun-23	10:12	---	19.8	18.9	18.2

Note: Provincial unionized ammonia calculated from field pH and temperature provided on the chain of custody form.

Patti Stark
Project Specialist,
Environment, Health & Safety



SGS Canada Inc.

P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

Twp of Severn (Washago STP)

Attn : Tony Drouin

P.O. Box 159
Orillia, ON
L3V 6J3, Canada

Phone: 705-345-1841 (cell)
Fax:705-325-1247

12-June-2023

Date Rec. : 01 June 2023
LR Report: CA12037-JUN23

Copy: #1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Client Limits	6: Lagoon Effluent	7: Green River Upstream	8: Green River Downstream
Sample Date & Time						31-May-23 11:35	31-May-23 11:20	31-May-23 11:10
Temperature Upon Receipt [°C]	---	---	---	---	---	15.0	15.0	15.0
Field pH [no unit]	---	---	---	---	---	7.5	8.6	8.7
Field Temperature [celcius]	---	---	---	---	---	22	21	21
Biochemical Oxygen Demand (BOD5) [mg/L]	02-Jun-23	17:34	07-Jun-23	13:39	25	5	< 4	< 4
Total Suspended Solids [mg/L]	03-Jun-23	11:29	05-Jun-23	14:49	25	14	2	2
Phosphorus (total) [mg/L]	02-Jun-23	14:39	05-Jun-23	10:20	1	0.36	0.04	< 0.03
Total Kjeldahl Nitrogen [as N mg/L]	01-Jun-23	16:49	05-Jun-23	11:50	---	4.7	< 0.5	< 0.5
Alkalinity [mg/L as CaCO3]	01-Jun-23	16:31	07-Jun-23	09:10	---	121	94	96
Ammonia+Ammonium (N) [as N mg/L]	02-Jun-23	13:08	05-Jun-23	08:26	---	3.3	0.1	< 0.1
Unionized Ammonia [mg/L as N]	02-Jun-23	13:08	05-Jun-23	08:27	---	0.048	0.015	0.016

Note: Provincial unionized ammonia calculated from field pH and temperature provided on the chain of custody form.



SGS Canada Inc.

P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

LR Report :

CA12037-JUN23

Patti Stark
Project Specialist,
Environment, Health & Safety



SGS Canada Inc.

P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - K0L 2H0
Phone: 705-652-2000 FAX: 705-652-6365

Twp of Severn (Washago STP)

Attn : Tony Drouin

P.O. Box 159
Orillia, ON
L3V 6J3, Canada

Phone: 705-345-1841 (cell)
Fax:705-325-1247

16-June-2023

Date Rec. : 07 June 2023
LR Report: CA13186-JUN23

Copy: #1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Client Limits	6: Lagoon Effluent	7: Green River Upstream	8: Green River Downstream
Sample Date & Time						02-Jun-23 13:53	02-Jun-23 14:05	02-Jun-23 13:35
Temperature Upon Receipt [°C]	---	---	---	---	---	12.0	12.0	12.0
Field pH [no unit]						7.3	8.8	8.6
Field Temperature [celcius]						27	24	23.5
Biochemical Oxygen Demand (BOD5) [mg/L]	08-Jun-23	15:40	13-Jun-23	12:35	25	< 4	6	< 4
Total Suspended Solids [mg/L]	07-Jun-23	18:17	08-Jun-23	16:10	25	4	2	2
Alkalinity [mg/L as CaCO3]	08-Jun-23	08:46	12-Jun-23	12:15		112	90	90
Phosphorus (total) [mg/L]	08-Jun-23	14:41	12-Jun-23	13:15	1	0.39	< 0.03	< 0.03
Total Kjeldahl Nitrogen [as N mg/L]	07-Jun-23	19:20	12-Jun-23	11:29	---	4.3	< 0.5	1.3
Ammonia+Ammonium (N) [as N mg/L]	09-Jun-23	16:58	12-Jun-23	10:08		3.3	< 0.1	0.1
Unionized Ammonia [mg/L as N]	09-Jun-23	16:58	12-Jun-23	10:08		0.042	0.018	0.017

Note: Provincial unionized ammonia calculated from field pH and temperature provided on the chain of custody form.



SGS Canada Inc.

P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

LR Report :

CA13186-JUN23

Patti Stark
Project Specialist,
Environment, Health & Safety



SGS Canada Inc.

