



— Township of —

SEVERN

Wastewater Treatment and Collection System

Washago
2022 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 2022. 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 40,094 m³ - approximately 49% of the facility's operating capacity of 81,900 m³/year.

No bypass occurred during the 2022 operating year.

Introduction

Washago is situated approximately 20 km north of Orillia near the intersection of Highway No. 11 and County Road No. 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

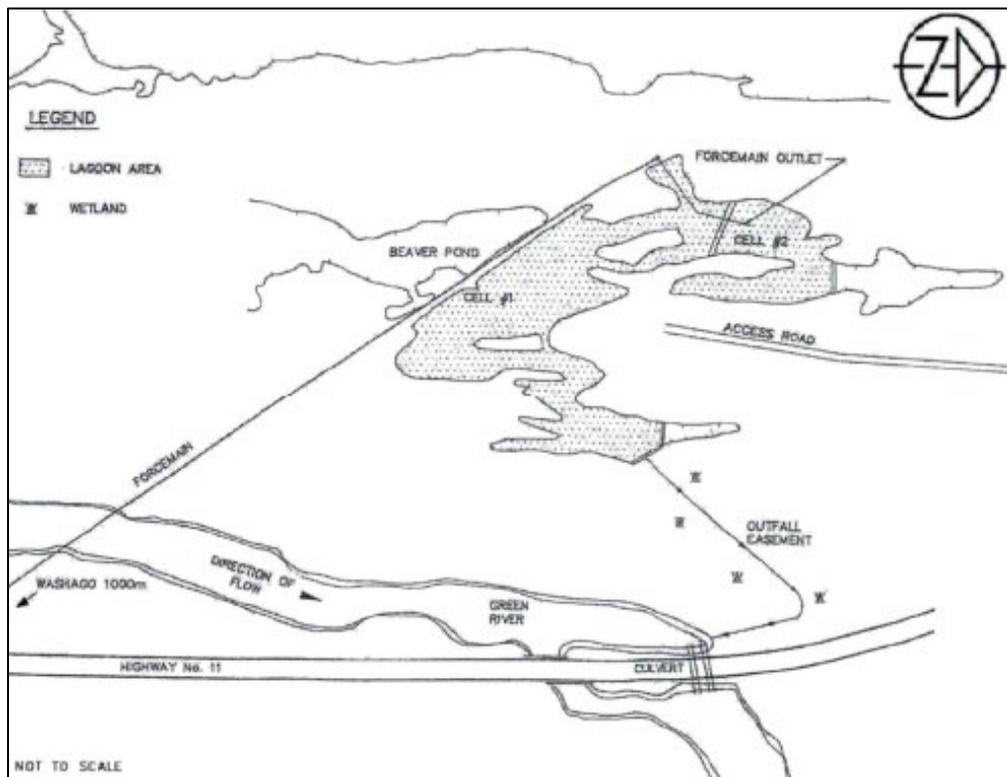
runs through the adjacent wetland. According to the C of A, the seasonal operating capacity of the facility is 40,950 m³ based on an average day flow of 227.5 m³/day over 180 days. A breakdown of the lagoon capacity is shown in Table 1.

Table 1: Lagoon Capacity

Operating Cell	Dead Storage (m ³)	Active Storage below 0.6 m Freeboard (m ³)	Active Storage including Freeboard (m ³)	Total Storage (m ³)
Cell No. 1	1,700	38,150	63,880	65,580
Cell No. 2	55	6,195	12,745	12,800
Total	1755	44,345	76,625	78,380

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 2.

Table 2: Performance Criteria

Parameter	Objective Limits		Compliance Limits	
	Concentration (mg/L)	Semi-Annual Loading (kg)	Concentration (mg/L)	Semi-Annual Loading (kg)
BOD ₅	15	614	25	1,024
TSS	20	815	25	1,024
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 3.

Raw Sewage Monitoring

Table 3: Raw Sewage Monitoring Results

Date	TSS (mg/L)	BOD5 (mg/L)	Pt	TKN (mg/L)
January 5, 2022	139	193	5.35	52.6
February 8, 2022	325	377	6.90	58.7
March 9, 2022	208	180	5.68	52.3
April 5, 2022	238	138	4.52	44.3
May 3, 2022	159	129	2.69	25.9
June 7, 2022	125	143	1.82	17.1
July 6, 2022	210	213	7.26	73.4
August 3, 2022	246	371	6.66	60.0
September 7, 2022	71	371	4.76	41.1
October 4, 2022	142	156	3.14	33.9
November 9, 2022	212	128	2.15	23.7
December 7, 2022	120	191	4.15	39.6

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 14, 2021, to April 3, 2022, winter operating season was 12,148 m³. The total estimated volume of sewage transferred to the lagoon during the April 4, 2022, to November 9, 2022, summer operating season was 16,102 m³. The total volume of sewage transferred to the lagoon during the winter and summer operating seasons was 28,250 m³. Sewage flows are summarized in Table 4.

Table 4: Sewage Flow to Lagoon

Winter Operating Season		Summer Operating Season	
Date	Volume (m ³)	Date	Volume (m ³)
October 14-31, 2021	1,040	April 4-30, 2022	2,751
November 2021	2,194	May 2022	2,674
December 2021	2,713	June 2022	3,400
January 2022	1,448	July 2022	2,047
February 2022	1,441	August 2022	2,476
March 2022	2,995	September 2022	1,920
April 1-3, 2022	317	October 2022	1,930
		November 1-9, 2022	834
Sub-Total	12,148	Sub-Total	16,102
Total Volume - Summer and Winter Operating Season (m ³)			28,250

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 essentially to reduce P_t levels, a significant reduction of BOD_5 and TSS is also achieved. The volume of alum required to treat the cell is calculated based on jar test results to determine the optimum alum concentration and the estimated gross volume of liquid in the cell. The formulae for

calculating the required volume of alum are presented in Appendix D. The stage-storage curves used to estimate the gross volume of liquid in the cells are presented in Appendix E. 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 F.

