

Copart
14185 Dallas Parkway
Suite 300
Dallas, TX 75254

March 9, 2020
File: 65080.01 – R3

Attention: Mason Laycock, Manager of Property and Development

**Re: Abbreviated Hydrogeological Assessment
 Rural Site Plan Control Application, 300 Somme Street, Ottawa, Ontario**

GEMTEC Consulting Engineers and Scientists Limited (GEMTEC) was retained by Copart to carry out an abbreviated hydrogeological assessment for a proposed commercial/light industrial development to be located in the Hawthorne Industrial Park at 300 Somme Street in Ottawa, Ontario.

BACKGROUND AND SCOPE OF WORK

Plans are being prepared for the construction of a vehicle storage yard at 300 Somme Street in Ottawa, Ontario. The outdoor vehicle storage will take up most of the property. However, an office/warehouse building is proposed in the west corner of the property in support of the storage yard. The building will be serviced with private services, including a septic system and well. The approximate development area is 17 hectares.

The purpose of the abbreviated hydrogeological assessment was to evaluate the likely well yield and groundwater quality for the new development using an existing offsite test well (i.e., test well TW2), which is situated approximately 110 metres north of the proposed location of the future supply well. Test well TW2 was installed in 1993 and is approximately 30.5 metres deep. The well record for TW2 is provided in Attachment 1. TW2 was installed in the same deep aquifer that the future supply well will intersect.

GEMTEC carried out an abbreviated hydrogeological assessment by pumping test well TW2 for approximately six hours and collecting a groundwater sample for comparison to Ontario Drinking Water standards (ODWS).

SITE GEOLOGY

Background reports indicate that the site is covered with inert fill, primarily excavated from road construction projects. A thin layer of topsoil is present below the fill at some locations. The soils are described as silty sand, sandy silt and silty sand and gravel. Clayey silt, silty clay and glacial till were also encountered at depth at some locations. Overburden thicknesses across the site

range from about 0.7 metres to greater than 3 metres, averaging about 2 metres in thickness. Thin soils may also be encountered at the eastern edge of the site.

Two hydrogeological units have been identified on the property. The first is a shallow unconfined unit located within the native soils and imported fill in the upper bedrock zone. This zone is not considered suitable as a potable water supply source. A deeper confined aquifer is found in the sandstone bedrock, generally at depths of 25 to 35 metres below ground surface. This aquifer is considered suitable as a potable water supply (Golder, 2019).

METHODOLOGY

The abbreviated hydrogeological investigation was carried out in general accordance with the Ontario Ministry of Environment, Conservation and Parks (MECP) Guideline D-5-5. The supply well was chlorinated approximately 72-hours prior to the pump test in order to prevent potential bacteria issues associated with long-term water stagnation, since the well had not been used for approximately twelve years.

Water samples were collected on February 24, 2020 during the pump test by sampling the pump discharge water and preserving the water samples in the field. The samples were submitted to an accredited laboratory (AGAT Laboratories) for bacteriological, chemical and physical analyses (subdivision package, metals, volatile organic compounds (VOCs), polyaromatic hydrocarbons (PAHs), and petroleum hydrocarbon (PH) fractions (F1-F4)).

Field parameters (pH, temperature, conductivity, turbidity, visual and olfactory observations, and total chlorine) were measured at the beginning and end of the pump test.

Details on the quantity and quality of the supply aquifer at test well TW2 are described in the sections that follow.

GROUNDWATER QUANTITY

During the pump test, water level measurements were collected on a continuous basis using an electronic data logger and supplemented with manual water level measurements using an electric water level tape. After the pump was shut off, water level data was collected until a minimum of 95 percent of the drawdown in the water level had recovered in the test well. The water level measurements for the drawdown and recovery data for the pump tests are provided in Attachment 2.

The well was pumped using an electric submersible pump and portable generator supplied by Air Rock Drilling Ltd. The flow rate of the pump discharge hose was monitored using a flow nozzle to ensure that the discharge rate maintained a constant flow rate (i.e., within 5 percent).

As per MECP Procedure D-5-5, the test well was pumped at a flow rate greater than 18.9 litres per minute for greater than 6 hours. The maximum drawdown observed at the end of pumping was 0.91 metres, which is equivalent to approximately 4 percent of the available drawdown in the test well. Based on the anticipated septic flows identified in the Concept Plan, the water demand

for the development is 3800 litres per day (8 litres per minute over an 8-hour workday). The volume of water pumped from the well was 15,120 litres, or four times the actual daily requirement.

The transmissivity of the water supply aquifer was estimated from the pump test drawdown data using Aqtesolv version 4.5, a commercially available software program from HydroSOLVE Inc. An analysis of the pump test data was carried out using the Cooper-Jacob method of analysis. Transmissivity values were also calculated using the recovery data, Theis (1935) method. The results of the Aqtesolv 4.5 analysis are provided in Attachment 2.

The specific capacity of the well at the time of maximum drawdown was 41.5 litres per minute per metre. An aquifer transmissivity ranging from 16 to 40 metres squared per day was estimated using the drawdown and recovery data, respectively. The results of two prior pump tests carried out on test well TW2 as well as from the current investigation are presented in Table 1 below.

Table 1 Summary Pump Tests on Test Well TW2

	29-Aug-93	20-Aug-08	24-Feb-20
Static Level (mBTOC) ^a	3.15	3.15 ^b	7.62
Pump Rate (L/minute)	66.7	55	37.8
Drawdown (m)	1.18	1.2	0.91
Volume Pumped (Litres)	24,012	19,800	15,120
Available Drawdown (m)	27	27	22.6
Percent Available Drawdown (%)	4	5	4
Specific Capacity (L/minute/m)	56.5	45.8	41.5
Transmissivity (m ² /day)	22/41	16/39	16/40
Estimated Short-term Yield (m ³ /day)	130.9	130.9	130.9

Notes: ^a mBTOC- metres below top of casing.

^b Water level identified as being similar to previous result.

The aquifer response and properties at TW2 are consistent with past pump tests, although the static water level has decreased by approximately 4.5 metres since the measurement taken in 2008. Seasonal variation may account for some of the difference in water levels, but the decrease is larger than what typically occurs at other locations in the Ottawa area. A portion of the decrease may also be related to local quarry dewatering or other groundwater users in the area. Despite the water level decrease, the available drawdown is more than sufficient to support the proposed development.

Based on these results, it is our opinion that the deep supply aquifer at the site is capable of meeting the demand of the proposed development. In addition, no concerns with long-term sustainability of the proposed water supply aquifer were identified.

GROUNDWATER QUALITY

The results of the chemical, physical and bacteriological analyses on the water sample from the test well TW2 are summarized in appended Table 2 along with previous water sample results from 1993 and 2008. The field parameters measured at the time of sampling are provided in Table 3. The laboratory certificates of analysis from AGAT Laboratories are provided in Attachment C.

ODWS – Health Standards

Total chlorine measurements made during the pump test confirmed that total chlorine concentrations in the well water was non-detectable at the time of bacteriological sampling. Total coliform counts and other bacteria indicator species such as e. coli and fecal coliform were determined to be non-detectable in the water sample. Based on the bacteriological testing, the water is suitable for consumption.

Three common chlorination by-products (chloroform, dibromochloromethane and bromodichloromethane) were detected at levels above the ODWS at the time of the pump test. However, following additional (approximately 6 hours) of well pumping on March 5, 2020, the concentrations of these chemical decreased by an order of magnitude and the levels did not exceed the ODWS in the follow-up sample. This suggests that these compounds are likely related to the well chlorination prior to pumping and that concentrations should continue to decrease over time.

The concentration of chloroform in the initial sample (0.089 milligrams per liter) from TW2 and follow-up sample (0.014 milligrams per liter) exceeds Ontario EPA Table 1 Standard of 0.002 milligrams per liter (Table 1: Full Depth Background Site Condition Standards - Soil, ground water and sediment standards for use under Part XV.1 of the *Environmental Protection Act*, effective July 1, 2011). However, this level is expected to continue to decrease over time as well chlorination effects fade.

PAHs and PHCs were not detected in the sampled groundwater.

ODWS - Aesthetic Objective Exceedances

The water quality is similar to the previous results from 2008, with ODWS exceedances of TDS, turbidity, iron, and manganese, but at concentrations that are treatable in accordance with MECP Guideline D-5-5.

The Ryznar Stability Index was calculated to be approximately 6.6, which predicts that slight scale will form. However, significant incrustation and corrosion are considered unlikely to be problematic as result of the elevated total dissolved solids.

ODWS – Operational Exceedances

Operational related exceedances of the Ontario Drinking Water Standards (ODWS) were noted for hardness.

The concentration of hardness in the water sample was 454 milligrams per liter as CaCO₃, which is higher than the operational guideline of 80 to 100 milligrams per liter of CaCO₃ as specified in the ODWS.

Water having a hardness level above 80 to 100 milligrams per liter as CaCO₃ is often softened for domestic use. The MECP Procedure D-5-5 document states that water having a hardness value of more than 300 milligrams per liter is considered "very hard". The Ontario Ministry of the Environment publication entitled "*Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines*", states that water with hardness in excess of 500 milligrams per liter is considered to be unacceptable for most domestic purposes. There is no upper treatable limit for the hardness specified in MECP Procedure D-5-5.