P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - K0L 2H0
Phone: 705-652-2000 FAX: 705-652-6365

14-November-2023

Twp of Severn (Washago STP)

Attn : Tony Drouin

Date Rec. : 06 November 2023
LR Report: CA13221-NOV23

P.O. Box 159
Orillia, ON
L3V 6J3, Canada

Copy: #1

Phone: 705-345-1841 (cell)
Fax:705-325-1247

CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Client Limits	6: Washago Lagoon
Sample Date & Time						06-Nov-23 10:50
Temperature Upon Receipt [°C]	---	---	---	---	---	13.5
Biochemical Oxygen Demand (BOD5) [mg/L]	08-Nov-23	16:44	13-Nov-23	14:50	25	17
Total Suspended Solids [mg/L]	10-Nov-23	13:55	13-Nov-23	13:41	25	16
pH [No unit]	08-Nov-23	08:40	09-Nov-23	10:25		8.13
Alkalinity [mg/L as CaCO3]	08-Nov-23	08:40	09-Nov-23	10:25		115
Phosphorus (total) [mg/L]	10-Nov-23	14:29	13-Nov-23	12:56	1	0.09
Total Kjeldahl Nitrogen [as N mg/L]	09-Nov-23	16:09	13-Nov-23	10:48	---	1.9
Ammonia+Ammonium (N) [as N mg/L]	09-Nov-23	19:53	10-Nov-23	13:01		< 0.1

Patti Stark
Project Specialist,
Environment, Health & Safety



SGS Canada Inc.

P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - K0L 2H0
Phone: 705-652-2000 FAX: 705-652-6365

22-November-2023

Twp of Severn (Washago STP)

Attn : Tony Drouin

Date Rec. : 13 November 2023
LR Report: CA14440-NOV23

P.O. Box 159
Orillia, ON
L3V 6J3, Canada

Copy: #1

Phone: 705-345-1841 (cell)
Fax:705-325-1247

CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Client Limits	6: Washago Lagoon
Sample Date & Time						13-Nov-23 08:45
Temperature Upon Receipt [°C]	---	---	---	---	---	9.0
Biochemical Oxygen Demand (BOD5) [mg/L]	14-Nov-23	16:52	20-Nov-23	12:22	25	20
Total Suspended Solids [mg/L]	16-Nov-23	15:16	17-Nov-23	11:18	25	17
pH [No unit]	14-Nov-23	16:42	15-Nov-23	10:44		8.06
Alkalinity [mg/L as CaCO3]	14-Nov-23	16:42	15-Nov-23	10:44		113
Phosphorus (total) [mg/L]	15-Nov-23	16:54	16-Nov-23	14:16	1	0.08
Total Kjeldahl Nitrogen [as N mg/L]	16-Nov-23	17:05	20-Nov-23	13:47	---	1.4
Ammonia+Ammonium (N) [as N mg/L]	15-Nov-23	19:40	16-Nov-23	11:37		< 0.1

Patti Stark
*Project Specialist,
Environment, Health & Safety*



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27-November-2023

Twp of Severn (Washago STP)

Attn : Tony Drouin

Date Rec. : 20 November 2023
LR Report: CA14608-NOV23

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CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Client Limits	6: Washago Lagoon
Sample Date & Time						20-Nov-23 07:59
Temperature Upon Receipt [°C]	---	---	---	---	---	9.0
Biochemical Oxygen Demand (BOD5) [mg/L]	21-Nov-23	15:56	27-Nov-23	10:48	25	16
Total Suspended Solids [mg/L]	21-Nov-23	15:05	22-Nov-23	11:49	25	6
pH [No unit]	21-Nov-23	16:07	23-Nov-23	13:30	---	8.10
Alkalinity [mg/L as CaCO3]	21-Nov-23	16:07	23-Nov-23	13:30	---	113
Phosphorus (total) [mg/L]	21-Nov-23	16:36	22-Nov-23	14:56	1	0.04
Total Kjeldahl Nitrogen [as N mg/L]	21-Nov-23	15:51	23-Nov-23	11:56	---	1.6
Ammonia+Ammonium (N) [as N mg/L]	22-Nov-23	17:18	23-Nov-23	11:30	---	0.4

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15-December-2023

Twp of Severn (Washago STP)