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 P_t, 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 5: Pre-Discharge Sampling – Spring Discharge

	Date	TSS (mg/L)	BOD ₅ (mg/L)	P _t (mg/L)	TA (mg/L)
Sample 1	April 19, 2022	19	18	0.23	9.0
Sample 2	April 25, 2022	14	13	0.18	6.6
Sample 3	May 2, 2022	17	19	0.09	3.9
C of A Objective		20	15	1	N/A
C of A Compliance		25	25	1	N/A

The spring discharge commenced on May 16, 2022. The total volume of effluent discharged was 23,619 m³ at a mean discharge rate of 2147 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 6: Effluent Discharge Summary – Spring Discharge

	Date	TSS (mg/L)	BOD ₅ (mg/L)	P _t (mg/L)	TA (mg/L)
Start Discharge	May 16, 2022	5	16	0.04	0.8
Mid Discharge	May 18, 2022	7	14	0.15	1.6
End Discharge	May 25, 2022	6	7	0.36	3.9
End Discharge	May 26, 2022	6	6	0.49	4.6
Mean Concentration		6	10.75	0.26	2.7
C of A Objective		20	15	1	N/A
C of A Compliance		25	25	1	N/A
Effluent Waste Loading		141	254	6.14	63.8

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 7: Green River Monitoring – Spring Discharge

	Date	TSS (mg/L)	BOD ₅ (mg/L)	P _t (mg/L)	TA (mg/L)
Start Discharge	May 16, 2022				
Upstream		<2	<4	<0.03	<0.1
Downstream		2	<4	<0.03	<0.1
Mid Discharge	May 18, 2022				
Upstream		4	<4	<0.03	<0.1
Downstream		<2	<4	<0.03	<0.1
End Discharge	May 26, 2022				
Upstream		2	<4	0.03	<0.1
Downstream		4	<4	<0.03	<0.1

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 8: Pre-Discharge Sampling – Fall Discharge

	Date	TSS (mg/L)	BOD ₅ (mg/L)	P _t (mg/L)	TA (mg/L)
Sample 1	Oct 31, 2022	3	5	0.23	5.3
Sample 2	Nov 7, 2022	5	<4	0.23	5.2
Sample 3	Nov 14, 2022	3	5	0.24	5.8
C of A Objective		20	15	1	N/A
C of A Compliance		25	25	1	N/A

The discharge of Cell No. 1 commenced December 7, 2022. The total volume of effluent discharged was 16,475 m³ at a mean discharge rate of 2,353 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)	BOD ₅ (mg/L)	P _t (mg/L)	TA (mg/L)
Start Discharge	Dec 7, 2022	4	7	0.23	5.8
Mid Discharge	Dec 12, 2022	2	5	0.23	6.1
End Discharge	Dec 13, 2022	7	5	0.25	6.4
Mean Concentration		9	10	0.07	1.6
C of A Objective		20	15	1	N/A
C of A Compliance		25	25	1	N/A
Effluent Waste loading		148	165	1.15	26.4

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. Results of the analysis are illustrated in Table 10.

Table 10: Green River Monitoring - Fall Discharge

	Date	TSS (mg/L)	BOD ₅ (mg/L)	P _t (mg/L)	TA (mg/L)
Start Discharge	Dec 7, 2022				
Upstream		4	7	<0.03	<0.01
Downstream		4	<4	<0.03	<0.01
Mid Discharge	Dec 12, 2022				
Upstream		2	<4	<0.03	<0.01
Downstream		3	<4	<0.03	<0.01
End Discharge	Dec 13, 2022				

Upstream		<2	<4	<0.03	<0.01
Downstream		14	<4	<0.03	<0.01

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.

One effluent objective exceeded in 2022.

- Spring pre-discharge BOD objective of 15 mg/l was exceeded. BOD average for spring pre-discharge was 16.6 mg/l.

2022 Operating Year Summary

The volumes of influent received, and effluent discharged from the lagoon during the 2022 operating year are summarized in Table 11. The total volume of sewage received plus the net precipitation during the 2022 operating year was 40,094 m³. A total effluent volume of 40,094 m³ was discharged from the lagoon.

Table 11: Influent and Discharge Volume Summary

Total Influent Volume Sewage	28,250 m ³
Total Effluent Discharged	40,094 m ³
Approx. Precipitation Volume	11,844 m ³

The waste loadings during the 2022 operating year are summarized in Table 12.

Table 12: Waste Loading Summary

	Spring 2022 (kg)	Fall 2022 (kg)	Total Loading (kg)
TSS	141	148	289
BOD5	254	165	419
Pt	6.15	1.15	7.30
TA	63.8	26.4	90.20

Conclusions and Recommendations

The performance of the Washago Sewage Treatment Works during the 2022 operating year satisfied all requirements of the Certificate of Approval. 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 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 coarse 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 19 83

- ttn:-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

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

/an


Director

APPENDIX "A"

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° 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.

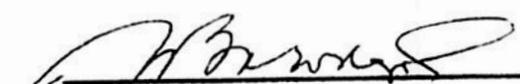
This Notice should be served upon:

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, 1983.



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



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 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.



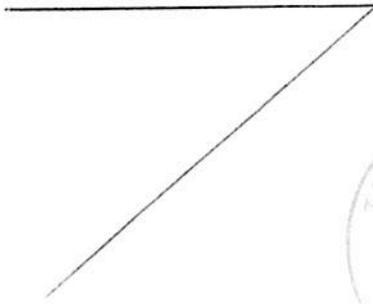
Whereas / *Attendu que* TOWNSHIP OF ORILLIA

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
DATE 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.

[Handwritten Signature]
Director / Directeur



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

ec

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)

Whereas

- 3 -

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 (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
---------------------	----------------	-----------------

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

/ec

[Handwritten Signature]

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.

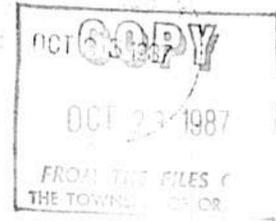
<u>Street</u>	<u>From</u>	<u>To</u>
<u>Forcemain</u>		
Hamilton St.	Approx. 45m E of Cumberland St.	Quetton St

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)



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
DATE À TORONTO ce

16

day of
jour d

October 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

A. L. T. 1009

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	1 2 0 0 0 2 2 7 3 3 11	0 1 2 0 2 2 16 19		3 1 20 21	2 22	R 80