The concentration of hardness in the test well is below the reported threshold of 500 milligrams per liter as CaCO₃ as specified in the Technical Support Document for the ODWS. Therefore, the concentration of hardness observed in the test well is considered reasonably treatable using a conventional water softener. In addition, most water supply wells within rural eastern Ontario are equipped with water softeners.

Water softening by conventional sodium ion exchange may introduce relatively high concentrations of sodium into the drinking water that may be of concern to persons on a sodium-restricted diet. The use of potassium chloride in the water softener (which adds potassium to the water instead of sodium); could be considered as a means of keeping sodium concentrations in the water at background levels. Consideration could also be given to providing a bypass of the water softener for drinking water purposes (for example, a bypass of the softener to the cold-water kitchen tap).

CONCLUSIONS

Based on the results of the abbreviated hydrogeological investigation, the following conclusions and professional opinions are provided:

- GEMTEC completed a 6.6 hour pump test and collected water samples from an existing test well (TW2) for a proposed commercial development to be located in the Hawthorne Industrial Park in Ottawa, Ontario.
- The quantity of groundwater available from the deep water supply aquifer is more than sufficient for the proposed development, and the aquifer will sustain repeated pumping at the test rate and duration at 24-hour intervals over the long term.
- The water quality available from drilled wells on the subject site are considered safe for consumption based on the absence of health-related exceedances. Groundwater

treatment for aesthetic parameters (iron, manganese, hardness, and TDS) will likely be required.

LIMITATIONS OF LETTER

This letter was prepared for, and is intended for the exclusive use of Copart. This letter may not be relied upon by any other person or entity without written consent of GEMTEC and Copart. The contents of this letter are not intended to provide legal opinion.

The investigation undertaken by GEMTEC, as well as the recommendations and conclusion made herein reflect the best judgements of GEMTEC based on the site conditions observed at the time the report was prepared. GEMTEC received information from outside sources that was not independently verified and was relied upon in good faith. GEMTEC does not accept responsibility for any deficiencies, misstatements or inaccuracies contained herein due to omissions, misinterpretation or fraudulent acts.

Should new information become available during future work, including excavations, borings or other studies, GEMTEC should be requested to review the information and, if necessary, re-assess the conclusions presented herein.

CLOSURE

We trust that this letter meets your current requirements. If you have questions or concerns please do not hesitate to contact the undersigned.



Andrius Paznekas, M.Sc., P.Geo.
Hydrogeologist



Shaun Pelkey, M.Sc.E., P.Eng.
Principal, Environmental Engineer



Attachments: Table 2 – Groundwater Quality Analyses TW2
Table 3 – Field Measured Groundwater Quality
Attachment 1 – Historical Well Record
Attachment 2 – Pump Test Results
Attachment 3 – Laboratory Test Results

References

Golder, March 1994 report submitted to Beaver Road Builders Ltd. Hydrogeological Investigation, Terrain Evaluation, Proposed Rural Industrial Subdivision, Lots 26 and 27, Concession VI, City of Gloucester, Ontario.

CRA, September 2008 report prepared for R.W. Tomlinson Limited. Phase II Environmental Site Assessment and Hydrogeological Assessment, Part Lot 26 & 27 Concession 6, Ottawa, Ontario.

Golder, December 2008 report submitted to R.W. Tomlinson Limited. Hydrogeological Investigation, Terrain Analysis and Impact Assessment, Proposed Industrial Subdivision, Lots 26 & 27, Concession VI, Geographic City of Gloucester, City of Ottawa, Ontario.

Golder, June 18, 2019 Letter to R.W. Tomlinson Development Corporation. Potential Impacts from Organics Composting Facility on Hawthorne Industrial Park Groundwater Quality, Lots 26 and 27, Concession VI, Geographic City of Gloucester, Ottawa, Ontario.

Table 2 Groundwater Quality Analyses TW2

Parameter	Criteria ODWS	EPA Table1	August 29, 1993		August 20, 2008		February 24, 2020
			1.5 hours	6.0 hours	0.5 hours	5.5 hours	6.6 hours
Alkalinity (CaCO3)	30-500		308	306	316	314	278
Ammonia			0.23	0.22	0.18	0.18	0.17
Calcium			117	107	86	88	101
Chloride	250	790	72	73	66	66	77.8
Colour (TCU)	5		6	2	<2	<2	<5
Conductivity (uS/cm)			925	900	1060	1060	1260
DOC (TOC in 1993)	5		3.2	3.4	2.4	2.3	1.8
Fluoride	1.5		0.25	0.56	0.35	0.35	<0.05
Hardness (CaCO3)			515	490	400	405	454
Hydrogen Sulphide	0.05		0.01	0.01	0.01	<0.01	<0.05
Iron	0.3		0.50	0.60	0.84	0.42	0.532
Magnesium			54	54	45	45	48.9
Manganese	0.05		0.14	0.14	0.12	0.11	0.149
Nitrate (as N)	10		<0.1	<0.1	<0.10	<0.10	<0.25
Nitrite (as N)	1		<0.1	<0.1	<0.10	<0.10	<0.25
pH (pH units)	6.5-8.5		7.2	7.1	7.94	7.95	7.73
Phenols		0.005	<0.002	<0.002	<0.001	<0.001	<0.001
Potassium			7	8	8	8	7.76
Sodium	200	490	60	60	55	56	55.1
Sulphate	500		223	234	167	168	212

Parameter	Criteria ODWS	EPA Table1	August 29, 1993		August 20, 2008		February 24, 2020
			1.5 hours	6.0 hours	0.5 hours	5.5 hours	6.6 hours
Tannin & Lignin			<0.1	<0.1	0.2	0.3	0.1
TDS	500		700	710	689	689	664
TKN			0.29	0.24	0.24	0.19	<0.1
Turbidity (NTU)	5		4.8	5.4	10.5	3.9	6.9
Total Coliforms (cts/100 mL)	5		0	0	1	0	0
E. coli (cts/100 mL)	0		0	0	0	0	0
Faecal Coliforms (cts/100 mL)					0	0	0
Faecal Streptococcus (cts 100/mL)					0	0	
Heterotrophic Plate Count (cts/1 mL)					2	2	0
Arsenic	0.025	0.013	<0.01	<0.01			<0.003

Notes: All values in mg/L unless otherwise noted

Bolded Number – Concentration exceeds aesthetic or health related criteria

Criteria – Ontario Drinking Water Quality Standards (Health related) or Guideline (Aesthetic)

EPA - Soil, ground water and sediment standards for use under Part XV.1 of the Environmental Protection Act (Ontario's soil, ground water and sediment standards effective July 1, 2011)

Table 3 Field Measured Groundwater Quality

Date/Time ¹	pH	Temp (°C)	TDS ² (ppm)	EC ³ (us/cm)	Turbidity (NTU)	Chlorine (mg/L)	Colour (ACU ⁴)	Colour (TCU ⁵)
February 24, 2020 2:30 PM	7.45	10.0	778	1,210	<1.0	0.0	52	0
March 5, 2020 2:00 PM						0.0		

Notes: 1. Measured using Horiba Multiparameter Meter. Calibrated by Maxim Environmental.

2. TDS – Total Dissolved Solids

3. EC – Electrical Conductivity

4. ACU – Actual Colour Units

5. TCU – True Colour Units. Field filtered using 0.45 micron filter.



ATTACHMENT 1

Historical Well Record



#2

The Ontario Water Resources Act

TEST WELL TW-2

2. PRINT ONLY IN SPACES PROVIDED
3. CHECK ☒ CORRECT BOX WHERE APPLICABLE

COUNTY OR DISTRICT Ottawa Carleton		TOWNSHIP OR RURAL C.D.N. BOUND VILLAGE Gloucester	LOT, BLOCK, TRACT, SUBDIV ETC 6	NO. 26
FIRM OR NAME FIRST Beaver Road Builders		ADDRESS P.O. Box 4208 stn. "E" Ottawa, Ontario K1S 5B2	DATE COMPLETED DATE 16 MO 8 YR 93	

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

[illegible]

-WATER RECORD		
WATER FOUND		NAME OF WATER
58	<input type="checkbox"/> FRESH	<input type="checkbox"/> SULPHUR
	<input type="checkbox"/> SALT	<input type="checkbox"/> MINERAL
88	<input type="checkbox"/> FRESH	<input type="checkbox"/> SULPHUR
	<input type="checkbox"/> SALT	<input type="checkbox"/> MINERAL
	NOT TESTED	
	<input type="checkbox"/> FRESH	<input type="checkbox"/> SULPHUR
	<input type="checkbox"/> SALT	<input type="checkbox"/> MINERAL
	<input type="checkbox"/> FRESH	<input type="checkbox"/> SULPHUR
	<input type="checkbox"/> SALT	<input type="checkbox"/> MINERAL
	<input type="checkbox"/> FRESH	<input type="checkbox"/> SULPHUR
<input type="checkbox"/> SALT	<input type="checkbox"/> MINERAL	
<input type="checkbox"/> FRESH	<input type="checkbox"/> SULPHUR	
<input type="checkbox"/> SALT	<input type="checkbox"/> MINERAL	