Attn : Tony Drouin

Date Rec. : 08 December 2023
LR Report: CA12212-DEC23

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CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Client Limits	6: Lagoon Effluent	7: Green River Upstream	8: Green River Downstream
Sample Date & Time						07-Dec-23 09:55	07-Dec-23 10:35	07-Dec-23 09:40
Temperature Upon Receipt [°C]	---	---	---	---	---	9.0	9.0	9.0
Field pH [no unit]	---	---	---	---	---	7.6	7.7	8.0
Field Temperature [celcius]	---	---	---	---	---	7	7	7
Biochemical Oxygen Demand (BOD5) [mg/L]	08-Dec-23	15:49	13-Dec-23	13:16	25	19	< 4	< 4
Total Suspended Solids [mg/L]	12-Dec-23	08:25	12-Dec-23	16:13	25	16	< 2	2
Phosphorus (total) [mg/L]	12-Dec-23	16:09	13-Dec-23	09:39	1	0.04	< 0.03	< 0.03
Total Kjeldahl Nitrogen [as N mg/L]	11-Dec-23	16:49	12-Dec-23	10:26	---	2.1	< 0.5	< 0.5
Alkalinity [mg/L as CaCO3]	09-Dec-23	08:51	11-Dec-23	10:25		107	101	104
Ammonia+Ammonium (N) [as N mg/L]	12-Dec-23	18:14	14-Dec-23	09:58		0.5	< 0.1	< 0.1
Unionized Ammonia [mg/L as N]	12-Dec-23	18:14	14-Dec-23	09:58		0.003	< 0.001	< 0.001

Note: Unionized ammonia calculated from field pH and temperature provided on the chain of custody form.

Kimberley Didsbury
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18-December-2023

Date Rec. : 04 December 2023
LR Report: CA14053-DEC23

Copy: #2

CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Client Limits	6: Lagoon Effluent	7: Green River Upstream	8: Green River Downstream
Sample Date & Time						04-Dec-23 10:55	04-Dec-23 07:07	04-Dec-23 07:15
Temperature Upon Receipt [°C]	---	---	---	---	---	5.0	5.0	5.0
Field pH [no unit]	---	---	---	---	---	7.70	7.35	6.90
Field Temperature [celcius]	---	---	---	---	---	4	7.0	7.1
Biochemical Oxygen Demand (BOD5) [mg/L]	05-Dec-23	15:56	18-Dec-23	12:42	25	32	< 4	< 4
Total Suspended Solids [mg/L]	05-Dec-23	12:42	06-Dec-23	15:25	25	28	< 2	< 2
Alkalinity [mg/L as CaCO3]	06-Dec-23	08:37	07-Dec-23	12:05		103	105	103
Phosphorus (total) [mg/L]	05-Dec-23	17:06	06-Dec-23	11:40	1	0.05	< 0.03	< 0.03
Total Kjeldahl Nitrogen [as N mg/L]	05-Dec-23	19:45	06-Dec-23	13:05	---	2.1	< 0.5	< 0.5
Ammonia+Ammonium (N) [as N mg/L]	05-Dec-23	18:22	06-Dec-23	10:07		< 0.1	< 0.1	< 0.1
Unionized Ammonia [mg/L as N]	05-Dec-23	18:22	06-Dec-23	10:07		< 0.001	< 0.001	< 0.001



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LR Report :

CA14053-DEC23

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18-December-2023

Date Rec. : 11 December 2023
LR Report: CA14340-DEC23

Copy: #1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Client Limits	6: Lagoon Effluent	7: Green River Upstream	8: Green River Downstream
Sample Date & Time						11-Dec-23 11:30	11-Dec-23 11:10	11-Dec-23 11:20
Temperature Upon Receipt [°C]	---	---	---	---	---	6.0	6.0	6.0
Field pH [no unit]	---	---	---	---	---	8.06	7.90	8.00
Field Temperature [celcius]	---	---	---	---	---	4	6	6
Biochemical Oxygen Demand (BOD5) [mg/L]	12-Dec-23	16:25	18-Dec-23	11:41	25	27	< 4	< 4
Total Suspended Solids [mg/L]	13-Dec-23	10:08	14-Dec-23	15:59	25	19	2	2
Alkalinity [mg/L as CaCO3]	12-Dec-23	13:51	13-Dec-23	12:25		103	102	103
Phosphorus (total) [mg/L]	12-Dec-23	16:09	13-Dec-23	09:55	1	0.04	< 0.03	< 0.03
Total Kjeldahl Nitrogen [as N mg/L]	12-Dec-23	18:24	14-Dec-23	09:37	---	2.1	< 0.5	< 0.5
Ammonia+Ammonium (N) [as N mg/L]	12-Dec-23	18:14	14-Dec-23	10:10		0.8	< 0.1	< 0.1
Unionized Ammonia [mg/L as N]	12-Dec-23	18:14	14-Dec-23	10:10		0.010	< 0.001	0.001



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LR Report :

CA14340-DEC23

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