C.P.			Parameter Code	Dec.	Monthly Results		
3 5 12 13	Flows						
	Total Flow	(10 ³ m ³)	50010	3	1.448		
	Average Daily Flow	(10 ³ m ³ /d)	50015	3	0.051		
	Maximum Daily Flow	(10 ³ m ³ /d)	50020	3			
			30 34	35	38	46	
3 5 12 13	Bypass					# of Occurrences	
	Plant Bypass Volume	(10 ³ m ³)	50270	3			
	Duration	(hours)	81680	1			
			30 34	35	38		
3 6 12 13	Raw Sewage					# of Samples	
	BOD ₅	(mg/L)	00001	0	193	1	
	Suspended Solids	(mg/L)	00006	0	139	1	
	TKN	(mg/L)	00020	2	52.60	1	
	Total Phosphorus	(mg/L)	00033	1	5.3	1	
			30 34	35	38	48	51
3 9 12 13	Final Effluent						
	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 12 13	Disinfection						
	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:

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

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	1 2 0 0 0 2 2 7 3 3 11	Month 0 1 2 16	Year 0 2 2 19	3 1 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		

Operator Telephone Number
705-345-1841

Operator Email Address
tdrouin@severn.ca

Comments

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- Environmental Monitoring and Reporting Branch, MECP, at WasteWaterReporting@ontario.ca And
 - 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	2 8	2	R
1 2	3 11	0 2	2 0 2 2	20 21	22	80

C.P.						
3 5	Flows		Parameter Code	Dec.	Monthly Results	
12 13	Total Flow	(10 ³ m ³)	50010	3	1.441	
	Average Daily Flow	(10 ³ m ³ /d)	50015	3	0.060	
	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	377 1	
	Suspended Solids	(mg/L)	00006	0	325 1	
	TKN	(mg/L)	00020	2	58.70 1	
	Total Phosphorus	(mg/L)	00033	1	6.9 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

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

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	1 2 0 0 0 2 2 7 3 3 11	Month 0 2	Year 2 0 2 2	2 8 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		

 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. (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	0 3	2 0 2 2	20 21	22	80

C.P.		Flows		Parameter Code	Dec.	Monthly Results	
3 5	12 13	Total Flow	(10 ³ m ³)	50010	3	2.995	
		Average Daily Flow	(10 ³ m ³ /d)	50015	3	0.096	
		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	180	1
		Suspended Solids	(mg/L)	00006	0	208	1
		TKN	(mg/L)	00020	2	52.30	1
		Total Phosphorus	(mg/L)	00033	1	5.6	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:

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

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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 2	20 21	22	80

C.P.	3 5	Flows		Parameter Code	Dec.	Monthly Results	
12 13		Total Flow	(10 ³ m ³)	50010	3	3.174	
		Average Daily Flow	(10 ³ m ³ /d)	50015	3	0.100	
		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	138	1
		Suspended Solids	(mg/L)	00006	0	238	1
		TKN	(mg/L)	00020	2	44.30	1
		Total Phosphorus	(mg/L)	00033	1	4.5	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	15.5	2
		Suspended Solids	(mg/L)	00006	1	16.5	2
		Ammonia + Ammonium	(mg/L)	00019	2	7.80	2
		TKN	(mg/L)	00020	2	8.95	2
		Total Phosphorus	(mg/L)	00033	2	0.20	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:

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 1	2	R
1 2	3 11	0 5	2 0 2 2	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	2.674	
		Average Daily Flow	(10 ³ m ³ /d)	50015	3	0.086	
		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	129	1
		Suspended Solids	(mg/L)	00006	0	159	1
		TKN	(mg/L)	00020	2	25.90	1
		Total Phosphorus	(mg/L)	00033	1	2.6	1
				30 34	35	38	48 51
3 9		Final Effluent					
12 13		Total Effl. Volume To Watercourse	(10 ³ m ³)	50280	3	23.619	
		Flow Duration	(hours)	81680	1	243.0	
		Cell Depth	(m)	50290	1		
		CBOD ₅	(mg/L)	00002	1		
		BOD ₅	(mg/L)	00001	1	12.5	5
		Suspended Solids	(mg/L)	00006	1	8.2	5
		Ammonia + Ammonium	(mg/L)	00019	2	2.96	5
		TKN	(mg/L)	00020	2	4.86	5
		Total Phosphorus	(mg/L)	00033	2	0.23	5
				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

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Project Name
Washago Lagoon

Facility Address

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Mailing Address

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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 2	20 21	22	80

C.P.						
3 5	Flows		Parameter Code	Dec.	Monthly Results	
12 13	Total Flow (10 ³ m ³)	50010	3	3.400		
	Average Daily Flow (10 ³ m ³ /d)	50015	3	0.110		
	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	143	1	
	Suspended Solids (mg/L)	00006	0	125	1	
	TKN (mg/L)	00020	2	17.10	1	
	Total Phosphorus (mg/L)	00033	1	1.8	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 0 0 0 2 2 7 3	Month	Year	3 1	2	R
1 2	3 11	0 7	2 0 2 2	20 21	22	80

C.P.									
3 5	Flows		Parameter Code	Dec.	Monthly Results				
12 13	Total Flow	(10 ³ m ³)	50010	3	2.047				
	Average Daily Flow	(10 ³ m ³ /d)	50015	3	0.066				
	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	213	1			
	Suspended Solids	(mg/L)	00006	0	210	1			
	TKN	(mg/L)	00020	2	73.40	1			
	Total Phosphorus	(mg/L)	00033	1	7.2	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 0 0 0 2 2 7 3	Month	Year	3 1	2	R
1 2	3 11	0 8	2 0 2 2	20 21	22	80

C.P.									
3 5	Flows	Parameter Code	Dec.	Monthly Results					
12 13	Total Flow (10 ³ m ³)	50010	3	2.476					
	Average Daily Flow (10 ³ m ³ /d)	50015	3	0.079					
	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	371		1			
	Suspended Solids (mg/L)	00006	0	246		1			
	TKN (mg/L)	00020	2	60.00		1			
	Total Phosphorus (mg/L)	00033	1	6.6		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 0 0 0 2 2 7 3	Month	Year	3 0	2	R
1 2	3 11	0 9	2 0 2 2	20 21	22	80

C.P.	Flows	Parameter Code	Dec.	Monthly Results
3 5	Total Flow (10 ³ m ³)	50010	3	1.920
12 13	Average Daily Flow (10 ³ m ³ /d)	50015	3	0.064
	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	371	1
	Suspended Solids (mg/L)	00006	0	71	1
	TKN (mg/L)	00020	2	41.10	1
	Total Phosphorus (mg/L)	00033	1	4.7	1
		30 34	35	38	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		
	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	# 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	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	16	19	20 21	22	80