CASING & OPEN HOLE RECORD				
INCHES B.H.M. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH FEET	LOG
6 1/4	STEEL GALVANIZED CONCRETE OPEN HOLE PLASTIC	.188	0	34
5 15/16	STEEL GALVANIZED CONCRETE OPEN HOLE PLASTIC		39	100

SCREEN	TYPE OF DRILLING "REG" OR "	CHARGER	TRUCK
	MATERIAL AND TYPE	DEPTH TO TOP OF DESIGN	FEET

PLUGGING & SEALING RECORD			
DEPTH SET AT FOOT	FEET	MATERIAL AND TYPE	REMARKS (State how many feet)
37.5	0	Cement - Grouted	

VEHICLE TEST METHOD		PUMPING RATE		DURATION OF PUMPING	
<input checked="" type="checkbox"/> PUMP	<input type="checkbox"/> BATTERY	20 GPM		1 HOUR	
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVEL DURING PUMPING		<input checked="" type="checkbox"/> PUMPING <input type="checkbox"/> ALLOWANCE	
		15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
7'6" <small>FEET</small>	14'6" <small>FEET</small>	13'11" <small>FEET</small>	14' <small>FEET</small>	14'4" <small>FEET</small>	14'6" <small>FEET</small>
IS FLOODING DRAIN BAYS		PUMP INTAKE SET AT		WATER AT END OF TEST	
		GPM		<input type="checkbox"/> CLEAR <input checked="" type="checkbox"/> CLOUDY	
UNDESIRABLE PUMP TYPE		RECOMMENDED PUMP		RECOMMENDED PUMPING RATE	
<input type="checkbox"/> SHALLOW <input checked="" type="checkbox"/> DEEP		50 GPM		5 RPM	

FINAL STATUS OF WELL	<input checked="" type="checkbox"/> WATER SUPPLY	<input type="checkbox"/> ABANDONED INSUFFICIENT SUPPLY
	<input type="checkbox"/> INTERVENTION WELL	<input type="checkbox"/> ABANDONED POOR QUALITY
	<input type="checkbox"/> TEST HOLE	<input type="checkbox"/> UNFINISHED
	<input type="checkbox"/> RESEARCH WELL	<input type="checkbox"/> REMAINS ONLY
WATER USE	<input checked="" type="checkbox"/> DOMESTIC	<input type="checkbox"/> COMMERCIAL
	<input type="checkbox"/> SUGAR	<input type="checkbox"/> MUNICIPAL
	<input type="checkbox"/> IRRIGATION	<input type="checkbox"/> PUBLIC SUPPLY
	<input type="checkbox"/> INDUSTRIAL	<input type="checkbox"/> COOLING OR AIR CONDITIONING
	<input type="checkbox"/> OTHER	<input type="checkbox"/> NOT USED
METHOD OF CONSTRUCTION	<input type="checkbox"/> CABLE TOOL	<input type="checkbox"/> BORING
	<input type="checkbox"/> ROTARY (CONVENTIONAL)	<input type="checkbox"/> MAMMOET
	<input type="checkbox"/> ROTARY (REVERSE)	<input type="checkbox"/> JETTING
	<input type="checkbox"/> ROTARY (AIR)	<input type="checkbox"/> DRILLING
	<input type="checkbox"/> AIR PERCUSSION	<input type="checkbox"/> CRACKING
		<input type="checkbox"/> OTHER

LOCATION OF WELL

THE DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND
LOT LINE INDICATE NORTH BY ARROW.

135946

NAME OF WELL CONTRACTOR
Capital Water Supply Ltd.
ADDRESS
c/o 490 Stittsville, Ontario K2S 1A6
OFF. OF WELL TECHNIQUES
S. Miller/T. Harrison
SIGNATURE OF TECHNICIAN/CONTRACTOR
WELL CONTRACTOR'S
LICENSE NUMBER
1558
WELL CONTRACTOR'S
LICENSE NUMBER
T0097/T2251
SUBMISSION DATE
DAY 15 MO 8 YR 78

OFFICE USE ONLY	
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ATTACHMENT 2

Pump Test Results



Pumping Test Analysis Report

Project: Hydrogeological Investigation

Project Number: 65080.01

Client: Copart

Location: 300 Somme Street, Ottawa, Ontario

Test Conducted by: AP

Pumping Well: TW2

P-Test Date: Feb 24, 2020

Analysis Performed by: AP

Method: Manual Measurements

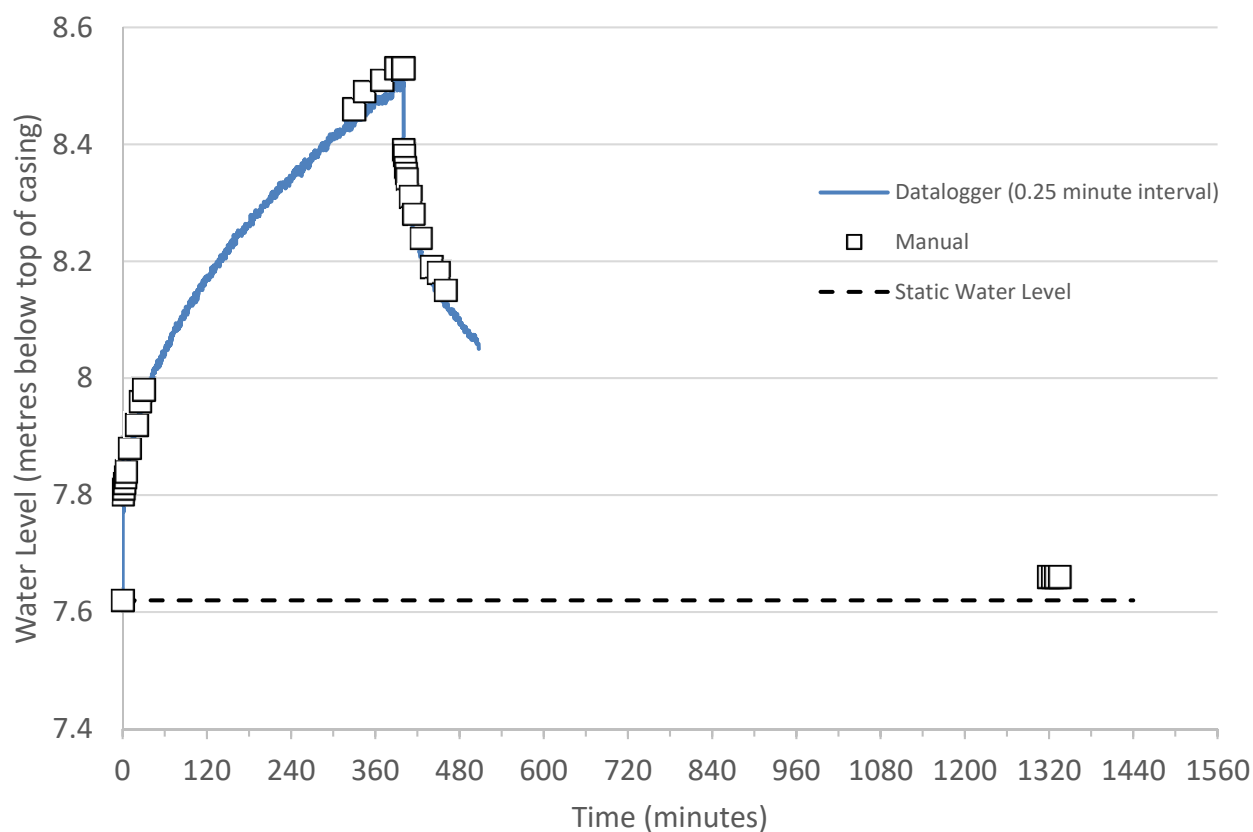
Analysis Date: Feb 28, 2020

Aquifer Thickness: 18 m

Discharge: Constant 38 L/min

Duration: 400 minutes

Pumping Test Data (TW19-1): Drawdown and Recovery



Water Levels TW2

Static : 7.62 m bgs

End of pump test (400 minutes): 8.53 m

Following recovery (60 minutes): 8.15 m (42%)

Following recovery (120 minutes): 8.05 m (53%)

Following recovery (22.50 hours): 7.66 m (96%)