C.P.			Parameter Code	Dec.	Monthly Results		
3 5	Flows						
12 13	Total Flow	(10 ³ m ³)	50010	3	1.930		
	Average Daily Flow	(10 ³ m ³ /d)	50015	3	0.062		
	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	156	1	
	Suspended Solids	(mg/L)	00006	0	142	1	
	TKN	(mg/L)	00020	2	33.90	1	
	Total Phosphorus	(mg/L)	00033	1	3.1	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 0 0 0 2 2 7 3	Month Year 1 1 2 0 2 2	3 0	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	2.780			
	Average Daily Flow	(10 ³ m ³ /d)	50015	3	0.092			
	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	128		1	
	Suspended Solids	(mg/L)	00006	0	212		1	
	TKN	(mg/L)	00020	2	23.70		1	
	Total Phosphorus	(mg/L)	00033	1	2.1		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	4.6		3	
	Suspended Solids	(mg/L)	00006	1	3.6		3	
	Ammonia + Ammonium	(mg/L)	00019	2	5.43		3	
	TKN	(mg/L)	00020	2	7.66		3	
	Total Phosphorus	(mg/L)	00033	2	0.23		3	
			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 0 0 0 2 2 7 3	Month	Year	3 1	2	R
1 2	3 11	1 2	2 0 2 2	20 21	22	80

C.P.			Parameter Code	Dec.	Monthly Results		
3 5	Flows		50010	3	3.456		
12 13	Total Flow	(10 ³ m ³)	50015	3	0.111		
	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	191	# of Samples	
12 13	BOD ₅	(mg/L)	00006	0	120	1	
	Suspended Solids	(mg/L)	00020	2	39.60	1	
	TKN	(mg/L)	00033	1	4.1	1	
	Total Phosphorus	(mg/L)					
			30 34	35 38	48	51	
3 9	Final Effluent		50280	3	16.475		
12 13	Total Effl. Volume To Watercourse (10 ³ m ³)		81680	1	76.0		
	Flow Duration	(hours)	50290	1			
	Cell Depth	(m)	00002	1			
	CBOD ₅	(mg/L)	00001	1	5.7	4	
	BOD ₅	(mg/L)	00006	1	4.3	4	
	Suspended Solids	(mg/L)	00019	2	6.10	4	
	Ammonia + Ammonium	(mg/L)	00020	2	7.63	4	
	TKN	(mg/L)	00033	2	0.24	4	
	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	

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Appendix C

Sewage Pump Station Draw Down Tests

Pump Drawdown Test Results at Pumping Station #1 in Washago

Completed: May 12 2022
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	0.89	0.89	0	0.82	0.63	0.19
	2	0.87	0.89	0.02	0.75	0.57	0.18
	3	0.88	0.89	0.01	0.85	0.66	0.19
Pump 2	1	0.88	0.89	0.01	0.79	0.62	0.17
	2	0.88	0.9	0.02	0.79	0.61	0.18
	3	0.87	0.89	0.02	0.87	0.7	0.17

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	14.31	12.05	13.55	13.3
Pump 2	12.05	12.05	11.29	11.79

Therefore the pump capacity of Pump 1 is 13.3 L/s and Pump 2 is 11.79 L/s.

Prepared On: May 12 2022

Prepared By: Jenna Beard

Signature: _____

Pump Drawdown Test Results at Pumping Station #1 in Washago

Completed: October 27 2022

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	0.87	0.89	0.02	0.76	0.59	0.15
	2	0.88	0.89	0.01	0.79	0.61	0.17
	3	0.89	0.89	0.00	0.78	0.62	0.16
Pump 2	1	0.87	0.89	0.02	0.8	0.62	0.16
	2	0.88	0.89	0.01	0.78	0.61	0.16
	3	0.87	0.89	0.02	0.76	0.58	0.16

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	11.30	12.811	12.05	12.05
Pump 2	12.05	12.05	12.05	12.05

Therefore the pump capacity of Pump 1 is 13.3 L/s and Pump 2 is 11.79 L/s.

Prepared On: Oct 31 2022

Prepared By: Jenna Beard

Signature: _____

Appendix D

Alum Dosing Formula

Alum Dosing

Dry Alum

$$\text{Mass of Alum (kg)} = \frac{\text{Gross Volume of Cell (m}^3\text{)} \times \text{Optimum Alum Dosage (mg/L)} \times 1000\text{L/m}^3}{1,000,000 \text{ mg/kg}}$$

Liquid Alum

Volume of Alum (L) =

$$\frac{\text{Gross Volume of Cell (m}^3\text{)} \times 1,000\text{L/m}^3 \times \text{Optimum Alum Dosage (mg/L)}}{1,000,000 \text{ mg/kg} \times \text{Density of Alum (1.335 kg/L)} \times \% \text{ of alum concentration (48.5%)}}$$

OR

$$\frac{\text{Gross Volume of Cell (m}^3\text{)} \times \text{Optimum Alum Dosage (mg/L)}}{647.5 \text{ mg/L}}$$