GEMTEC

CONSULTING ENGINEERS
AND SCIENTISTS

Pumping Test Analysis Report

Project: Hydrogeological Investigation

Project Number: 65080.01

Client: Copart

Location: 300 Somme Street, Ottawa, Ontario

Test Conducted by: AP

Pumping Well: TW2

P-Test Date: Feb 24, 2020

Analysis Performed by: AP

Method: Aqtesolv Analysis

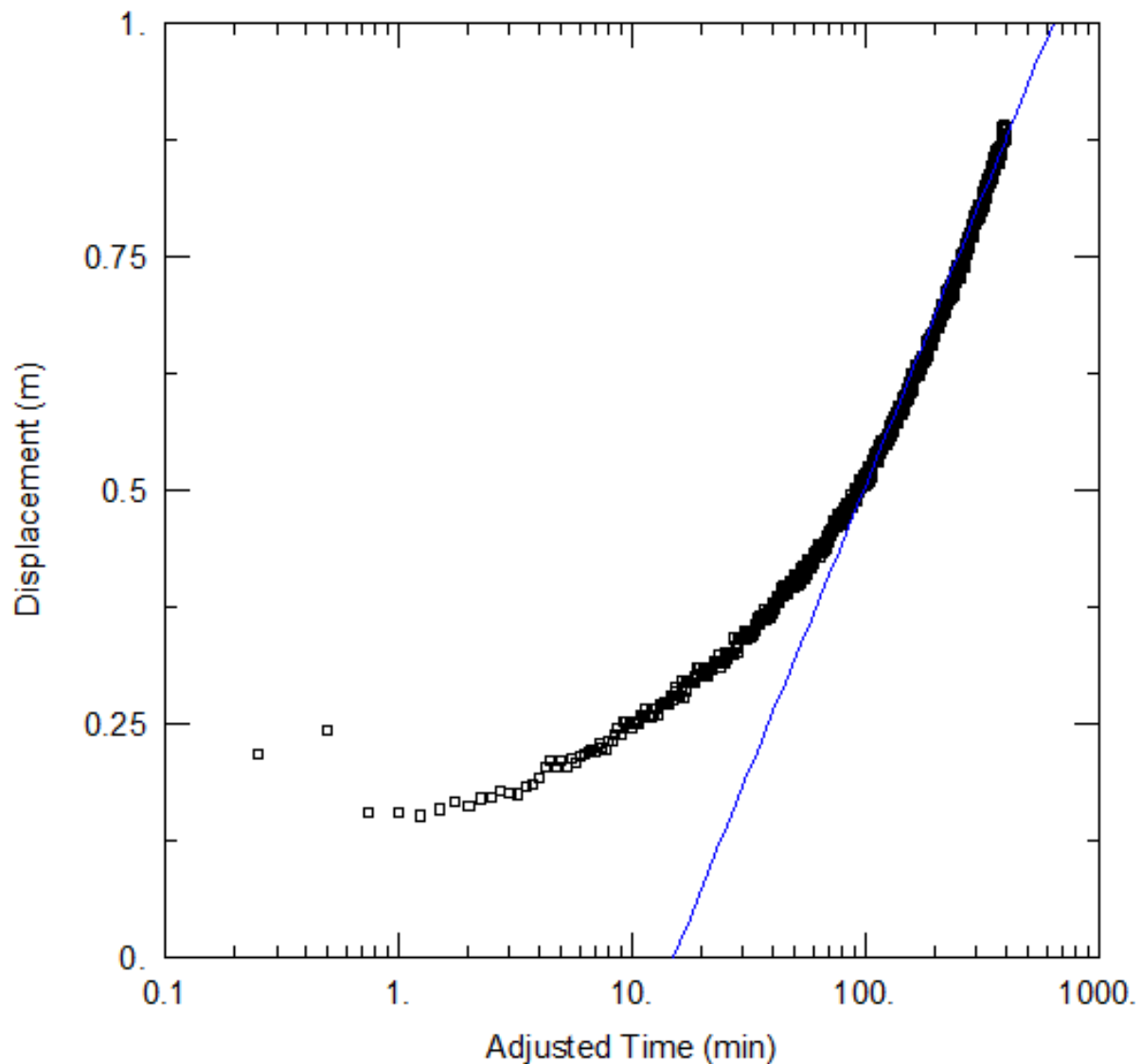
Analysis Date: Feb 28, 2020

Aquifer Thickness: 18 m

Discharge: Constant 38 L/min

Duration: 400 minutes

Pumping Test Analysis (TW2): Cooper-Jacob (Confined Aquifer)



Estimated Transmissivity: 16 m²/day or 2 x 10⁻⁴ m²/s



Pumping Test Analysis Report

Project: Hydrogeological Investigation

Project Number: 65080.01

Client: Copart

Location: 300 Somme Street, Ottawa, Ontario

Test Conducted by: AP

Pumping Well: TW2

P-Test Date: Feb 24, 2020

Analysis Performed by: AP

Method: Aqtesolv Analysis

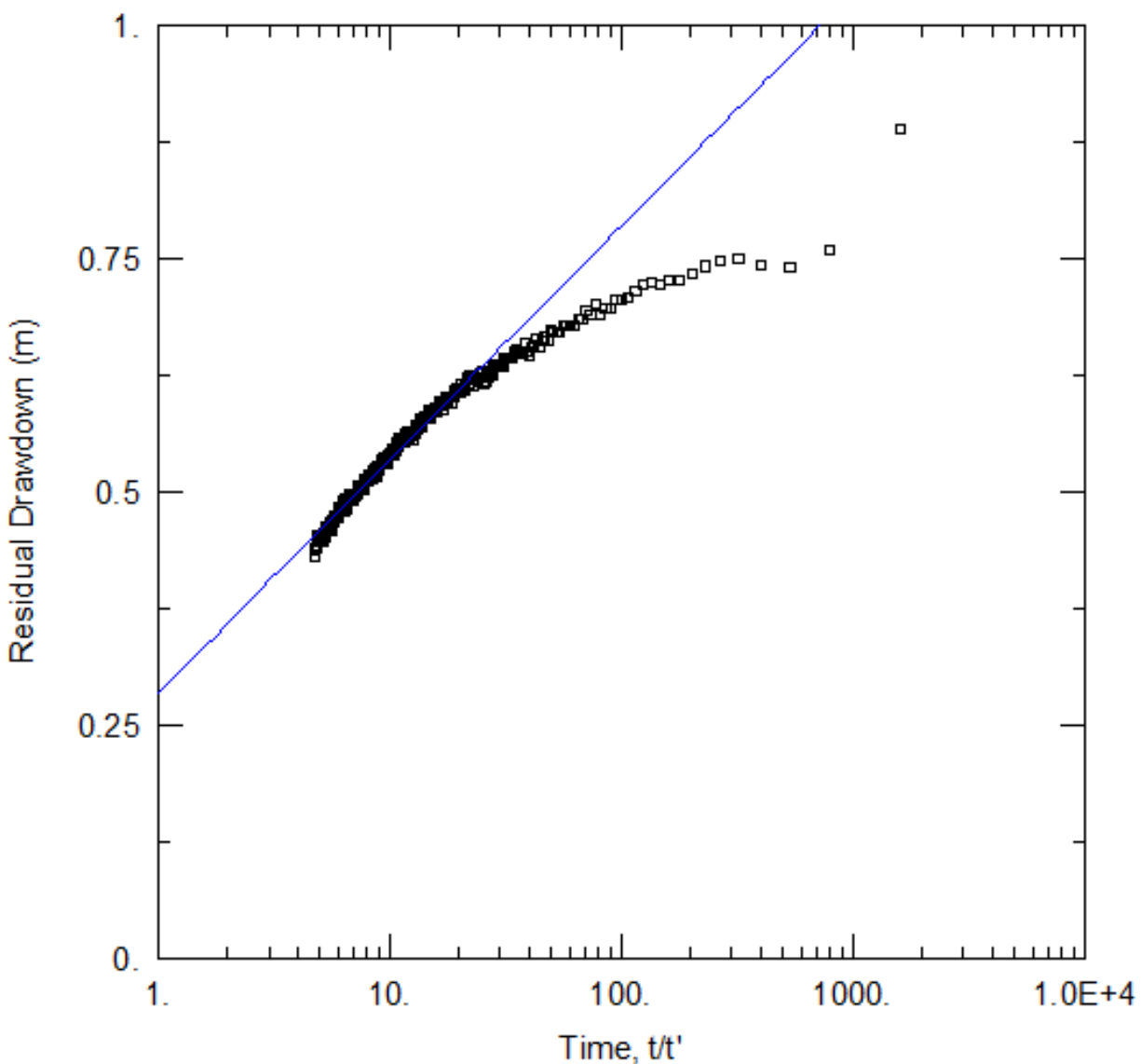
Analysis Date: Feb 28, 2020

Aquifer Thickness: 18 m

Discharge: Constant 38 L/min

Duration: 400 minutes

Pumping Test Analysis (TW2): Theis Recovery (Confined Aquifer)



Estimated Transmissivity: 40 m²/day or 5 x 10⁻⁴ m²/s



ATTACHMENT 3

Laboratory Test Results

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS
32 STEACIE DRIVE
OTTAWA, ON K2K 2A9
(613) 836-1422

ATTENTION TO: Andrius Paznekas

PROJECT: 65080.01

AGAT WORK ORDER: 20Z577416

MICROBIOLOGY ANALYSIS REVIEWED BY: Nivine Basily, Inorganics Report Writer

TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist

WATER ANALYSIS REVIEWED BY: Nivine Basily, Inorganics Report Writer

DATE REPORTED: Feb 28, 2020

PAGES (INCLUDING COVER): 24

VERSION*: 2

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*Notes

VERSION 2:V2 issued 2020-03-03. Complete report. Supersedes previous version.