Appendix E

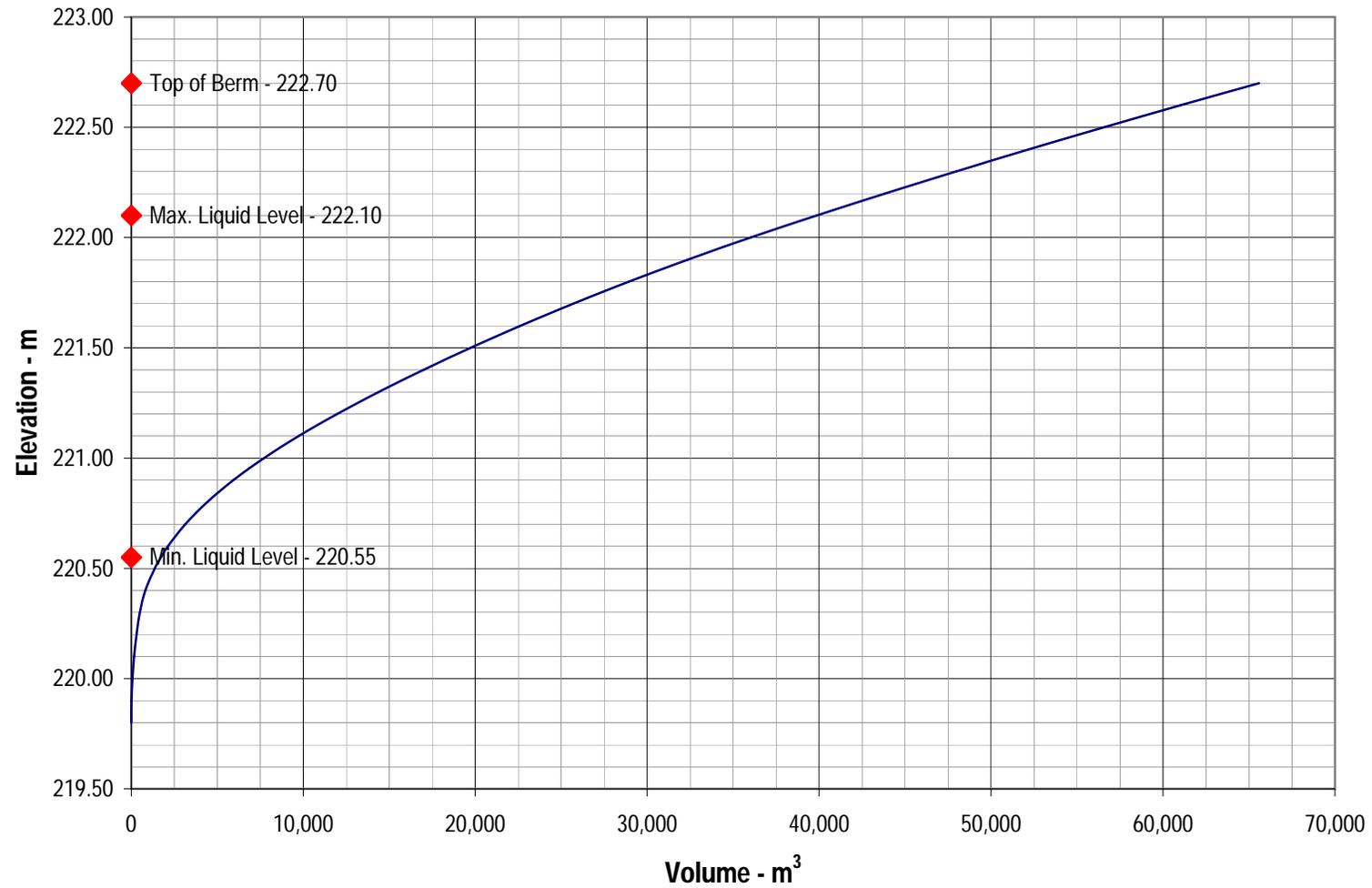
Lagoon Stage Storage Graphs

Note

Elevations are referenced to the following temporary benchmarks:

TBM No. 1 - Bolt in rock outcrop 37m north of Cell No. 1 outlet structure - Elev. 223.51

TBM No. 2 - Bolt in rock outcrop 26 m north of Cell No. 1 outlet structure - Elev. 223.51



C.C. Tatham & Associates Ltd.
Consulting Engineers

Collingwood Bracebridge Orillia Barrie

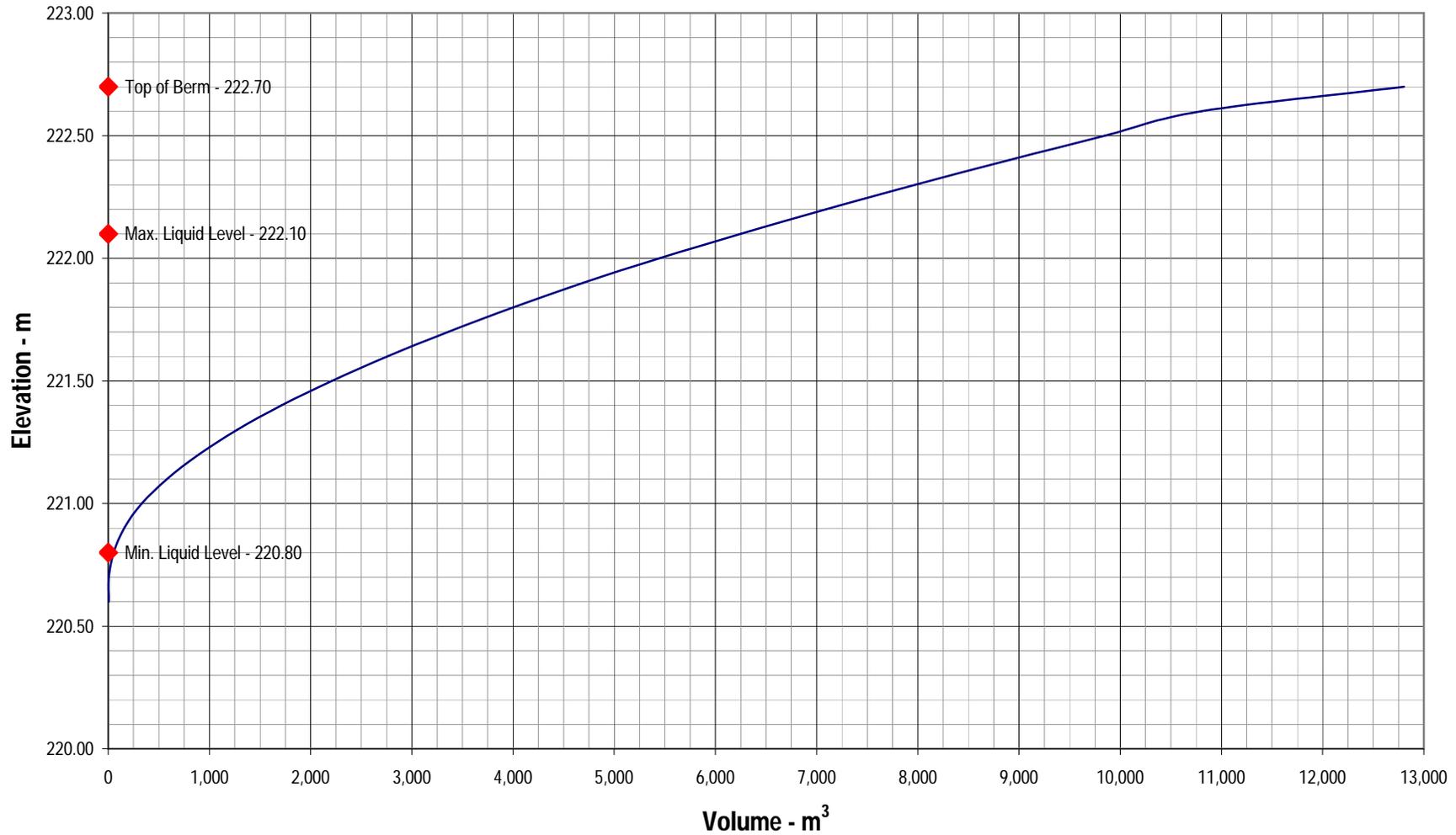
**Township of Severn
Village of Washago
Sewage Treatment Works
Stage Storage Graph - Cell No. 1
February 2012**

Note

Elevations are referenced to the following temporary benchmarks:

TBM No. 1 - Bolt in rock outcrop 37m north of Cell No. 1 outlet structure - Elev. 223.51

TBM No. 2 - Bolt in rock outcrop 26 m north of Cell No. 1 outlet structure - Elev. 223.51



C.C. Tatham & Associates Ltd.