Disclaimer:

- *All work conducted herein has been done using accepted standard protocols, and generally accepted practices and methods. AGAT test methods may incorporate modifications from the specified reference methods to improve performance.*
- *All samples will be disposed of within 30 days following analysis, unless expressly agreed otherwise in writing. Please contact your Client Project Manager if you require additional sample storage time.*
- *AGAT's liability in connection with any delay, performance or non-performance of these services is only to the Client and does not extend to any other third party. Unless expressly agreed otherwise in writing, AGAT's liability is limited to the actual cost of the specific analysis or analyses included in the services.*
- *This report shall not be reproduced or distributed, in whole or in part, without the prior written consent of AGAT Laboratories.*
- *The test results reported herewith relate only to the samples as received by the laboratory.*
- *Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, warranties of merchantability, fitness for a particular purpose, or non-infringement. AGAT assumes no responsibility for any errors or omissions in the information contained in this document.*
- *All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.*



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 20Z577416

PROJECT: 65080.01

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

ATTENTION TO: Andrius Paznekas

SAMPLING SITE:

SAMPLED BY:

Fecal Coliforms in Water

DATE RECEIVED: 2020-02-24

DATE REPORTED: 2020-02-28

SAMPLE DESCRIPTION: TW2
SAMPLE TYPE: Water
DATE SAMPLED: 2020-02-24
14:45
965644

Parameter	Unit	G / S	RDL
Fecal Coliform	CFU/100mL	1	ND

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

965644 ND - Not Detected.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

Divine Basily



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 20Z577416

PROJECT: 65080.01

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

ATTENTION TO: Andrius Paznekas

SAMPLING SITE:

SAMPLED BY:

Heterotrophic Plate Count in Water

DATE RECEIVED: 2020-02-24

DATE REPORTED: 2020-02-28

SAMPLE DESCRIPTION: TW2
SAMPLE TYPE: Water
DATE SAMPLED: 2020-02-24
14:45
965644

Parameter	Unit	G / S	RDL	965644
Heterotrophic Plate Count	CFU/1ml		10	ND

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

965644 ND - Not Detected.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

Divine Basily



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 20Z577416

PROJECT: 65080.01

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
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<http://www.agatlabs.com>

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

ATTENTION TO: Andrius Paznekas

SAMPLING SITE:

SAMPLED BY:

Total Coliforms & E. Coli (Using MI Agar)

DATE RECEIVED: 2020-02-24

DATE REPORTED: 2020-02-28

SAMPLE DESCRIPTION: TW2
SAMPLE TYPE: Water
DATE SAMPLED: 2020-02-24
14:45
965644

Parameter	Unit	G / S	RDL	
Escherichia coli	CFU/100mL	ND	1	ND
Total Coliforms	CFU/100mL	ND	1	ND

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to O. Reg 169/03 - Ontario Drinking Water Quality Standards. Na value derived from O. Reg 248
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

965644 ND - Not Detected.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

Divine Basily



Certificate of Analysis

AGAT WORK ORDER: 20Z577416

PROJECT: 65080.01

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CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

ATTENTION TO: Andrius Paznekas

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PAHs (Water)

DATE RECEIVED: 2020-02-24

DATE REPORTED: 2020-02-28

		SAMPLE DESCRIPTION:		TW2	
		SAMPLE TYPE:		Water	
		DATE SAMPLED:		2020-02-24 14:45	
Parameter	Unit	G / S: A	G / S: B	RDL	965644
Naphthalene	µg/L	11		0.20	<0.20[<A]
Acenaphthylene	µg/L	1		0.20	<0.20[<A]
Acenaphthene	µg/L	4.1		0.20	<0.20[<A]
Fluorene	µg/L	120		0.20	<0.20[<A]
Phenanthrene	µg/L	1		0.10	<0.10[<A]
Anthracene	µg/L	2.4		0.10	<0.10[<A]
Fluoranthene	µg/L	0.41		0.20	<0.20[<A]
Pyrene	µg/L	4.1		0.20	<0.20[<A]
Benz(a)anthracene	µg/L	1		0.20	<0.20[<A]
Chrysene	µg/L	0.1		0.10	<0.10[<A]
Benzo(b)fluoranthene	µg/L	0.1		0.10	<0.10[<A]
Benzo(k)fluoranthene	µg/L	0.1		0.10	<0.10[<A]
Benzo(a)pyrene	µg/L	0.01	0.01	0.01	<0.01[<A]
Indeno(1,2,3-cd)pyrene	µg/L	0.2		0.20	<0.20[<A]
Dibenz(a,h)anthracene	µg/L	0.2		0.20	<0.20[<A]
Benzo(g,h,i)perylene	µg/L	0.2		0.20	<0.20[<A]
2-and 1-methyl Naphthalene	µg/L	3.2		0.20	<0.20[<A]
Surrogate	Unit	Acceptable Limits			
Naphthalene-d8	%		50-140		103
Acenaphthene-d10	%		50-140		100
Chrysene-d12	%		50-140		117

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition - Potable Ground Water - All Types of Property Uses - Coarse Textured Soils, B Refers to O. Reg 169/03 - Ontario Drinking Water Quality Standards. Na value derived from O. Reg 248
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

965644 Note: The result for Benzo(b)Fluoranthene is the total of the Benzo(b)&(j)Fluoranthene isomers because the isomers co-elute on the GC column.
2- and 1-Methyl Naphthalene is a calculated parameter. The calculated value is the sum of 2-Methyl Naphthalene and 1-Methyl Naphthalene.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 20Z577416

PROJECT: 65080.01

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CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

ATTENTION TO: Andrius Paznekas

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PHCs F1 - F4 (with PAHs and VOC) (Water)

DATE RECEIVED: 2020-02-24

DATE REPORTED: 2020-02-28

SAMPLE DESCRIPTION: TW2				
SAMPLE TYPE: Water				
DATE SAMPLED: 2020-02-24 14:45				
Parameter	Unit	G / S	RDL	965644
F1 (C6-C10)	µg/L	750	25	<25
F1 (C6 to C10) minus BTEX	µg/L	750	25	<25
F2 (C10 to C16)	µg/L	150	100	<100
F2 (C10 to C16) minus Naphthalene	µg/L		100	<100
F3 (C16 to C34)	µg/L	500	100	<100
F3 (C16 to C34) minus PAHs	µg/L		100	<100
F4 (C34 to C50)	µg/L	500	100	<100
Gravimetric Heavy Hydrocarbons	µg/L	500	500	NA
Surrogate	Unit	Acceptable Limits		
Terphenyl	%	60-140		105

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition - Potable Ground Water - All Types of Property Uses - Coarse Textured Soils

Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

965644

The C6-C10 fraction is calculated using toluene response factor.

C6-C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX.

The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.

Gravimetric Heavy Hydrocarbons are not included in the Total C16-C50 and are only determined if the chromatogram of the C34 - C50 hydrocarbons indicates that hydrocarbons >C50 are present.

The chromatogram has returned to baseline by the retention time of nC50.

Total C6 - C50 results are corrected for BTEX and PAH contributions.

C>10 - C16 (F2- Naphthalene) is a calculated parameter. The calculated value is F2 - Naphthalene.

C>16 - C34 (F3-PAH) is a calculated parameter. The calculated value is F3-PAH (PAH: sum of Phenanthrene, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Fluoranthene, Dibenzo(a,h)anthracene, Indeno(1,2,3-c,d)pyrene and Pyrene).

This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.

nC10, nC16 and nC34 response factors are within 10% of their average.

C50 response factor is within 70% of nC10 + nC16 + nC34 average.

Linearity is within 15%.

Extraction and holding times were met for this sample.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 20Z577416

PROJECT: 65080.01

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CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

ATTENTION TO: Andrius Paznekas

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2020-02-24

DATE REPORTED: 2020-02-28

		SAMPLE DESCRIPTION:		TW2	
		SAMPLE TYPE:		Water	
		DATE SAMPLED:		2020-02-24 14:45	
Parameter	Unit	G / S: A	G / S: B	RDL	965644
Dichlorodifluoromethane	µg/L	590		0.20	<0.20[<A]
Vinyl Chloride	µg/L	0.5	1	0.17	<0.17[<A]
Bromomethane	µg/L	0.89		0.20	<0.20[<A]
Trichlorofluoromethane	µg/L	150		0.40	<0.40[<A]
Acetone	µg/L	2700		1.0	<1.0[<A]
1,1-Dichloroethylene	µg/L	1.6		0.30	<0.30[<A]
Methylene Chloride	µg/L	50	50	0.30	<0.30[<A]
trans- 1,2-Dichloroethylene	µg/L	1.6		0.20	<0.20[<A]
Methyl tert-butyl ether	µg/L	15		0.20	<0.20[<A]
1,1-Dichloroethane	µg/L	5		0.30	<0.30[<A]
Methyl Ethyl Ketone	µg/L	1800		1.0	<1.0[<A]
cis- 1,2-Dichloroethylene	µg/L	1.6		0.20	<0.20[<A]
Chloroform	µg/L	2.4		0.20	89[>A]
1,2-Dichloroethane	µg/L	1.6	5	0.20	<0.20[<A]
1,1,1-Trichloroethane	µg/L	200		0.30	<0.30[<A]
Carbon Tetrachloride	µg/L	0.79	2	0.20	<0.20[<A]
Benzene	µg/L	5.0	1.0	0.20	<0.20[<B]
1,2-Dichloropropane	µg/L	5		0.20	<0.20[<A]
Trichloroethylene	ug/L	1.6	5	0.20	<0.20[<A]
Bromodichloromethane	µg/L	16		0.20	19[>A]
Methyl Isobutyl Ketone	µg/L	640		1.0	<1.0[<A]
1,1,2-Trichloroethane	µg/L	4.7		0.20	<0.20[<A]
Toluene	µg/L	24		0.20	<0.20[<A]
Dibromochloromethane	µg/L	25		0.10	6.9[<A]
Ethylene Dibromide	µg/L	0.2		0.10	<0.10[<A]
Tetrachloroethylene	µg/L	1.6	10	0.20	<0.20[<A]
1,1,1,2-Tetrachloroethane	µg/L	1.1		0.10	<0.10[<A]
Chlorobenzene	µg/L	30	80	0.10	<0.10[<A]
Ethylbenzene	µg/L	2.4	140	0.10	<0.10[<A]