Consulting Engineers

Collingwood Bracebridge Orillia Barrie

Township of Severn
Village of Washago
Sewage Treatment Works
Stage Storage Graph - Cell No. 2
February 2012

Appendix F

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

26-April-2022

Twp of Severn (Washago STP)

Attn : Tony Drouin

Date Rec. : 19 April 2022
LR Report: CA13572-APR22

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						19-Apr-22 09:41
Temperature Upon Receipt [°C]	---	---	---	---	---	7.0
Biochemical Oxygen Demand (BOD5) [mg/L]	20-Apr-22	17:39	25-Apr-22	16:08	25	18
Total Suspended Solids [mg/L]	20-Apr-22	09:57	21-Apr-22	11:22	25	19
pH [No unit]	20-Apr-22	15:11	21-Apr-22	11:52	---	8.08
Alkalinity [mg/L as CaCO3]	20-Apr-22	15:11	21-Apr-22	11:52	---	133
Phosphorus (total) [mg/L]	20-Apr-22	16:26	22-Apr-22	09:28	1	0.23
Total Kjeldahl Nitrogen [as N mg/L]	20-Apr-22	16:25	21-Apr-22	09:50	---	9.3
Ammonia+Ammonium (N) [as N mg/L]	20-Apr-22	21:26	21-Apr-22	09:25	---	9.0

Patti Stark
Project Specialist,
Environment, Health & Safety



SGS Canada Inc.

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

03-May-2022

Twp of Severn (Washago STP)

Attn : Tony Drouin

Date Rec. : 25 April 2022
LR Report: CA13861-APR22

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						25-Apr-22 09:00
Temperature Upon Receipt [°C]	---	---	---	---	---	8.0
Biochemical Oxygen Demand (BOD5) [mg/L]	26-Apr-22	16:24	02-May-22	10:43	25	13
Total Suspended Solids [mg/L]	27-Apr-22	07:38	27-Apr-22	16:06	25	14
pH [No unit]	26-Apr-22	14:55	28-Apr-22	09:33	---	8.57
Alkalinity [mg/L as CaCO3]	26-Apr-22	14:55	28-Apr-22	09:33	---	114
Phosphorus (total) [mg/L]	26-Apr-22	14:06	28-Apr-22	11:01	1	0.18
Total Kjeldahl Nitrogen [as N mg/L]	26-Apr-22	15:26	27-Apr-22	09:33	---	8.6
Ammonia+Ammonium (N) [as N mg/L]	26-Apr-22	17:16	27-Apr-22	10:21	---	6.6

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Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

09-May-2022

Twp of Severn (Washago STP)

Attn : Tony Drouin

Date Rec. : 02 May 2022
LR Report: CA12001-MAY22

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						02-May-22 10:57
Temperature Upon Receipt [°C]	---	---	---	---	---	8.0
Biochemical Oxygen Demand (BOD5) [mg/L]	03-May-22	17:14	09-May-22	12:21	25	19
Total Suspended Solids [mg/L]	04-May-22	07:42	04-May-22	14:30	25	17
pH [No unit]	03-May-22	15:30	04-May-22	15:13	---	9.00
Alkalinity [mg/L as CaCO3]	03-May-22	15:30	04-May-22	15:13	---	105
Phosphorus (total) [mg/L]	03-May-22	16:13	04-May-22	15:08	1	0.09
Total Kjeldahl Nitrogen [as N mg/L]	03-May-22	16:10	04-May-22	13:08	---	4.8
Ammonia+Ammonium (N) [as N mg/L]	03-May-22	17:01	04-May-22	10:14	---	3.9

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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

25-May-2022

Date Rec. : 16 May 2022
LR Report: CA13597-MAY22

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						16-May-22 08:50	16-May-22 09:15	16-May-22 08:36
Temperature Upon Receipt [°C]	---	---	---	---	---	10.0	10.0	10.0
Field pH [no unit]	---	---	---	---	---	9.1	8.6	8.5
Field Temperature [celcius]	---	---	---	---	---	22	19	21
Biochemical Oxygen Demand (BOD5) [mg/L]	17-May-22	16:01	24-May-22	13:26	25	16	< 4	< 4
Total Suspended Solids [mg/L]	18-May-22	07:43	19-May-22	09:15	25	5	< 2	2
Phosphorus (total) [mg/L]	18-May-22	16:09	19-May-22	10:52	1	0.04	< 0.03	< 0.03
Total Kjeldahl Nitrogen [as N mg/L]	19-May-22	15:11	20-May-22	14:29	---	2.5	< 0.5	< 0.5
Alkalinity [mg/L as CaCO3]	17-May-22	08:42	18-May-22	09:39	---	82	107	100
Ammonia+Ammonium (N) [as N mg/L]	19-May-22	17:31	20-May-22	11:58	---	0.8	< 0.1	< 0.1
Unionized Ammonia [mg/L as N]	19-May-22	17:31	20-May-22	11:58	---	0.285	0.009	0.006



SGS Canada Inc.