Certified By:

N Popmukolof



Certificate of Analysis

AGAT WORK ORDER: 20Z577416

PROJECT: 65080.01

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CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

ATTENTION TO: Andrius Paznekas

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2020-02-24

DATE REPORTED: 2020-02-28

SAMPLE DESCRIPTION: TW2					
SAMPLE TYPE: Water					
DATE SAMPLED: 2020-02-24 14:45					
Parameter	Unit	G / S: A	G / S: B	RDL	965644
m & p-Xylene	µg/L			0.20	<0.20
Bromoform	µg/L	25		0.10	<0.10[<A]
Styrene	µg/L	5.4		0.10	<0.10[<A]
1,1,2,2-Tetrachloroethane	µg/L	1		0.10	<0.10[<A]
o-Xylene	µg/L			0.10	<0.10
1,3-Dichlorobenzene	µg/L	59		0.10	<0.10[<A]
1,4-Dichlorobenzene	µg/L	1	5	0.10	<0.10[<A]
1,2-Dichlorobenzene	µg/L	3	200	0.10	<0.10[<A]
1,3-Dichloropropene	µg/L	0.5		0.30	<0.30[<A]
Xylene Mixture	µg/L	300		0.20	<0.20[<A]
n-Hexane	µg/L	51		0.20	<0.20[<A]
Surrogate	Unit	Acceptable Limits			
Toluene-d8	% Recovery		50-140		88
4-Bromofluorobenzene	% Recovery		50-140		92

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition - Potable Ground Water - All Types of Property Uses - Coarse Textured Soils, B Refers to O. Reg 169/03 - Ontario Drinking Water Quality Standards. Na value derived from O. Reg 248
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

965644 Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.
1,3-Dichloropropene total is a calculated parameter. The calculated value is the sum of Cis-1,3-Dichloropropene and Trans-1,3-Dichloropropene.

Analysis performed at AGAT Toronto (unless marked by *)

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AGAT WORK ORDER: 20Z577416

PROJECT: 65080.01

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CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

ATTENTION TO: Andrius Paznekas

SAMPLING SITE:

SAMPLED BY:

Metals Scan incl. Chromium VI

DATE RECEIVED: 2020-02-24

DATE REPORTED: 2020-02-28

SAMPLE DESCRIPTION: TW2
SAMPLE TYPE: Water
DATE SAMPLED: 2020-02-24
14:45
965644

Parameter	Unit	G / S	RDL	965644
Total Aluminum	mg/L		0.010	0.012
Total Antimony	mg/L	0.006	0.003	<0.003
Total Arsenic	mg/L	0.01	0.003	<0.003
Total Barium	mg/L	1.0	0.002	0.095
Total Beryllium	mg/L		0.001	<0.001
Total Boron	mg/L	5.0	0.010	0.183
Total Cadmium	mg/L	0.005	0.001	<0.001
Total Chromium	mg/L	0.05	0.003	<0.003
Chromium VI	mg/L		0.005	<0.005
Total Cobalt	mg/L		0.001	<0.001
Total Copper	mg/L		0.003	0.004
Total Iron	mg/L		0.010	0.532
Total Lead	mg/L	0.010	0.0010	<0.0010
Total Manganese	mg/L		0.002	0.149
Total Mercury	mg/L	0.001	0.0001	<0.0001
Total Molybdenum	mg/L		0.002	0.020
Total Nickel	mg/L		0.003	0.004
Total Selenium	mg/L	0.05	0.004	<0.004
Total Silver	mg/L		0.002	<0.002
Total Strontium	mg/L		0.005	4.98
Total Thallium	µg/L		0.006	0.242
Total Titanium	mg/L		0.002	0.004
Total Tungsten	mg/L		0.010	<0.010
Total Uranium	mg/L	0.02	0.002	<0.002
Total Vanadium	mg/L		0.002	<0.002
Total Zinc	mg/L		0.005	0.010
Total Zirconium	mg/L		0.004	<0.004

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AGAT WORK ORDER: 20Z577416

PROJECT: 65080.01

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CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

ATTENTION TO: Andrius Paznekas

SAMPLING SITE:

SAMPLED BY:

Metals Scan incl. Chromium VI

DATE RECEIVED: 2020-02-24

DATE REPORTED: 2020-02-28

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to O. Reg 169/03 - Ontario Drinking Water Quality Standards. Na value derived from O. Reg 248
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

Analysis performed at AGAT Toronto (unless marked by *)

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PROJECT: 65080.01

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CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

ATTENTION TO: Andrius Paznekas

SAMPLING SITE:

SAMPLED BY:

Subdivision Well Water Supply

DATE RECEIVED: 2020-02-24

DATE REPORTED: 2020-02-28

SAMPLE DESCRIPTION: TW2
SAMPLE TYPE: Water
DATE SAMPLED: 2020-02-24
14:45
965644

Parameter	Unit	G / S	RDL	965644
Electrical Conductivity	µS/cm		2	1260
pH	pH Units		NA	7.73
Total Hardness (as CaCO ₃) (Calculated)	mg/L		0.5	454
Total Dissolved Solids	mg/L		20	664
Alkalinity (as CaCO ₃)	mg/L		5	278
Fluoride	mg/L	1.5	0.05	<0.05
Chloride	mg/L		0.50	77.8
Nitrate as N	mg/L	10.0	0.25	<0.25
Nitrite as N	mg/L	1.0	0.25	<0.25
Sulphate	mg/L		0.50	212
Ammonia as N	mg/L		0.02	0.17
Total Kjeldahl Nitrogen	mg/L		0.10	<0.10
Dissolved Organic Carbon	mg/L		0.5	1.8
Phenols	mg/L		0.001	<0.001
Hydrogen Sulphide	mg/L		0.05	<0.05
Colour	TCU		5	<5
Turbidity	NTU		0.5	6.9
Tannins and Lignins	mg phenol/L		0.1	0.1
Total Calcium	mg/L		0.10	101
Total Magnesium	mg/L		0.10	48.9
Total Sodium	mg/L		0.10	55.1
Total Potassium	mg/L		0.10	7.76
% Difference/ Ion Balance (Calculated)	%		NA	2.11

Certified By:

Divine Basily



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 20Z577416

PROJECT: 65080.01

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CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

ATTENTION TO: Andrius Paznekas

SAMPLING SITE:

SAMPLED BY:

Subdivision Well Water Supply

DATE RECEIVED: 2020-02-24

DATE REPORTED: 2020-02-28

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to O. Reg 169/03 - Ontario Drinking Water Quality Standards. Na value derived from O. Reg 248
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.
965644 Elevated RDLs indicate the degree of sample dilutions prior to the analysis to keep analytes within the calibration range or reduce matrix interference.

Complete results are now issued.

Ammonia: Data reported confirmed by re-analysis.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

Divine Basily



AGAT Laboratories

Guideline Violation

AGAT WORK ORDER: 20Z577416

PROJECT: 65080.01

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CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

ATTENTION TO: Andrius Paznekas

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
965644	TW2	ON T2 PGW CT	O. Reg. 153(511) - VOCs (Water)	Bromodichloromethane	µg/L	16	19
965644	TW2	ON T2 PGW CT	O. Reg. 153(511) - VOCs (Water)	Chloroform	µg/L	2.4	89

Quality Assurance

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

AGAT WORK ORDER: 20Z577416

PROJECT: 65080.01

ATTENTION TO: Andrius Paznekas

SAMPLING SITE:

SAMPLED BY:

Microbiology Analysis

RPT Date: Feb 28, 2020			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

Heterotrophic Plate Count in Water

Heterotrophic Plate Count	965644	965644	ND	ND	NA	< 10
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Fecal Coliforms in Water

Fecal Coliform	965644	965644	ND	ND	NA	< 1
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Total Coliforms & E. Coli (Using MI Agar)

Escherichia coli	969651		ND	ND	NA	< 1
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Total Coliforms	969651		ND	ND	NA	< 1
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Comments: ND - Not Detected, NA - % RPD Not Applicable.

Certified By:





Quality Assurance

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

AGAT WORK ORDER: 20Z577416

PROJECT: 65080.01

ATTENTION TO: Andrius Paznekas

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis

RPT Date: Feb 28, 2020			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE			MATRIX SPIKE			
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

O. Reg. 153(511) - PHCs F1 - F4 (with PAHs and VOC) (Water)

F1 (C6-C10)	967758		< 25	< 25	NA	< 25	105%	60%	140%	105%	60%	140%	103%	60%	140%
F2 (C10 to C16)		TW	< 100	< 100	NA	< 100	115%	60%	140%	99%	60%	140%	95%	60%	140%
F3 (C16 to C34)		TW	<100	<100	NA	< 100	107%	60%	140%	132%	60%	140%	126%	60%	140%
F4 (C34 to C50)		TW	< 100	< 100	NA	< 100	98%	60%	140%	109%	60%	140%	109%	60%	140%

O. Reg. 153(511) - PAHs (Water)

Naphthalene		TW	< 0.20	< 0.20	NA	< 0.20	107%	50%	140%	115%	50%	140%	94%	50%	140%
Acenaphthylene		TW	< 0.20	< 0.20	NA	< 0.20	117%	50%	140%	94%	50%	140%	119%	50%	140%
Acenaphthene		TW	< 0.20	< 0.20	NA	< 0.20	116%	50%	140%	113%	50%	140%	117%	50%	140%
Fluorene		TW	< 0.20	< 0.20	NA	< 0.20	118%	50%	140%	119%	50%	140%	111%	50%	140%
Phenanthrene		TW	< 0.10	< 0.10	NA	< 0.10	107%	50%	140%	118%	50%	140%	102%	50%	140%
Anthracene		TW	< 0.10	< 0.10	NA	< 0.10	98%	50%	140%	105%	50%	140%	103%	50%	140%
Fluoranthene		TW	< 0.20	< 0.20	NA	< 0.20	114%	50%	140%	107%	50%	140%	107%	50%	140%
Pyrene		TW	< 0.20	< 0.20	NA	< 0.20	114%	50%	140%	110%	50%	140%	108%	50%	140%
Benz(a)anthracene		TW	< 0.20	< 0.20	NA	< 0.20	109%	50%	140%	109%	50%	140%	98%	50%	140%
Chrysene		TW	< 0.10	< 0.10	NA	< 0.10	101%	50%	140%	97%	50%	140%	95%	50%	140%
Benzo(b)fluoranthene		TW	< 0.10	< 0.10	NA	< 0.10	64%	50%	140%	85%	50%	140%	97%	50%	140%
Benzo(k)fluoranthene		TW	< 0.10	< 0.10	NA	< 0.10	85%	50%	140%	118%	50%	140%	113%	50%	140%
Benzo(a)pyrene		TW	< 0.01	< 0.01	NA	< 0.01	88%	50%	140%	106%	50%	140%	113%	50%	140%
Indeno(1,2,3-cd)pyrene		TW	< 0.20	< 0.20	NA	< 0.20	65%	50%	140%	103%	50%	140%	111%	50%	140%
Dibenz(a,h)anthracene		TW	< 0.20	< 0.20	NA	< 0.20	76%	50%	140%	92%	50%	140%	119%	50%	140%
Benzo(g,h,i)perylene		TW	< 0.20	< 0.20	NA	< 0.20	68%	50%	140%	116%	50%	140%	115%	50%	140%

O. Reg. 153(511) - VOCs (Water)

Dichlorodifluoromethane	960103		< 0.20	< 0.20	NA	< 0.20	83%	50%	140%	83%	50%	140%	96%	50%	140%
Vinyl Chloride	960103		< 0.17	< 0.17	NA	< 0.17	72%	50%	140%	92%	50%	140%	72%	50%	140%
Bromomethane	960103		< 0.20	< 0.20	NA	< 0.20	85%	50%	140%	90%	50%	140%	71%	50%	140%
Trichlorofluoromethane	960103		< 0.40	< 0.40	NA	< 0.40	76%	50%	140%	106%	50%	140%	86%	50%	140%
Acetone	960103		< 1.0	< 1.0	NA	< 1.0	72%	50%	140%	84%	50%	140%	93%	50%	140%
1,1-Dichloroethylene	960103		< 0.30	< 0.30	NA	< 0.30	106%	50%	140%	89%	60%	130%	90%	50%	140%
Methylene Chloride	960103		< 0.30	< 0.30	NA	< 0.30	86%	50%	140%	110%	60%	130%	106%	50%	140%
trans- 1,2-Dichloroethylene	960103		< 0.20	< 0.20	NA	< 0.20	106%	50%	140%	106%	60%	130%	99%	50%	140%
Methyl tert-butyl ether	960103		< 0.20	< 0.20	NA	< 0.20	75%	50%	140%	74%	60%	130%	83%	50%	140%
1,1-Dichloroethane	960103		< 0.30	< 0.30	NA	< 0.30	86%	50%	140%	84%	60%	130%	101%	50%	140%
Methyl Ethyl Ketone	960103		< 1.0	< 1.0	NA	< 1.0	75%	50%	140%	78%	50%	140%	83%	50%	140%
cis- 1,2-Dichloroethylene	960103		< 0.20	< 0.20	NA	< 0.20	71%	50%	140%	82%	60%	130%	104%	50%	140%
Chloroform	960103		< 0.20	< 0.20	NA	< 0.20	73%	50%	140%	83%	60%	130%	105%	50%	140%
1,2-Dichloroethane	960103		< 0.20	< 0.20	NA	< 0.20	78%	50%	140%	95%	60%	130%	104%	50%	140%
1,1,1-Trichloroethane	960103		< 0.30	< 0.30	NA	< 0.30	86%	50%	140%	95%	60%	130%	79%	50%	140%
Carbon Tetrachloride	960103		< 0.20	< 0.20	NA	< 0.20	106%	50%	140%	86%	60%	130%	107%	50%	140%

AGAT QUALITY ASSURANCE REPORT (V2)

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AGAT Laboratories is accredited to ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA) and/or Standards Council of Canada (SCC) for specific tests listed on the scope of accreditation. AGAT Laboratories (Mississauga) is also accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) for specific drinking water tests. Accreditations are location and parameter specific. A complete listing of parameters for each location is available from www.cala.ca and/or www.scc.ca. The tests in this report may not necessarily be included in the scope of accreditation. RPDs calculated using raw data. The RPD may not be reflective of duplicate values shown, due to rounding of final results.

Results relate only to the items tested. Results apply to samples as received.



Quality Assurance

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

PROJECT: 65080.01

SAMPLING SITE:

AGAT WORK ORDER: 20Z577416

ATTENTION TO: Andrius Paznekas

SAMPLED BY:

Trace Organics Analysis (Continued)

RPT Date: Feb 28, 2020			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Benzene	960103		< 0.20	< 0.20	NA	< 0.20	76%	50%	140%	98%	60%	130%	86%	50%	140%
1,2-Dichloropropane	960103		< 0.20	< 0.20	NA	< 0.20	75%	50%	140%	90%	60%	130%	93%	50%	140%
Trichloroethylene	960103		< 0.20	< 0.20	NA	< 0.20	74%	60%	140%	91%	60%	140%	97%	60%	140%
Bromodichloromethane	960103		< 0.20	< 0.20	NA	< 0.20	77%	50%	140%	91%	60%	130%	88%	50%	140%
Methyl Isobutyl Ketone	960103		< 1.0	< 1.0	NA	< 1.0	102%	50%	140%	97%	50%	140%	88%	50%	140%
1,1,2-Trichloroethane	960103		< 0.20	< 0.20	NA	< 0.20	98%	50%	140%	107%	60%	130%	100%	50%	140%
Toluene	960103		< 0.20	< 0.20	NA	< 0.20	93%	50%	140%	105%	60%	130%	94%	50%	140%
Dibromochloromethane	960103		< 0.10	< 0.10	NA	< 0.10	76%	50%	140%	83%	60%	130%	86%	50%	140%
Ethylene Dibromide	960103		< 0.10	< 0.10	NA	< 0.10	89%	50%	140%	101%	60%	130%	90%	50%	140%
Tetrachloroethylene	960103		< 0.20	< 0.20	NA	< 0.20	93%	50%	140%	106%	60%	130%	86%	50%	140%
1,1,1,2-Tetrachloroethane	960103		< 0.10	< 0.10	NA	< 0.10	88%	50%	140%	97%	60%	130%	84%	50%	140%
Chlorobenzene	960103		< 0.10	< 0.10	NA	< 0.10	95%	50%	140%	105%	60%	130%	95%	50%	140%
Ethylbenzene	960103		< 0.10	< 0.10	NA	< 0.10	88%	50%	140%	99%	60%	130%	86%	50%	140%
m & p-Xylene	960103		< 0.20	< 0.20	NA	< 0.20	90%	50%	140%	100%	60%	130%	87%	50%	140%
Bromoform	960103		< 0.10	< 0.10	NA	< 0.10	84%	50%	140%	95%	60%	130%	78%	50%	140%
Styrene	960103		< 0.10	< 0.10	NA	< 0.10	86%	50%	140%	93%	60%	130%	82%	50%	140%
1,1,2,2-Tetrachloroethane	960103		< 0.10	< 0.10	NA	< 0.10	100%	50%	140%	104%	60%	130%	94%	50%	140%
o-Xylene	960103		< 0.10	< 0.10	NA	< 0.10	93%	50%	140%	102%	60%	130%	92%	50%	140%
1,3-Dichlorobenzene	960103		< 0.10	< 0.10	NA	< 0.10	92%	50%	140%	104%	60%	130%	94%	50%	140%
1,4-Dichlorobenzene	960103		< 0.10	< 0.10	NA	< 0.10	87%	50%	140%	98%	60%	130%	89%	50%	140%
1,2-Dichlorobenzene	960103		< 0.10	< 0.10	NA	< 0.10	95%	50%	140%	102%	60%	130%	94%	50%	140%
1,3-Dichloropropene	960103		< 0.30	< 0.30	NA	< 0.30	79%	50%	140%	81%	60%	130%	101%	50%	140%
n-Hexane	960103		< 0.20	< 0.20	NA	< 0.20	94%	50%	140%	97%	60%	130%	86%	50%	140%