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Phone: 705-652-2000 FAX: 705-652-6365

LR Report :

CA13597-MAY22

Patti Stark
Project Specialist,
Environment, Health & Safety



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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

31-May-2022

Date Rec. : 19 May 2022
LR Report: CA13770-MAY22

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						18-May-22 08:08	18-May-22 08:14	18-May-22 08:23
Temperature Upon Receipt [°C]	---	---	---	---	---	15.0	15.0	15.0
Biochemical Oxygen Demand (BOD5) [mg/L]	20-May-22	18:39	25-May-22	14:48	25	14	< 4	< 4
Total Suspended Solids [mg/L]	25-May-22	10:01	26-May-22	12:40	25	7	4	< 2
pH [No unit]	20-May-22	17:08	27-May-22	14:21	---	8.05	8.21	8.25
Temperature @ pH [°C]	20-May-22	17:08	27-May-22	14:21	---	22.5	21.8	22.1
Alkalinity [mg/L as CaCO3]	20-May-22	17:08	27-May-22	14:21	---	99	109	113
Ammonia+Ammonium (N) [as N mg/L]	24-May-22	12:20	25-May-22	08:07	---	1.6	< 0.1	< 0.1
Unionized Ammonia [mg/L as N]	24-May-22	12:20	27-May-22	07:13	---	0.078	<0.004	<0.004
Phosphorus (total) [mg/L]	24-May-22	10:40	30-May-22	08:24	1	0.15	< 0.03	< 0.03
Total Kjeldahl Nitrogen [as N mg/L]	24-May-22	16:59	30-May-22	11:48	---	3.4	< 0.5	< 0.5

Note: Uni oni zed ammoni a cal cul ated using lab results for pH and temperature.



SGS Canada Inc.

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LR Report :

CA13770-MAY22

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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

07-June-2022

Date Rec. : 26 May 2022
LR Report: CA15605-MAY22

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						25-May-22 09:00	25-May-22 08:50	25-May-22 08:40
Temperature Upon Receipt [°C]	---	---	---	---	---	14.0	14.0	14.0
Field pH [no unit]	---	---	---	---	---	7.6	8.1	8.4
Field Temperature [celcius]	---	---	---	---	---	23	19	22
Biochemical Oxygen Demand (BOD5) [mg/L]	27-May-22	17:49	01-Jun-22	13:25	25	7	< 4	< 2
Total Suspended Solids [mg/L]	30-May-22	11:26	31-May-22	11:58	25	6	3	3
Alkalinity [mg/L as CaCO3]	27-May-22	10:48	30-May-22	08:43		105	101	98
Phosphorus (total) [mg/L]	02-Jun-22	15:32	03-Jun-22	13:38	1	0.36	< 0.03	< 0.03
Total Kjeldahl Nitrogen [as N mg/L]	02-Jun-22	12:40	03-Jun-22	11:46	---	7.2	< 0.5	< 0.5
Ammonia+Ammonium (N) [as N mg/L]	01-Jun-22	22:03	02-Jun-22	16:13		3.9	< 0.1	< 0.1
Unionized Ammonia [mg/L as N]	01-Jun-22	22:03	02-Jun-22	16:13		0.075	<0.003	<0.005

Note: Uni oni zed ammoni a cal cul ated from fi eld pH and tem per a ture pro vi ded on the chain of cus to dy form.



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P.O. Box 4300 - 185 Concession St.
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LR Report :

CA15605-MAY22

Patti Stark
Project Specialist,
Environment, Health & Safety



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Lakefield - Ontario - K0L 2H0
Phone: 705-652-2000 FAX: 705-652-6365

09-June-2022

Twp of Severn (Washago STP)

Attn : Tony Drouin

Date Rec. : 27 May 2022
LR Report: CA15788-MAY22

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						26-May-22 12:00	26-May-22 12:22	26-May-22 11:43
Temperature Upon Receipt [°C]	---	---	---	---	---	20.0	20.0	20.0
Biochemical Oxygen Demand (BOD5) [mg/L]	27-May-22	17:49	01-Jun-22	13:34	25	6	< 4	< 4
Total Suspended Solids [mg/L]	31-May-22	08:17	01-Jun-22	10:22	25	6	2	4
pH [No unit]	30-May-22	08:23	31-May-22	15:41		7.72	8.26	8.24
Temperature @ pH [°C]	30-May-22	08:23	31-May-22	15:41		18.8	18.6	18.9
Alkalinity [mg/L as CaCO3]	30-May-22	08:23	31-May-22	15:41		109	99	97
Phosphorus (total) [mg/L]	01-Jun-22	15:16	02-Jun-22	11:00	1	0.49	< 0.03	< 0.03
Total Kjeldahl Nitrogen [as N mg/L]	02-Jun-22	12:40	06-Jun-22	11:18	---	6.4	< 0.5	< 0.5
Ammonia+Ammonium (N) [as N mg/L]	01-Jun-22	17:46	02-Jun-22	14:32		4.6	< 0.1	< 0.1
Unionized Ammonia [mg/L as N]	01-Jun-22	17:46	02-Jun-22	14:33		0.086	<0.003	<0.003

Note: Provincial unionized ammonia calculated using lab results for pH and temperature.

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

09-November-2022

Twp of Severn (Washago STP)

Attn : Tony Drouin

Date Rec. : 31 October 2022
LR Report: CA14827-OCT22

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						31-Oct-22 11:05
Temperature Upon Receipt [°C]	---	---	---	---	---	9.0
Biochemical Oxygen Demand (BOD5) [mg/L]	01-Nov-22	16:11	07-Nov-22	14:21	25	5
Total Suspended Solids [mg/L]	02-Nov-22	15:53	03-Nov-22	15:48	25	3
Phosphorus (total) [mg/L]	03-Nov-22	14:56	08-Nov-22	15:08	1	0.23
Total Kjeldahl Nitrogen [as N mg/L]	03-Nov-22	15:20	04-Nov-22	12:55	---	6.3
pH [No unit]	01-Nov-22	14:52	02-Nov-22	11:16	---	7.93
Alkalinity [mg/L as CaCO3]	01-Nov-22	14:52	02-Nov-22	11:16	---	130
Ammonia+Ammonium (N) [as N mg/L]	02-Nov-22	20:43	03-Nov-22	15:24	---	5.3

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

16-November-2022

Twp of Severn (Washago STP)

Attn : Tony Drouin

Date Rec. : 07 November 2022
LR Report: CA14101-NOV22

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						07-Nov-22 10:45
Temperature Upon Receipt [°C]	---	---	---	---	---	9.0
Biochemical Oxygen Demand (BOD5) [mg/L]	08-Nov-22	15:53	14-Nov-22	11:21	25	< 4
Total Suspended Solids [mg/L]	10-Nov-22	11:53	11-Nov-22	12:37	25	5
pH [No unit]	08-Nov-22	15:38	09-Nov-22	10:37		7.76
Alkalinity [mg/L as CaCO3]	08-Nov-22	15:38	09-Nov-22	10:37		137
Phosphorus (total) [mg/L]	09-Nov-22	14:51	10-Nov-22	12:52	1	0.23
Total Kjeldahl Nitrogen [as N mg/L]	09-Nov-22	15:48	10-Nov-22	13:32	---	9.3
Ammonia+Ammonium (N) [as N mg/L]	09-Nov-22	18:36	10-Nov-22	09:15		5.2

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

23-November-2022

Twp of Severn (Washago STP)

Attn : Tony Drouin

Date Rec. : 14 November 2022
LR Report: CA14194-NOV22

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						14-Nov-22 10:00
Temperature Upon Receipt [°C]	---	---	---	---	---	8.0
Biochemical Oxygen Demand (BOD5) [mg/L]	15-Nov-22	15:45	21-Nov-22	10:42	25	5
Total Suspended Solids [mg/L]	17-Nov-22	10:58	18-Nov-22	08:23	25	3
pH [No unit]	15-Nov-22	14:48	16-Nov-22	12:09	---	7.88
Alkalinity [mg/L as CaCO3]	15-Nov-22	14:48	16-Nov-22	12:09	---	139
Phosphorus (total) [mg/L]	15-Nov-22	15:33	16-Nov-22	10:51	1	0.24
Total Kjeldahl Nitrogen [as N mg/L]	15-Nov-22	17:06	16-Nov-22	09:55	---	7.4
Ammonia+Ammonium (N) [as N mg/L]	15-Nov-22	17:01	16-Nov-22	12:57	---	5.8

Patti Stark
Project Specialist,
Environment, Health & Safety



SGS Canada Inc.

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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

15-December-2022

Date Rec. : 08 December 2022

LR Report: CA13256-DEC22

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						07-Dec-22 11:15	07-Dec-22 11:25	07-Dec-22 11:36
Temperature Upon Receipt [°C]	---	---	---	---	---	10.0	10.0	10.0
Field pH [no unit]	---	---	---	---	---	7.9	8.3	8.4
Field Temperature [celcius]	---	---	---	---	---	9.5	10	10
Biochemical Oxygen Demand (BOD5) [mg/L]	09-Dec-22	16:06	14-Dec-22	13:28	25	7	7	< 4
Total Suspended Solids [mg/L]	12-Dec-22	08:13	13-Dec-22	15:06	25	4	4	4
Alkalinity [mg/L as CaCO3]	09-Dec-22	07:06	12-Dec-22	13:02		130	107	100
Unionized Ammonia [mg/L as N]	09-Dec-22	19:19	12-Dec-22	12:05		0.081	0.001	< 0.001
Ammonia+Ammonium (N) [as N mg/L]	09-Dec-22	19:19	12-Dec-22	12:05		5.8	< 0.1	< 0.1
Phosphorus (total) [mg/L]	08-Dec-22	16:57	09-Dec-22	11:37	1	0.23	< 0.03	< 0.03
Total Kjeldahl Nitrogen [as N mg/L]	09-Dec-22	16:04	12-Dec-22	13:27	---	7.4	< 0.5	< 0.5



SGS Canada Inc.

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

LR Report :

CA13256-DEC22

Carrie Greenlaw
Carrie Greenlaw
Project Specialist,
Environment, Health & Safety



SGS Canada Inc.

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Lakefield - Ontario - KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

21-December-2022

Twp of Severn (Washago STP)

Attn : Tony Drouin

Date Rec. : 13 December 2022
LR Report: CA13399-DEC22

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						12-Dec-22 13:38	12-Dec-22 13:45	12-Dec-22 13:55
Temperature Upon Receipt [°C]	---	---	---	---	---	6.0	6.0	6.0
Field pH [no unit]	---	---	---	---	---	7.9	8.0	7.9
Field Temperature [celcius]	---	---	---	---	---	3	3	3
Biochemical Oxygen Demand (BOD5) [mg/L]	13-Dec-22	16:06	19-Dec-22	12:58	25	5	< 4	< 4
Total Suspended Solids [mg/L]	15-Dec-22	09:24	16-Dec-22	09:30	25	2	2	3
Alkalinity [mg/L as CaCO3]	13-Dec-22	15:15	14-Dec-22	10:44	---	135	103	105
Ammonia+Ammonium (N) [as N mg/L]	13-Dec-22	21:27	14-Dec-22	09:35		6.1	< 0.1	< 0.1
Phosphorus (total) [mg/L]	13-Dec-22	15:52	14-Dec-22	09:51	1	0.23	< 0.03	< 0.03
Total Kjeldahl Nitrogen [as N mg/L]	14-Dec-22	15:34	16-Dec-22	12:40	---	7.5	< 0.5	< 0.5
Unionized Ammonia [mg/L as N]	13-Dec-22	21:27	16-Dec-22	12:40	---	0.051	< 0.001	< 0.001

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



SGS Canada Inc.

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Phone: 705-652-2000 FAX: 705-652-6365

21-December-2022

Twp of Severn (Washago STP)

Attn : Tony Drouin

Date Rec. : 14 December 2022
LR Report: CA12565-DEC22

P.O. Box 159
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L3V 6J3, Canada

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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						13-Dec-22 14:20	13-Dec-22 14:35	13-Dec-22 14:10
Temperature Upon Receipt [°C]	---	---	---	---	---	5.0	5.0	5.0
Field pH [no unit]	---	---	---	---	---	7.9	8.2	8.0
Field Temperature [celcius]	---	---	---	---	---	2.5	2	2.5
Biochemical Oxygen Demand (BOD5) [mg/L]	15-Dec-22	17:27	20-Dec-22	11:49	25	5	< 4	< 4
Total Suspended Solids [mg/L]	16-Dec-22	12:54	19-Dec-22	13:39	25	7	< 2	14
Alkalinity [mg/L as CaCO3]	14-Dec-22	16:09	15-Dec-22	11:17		142	126	106
Ammonia+Ammonium (N) [as N mg/L]	14-Dec-22	21:46	15-Dec-22	10:05		6.4	< 0.1	0.1
Unionized Ammonia [mg/L as N]	14-Dec-22	21:46	15-Dec-22	10:05		0.051	< 0.001	0.001
Phosphorus (total) [mg/L]	15-Dec-22	15:53	19-Dec-22	09:52	1	0.25	0.03	< 0.03
Total Kjeldahl Nitrogen [as N mg/L]	15-Dec-22	15:10	16-Dec-22	12:37	---	8.0	< 0.5	< 0.5

Patti Stark
Project Specialist,
Environment, Health & Safety