Comments: Tap water analysis has been performed as QC sample testing for duplicate and matrix spike due to insufficient sample volume.
When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By:

N Popmukohof

Quality Assurance

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

AGAT WORK ORDER: 20Z577416

PROJECT: 65080.01

ATTENTION TO: Andrius Paznekas

SAMPLING SITE:

SAMPLED BY:

Water Analysis															
RPT Date: Feb 28, 2020			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

Subdivision Well Water Supply

Electrical Conductivity	965644	965644	1260	1268	0.6%	< 2	103%	80%	120%						
pH	969360		7.94	7.77	2.2%	NA	101%	90%	110%						
Total Dissolved Solids	966495		494	492	0.4%	< 20	100%	80%	120%						
Alkalinity (as CaCO3)	969360		96	94	1.8%	< 5	90%	80%	120%						
Fluoride	965644	965644	<0.05	<0.05	NA	< 0.05	108%	90%	110%	104%	90%	110%	107%	85%	115%
Chloride	965644	965644	77.8	77.5	0.5%	< 0.10	90%	70%	130%	102%	80%	120%	107%	70%	130%
Nitrate as N	965644	965644	<0.25	<0.25	NA	< 0.05	92%	70%	130%	101%	80%	120%	101%	70%	130%
Nitrite as N	965644	965644	<0.25	<0.25	NA	< 0.05	100%	70%	130%	92%	80%	120%	91%	70%	130%
Sulphate	965644	965644	212	212	0.2%	< 0.10	100%	70%	130%	104%	80%	120%	NA	70%	130%
Ammonia as N	976214		<0.02	<0.02	NA	< 0.02	93%	70%	130%	99%	80%	120%	95%	70%	130%
Total Kjeldahl Nitrogen	965644	965644	<0.10	0.17	NA	< 0.10	99%	70%	130%	95%	80%	120%	101%	70%	130%
Dissolved Organic Carbon	965644	965644	1.8	1.8	NA	< 0.5	95%	90%	110%	108%	90%	110%	98%	80%	120%
Phenols	969360		<0.001	<0.001	NA	< 0.001	96%	90%	110%	103%	90%	110%	105%	80%	120%
Sulphide	972606		<0.05	<0.05	NA	< 0.05	100%	80%	120%	100%	85%	115%	98%	70%	130%
Hydrogen Sulphide	972606		<0.05	<0.05	NA	< 0.05	100%	90%	110%	100%	90%	110%	98%	80%	120%
Colour	965644	965644	<5	<5	NA	< 5	99%	90%	110%						
Turbidity	965644	965644	6.9	6.8	1.0%	< 0.5	99%	80%	120%						
Tannins and Lignins	965644	965644	0.1	0.1	NA	< 0.1	91%	80%	120%	101%	85%	115%	113%	70%	130%
Total Calcium	960961		80.9	83.6	3.3%	< 0.05	105%	90%	110%	102%	90%	110%	93%	70%	130%
Total Magnesium	960961		142	146	3.0%	< 0.05	100%	90%	110%	98%	90%	110%	92%	70%	130%
Total Sodium	960961		32.8	34.0	3.6%	< 0.05	105%	90%	110%	105%	90%	110%	96%	70%	130%
Total Potassium	960961		22.0	22.6	2.9%	< 0.05	105%	90%	110%	104%	90%	110%	97%	70%	130%

Comments: Matrix spike: Spike level < native concentration. Matrix spike acceptance limits do not apply.

Metals Scan incl. Chromium VI

Total Aluminum	971080		<0.010	<0.010	NA	< 0.010	99%	70%	130%	102%	80%	120%	97%	70%	130%
Total Antimony	971080		<0.003	<0.003	NA	< 0.003	99%	70%	130%	91%	80%	120%	92%	70%	130%
Total Arsenic	971080		<0.003	<0.003	NA	< 0.003	103%	70%	130%	104%	80%	120%	104%	70%	130%
Total Barium	971080		0.134	0.133	0.7%	< 0.002	109%	70%	130%	111%	80%	120%	103%	70%	130%
Total Beryllium	971080		<0.001	<0.001	NA	< 0.001	99%	70%	130%	101%	80%	120%	97%	70%	130%
Total Boron	971080		0.049	0.046	NA	< 0.010	97%	70%	130%	101%	80%	120%	97%	70%	130%
Total Cadmium	971080		<0.001	<0.001	NA	< 0.001	98%	70%	130%	100%	80%	120%	95%	70%	130%
Total Chromium	971080		<0.003	<0.003	NA	< 0.003	100%	70%	130%	98%	80%	120%	92%	70%	130%
Chromium VI	966557		<0.005	<0.005	NA	< 0.005	103%	70%	130%	102%	80%	120%	106%	70%	130%
Total Cobalt	971080		<0.001	<0.001	NA	< 0.001	103%	70%	130%	100%	80%	120%	92%	70%	130%
Total Copper	971080		<0.003	<0.003	NA	< 0.003	109%	70%	130%	104%	80%	120%	90%	70%	130%
Total Iron	971080		<0.010	<0.010	NA	< 0.010	106%	70%	130%	99%	80%	120%	97%	70%	130%
Total Lead	971080		<0.0010	<0.0010	NA	< 0.0010	101%	70%	130%	106%	80%	120%	94%	70%	130%
Total Manganese	971080		0.005	0.003	NA	< 0.002	99%	70%	130%	99%	80%	120%	93%	70%	130%



Quality Assurance

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

AGAT WORK ORDER: 20Z577416

PROJECT: 65080.01

ATTENTION TO: Andrius Paznekas

SAMPLING SITE:

SAMPLED BY:

Water Analysis (Continued)

RPT Date: Feb 28, 2020			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Total Mercury	971080		<0.0001	<0.0001	NA	< 0.0002	101%	70%	130%	104%	80%	120%	100%	70%	130%
Total Molybdenum	971080		<0.002	<0.002	NA	< 0.002	95%	70%	130%	94%	80%	120%	95%	70%	130%
Total Nickel	971080		<0.003	<0.003	NA	< 0.003	108%	70%	130%	102%	80%	120%	92%	70%	130%
Total Selenium	971080		<0.004	<0.004	NA	< 0.004	93%	70%	130%	96%	80%	120%	97%	70%	130%
Total Silver	971080		<0.002	<0.002	NA	< 0.002	96%	70%	130%	106%	80%	120%	98%	70%	130%
Total Strontium	971080		0.529	0.556	5.0%	< 0.005	92%	70%	130%	96%	80%	120%	97%	70%	130%
Total Thallium	967214		0.185	0.153	18.9%	< 0.006	95%	70%	130%	97%	80%	120%	96%	70%	130%
Total Titanium	971080		<0.002	<0.002	NA	< 0.002	98%	70%	130%	95%	80%	120%	94%	70%	130%
Total Tungsten	971080		<0.010	<0.010	NA	< 0.010	89%	70%	130%	92%	80%	120%	92%	70%	130%
Total Uranium	971080		<0.002	<0.002	NA	< 0.002	98%	70%	130%	102%	80%	120%	98%	70%	130%
Total Vanadium	971080		<0.002	<0.002	NA	< 0.002	98%	70%	130%	96%	80%	120%	94%	70%	130%
Total Zinc	971080		0.005	0.006	NA	< 0.005	104%	70%	130%	102%	80%	120%	93%	70%	130%
Total Zirconium	971080		<0.004	<0.004	NA	< 0.004	92%	70%	130%	92%	80%	120%	93%	70%	130%

Comments: NA signifies Not Applicable.

If the RPD value is NA, the results of the duplicates are under 5X the RDL and will not be calculated.

Certified By: _____

Divine Basily

Method Summary

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

AGAT WORK ORDER: 20Z577416

PROJECT: 65080.01

ATTENTION TO: Andrius Paznekas

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Microbiology Analysis			
Fecal Coliform	MIC-93-7000	SM 9222 D	MF/INCUBATOR
Heterotrophic Plate Count	MIC-93- 7020	SM 9215 C	INCUBATOR
Escherichia coli	MIC-93-7010	EPA 1604	Membrane Filtration
Total Coliforms	MIC-93-7010	EPA 1604	Membrane Filtration

Method Summary

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS
AGAT WORK ORDER: 20Z577416
PROJECT: 65080.01
ATTENTION TO: Andrius Paznekas
SAMPLING SITE:
SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Naphthalene	ORG-91-5105	modified from EPA SW-846 3510C & 8270E	GC/MS
Acenaphthylene	ORG-91-5105	modified from EPA SW-846 3510C & 8270E	GC/MS
Acenaphthene	ORG-91-5105	modified from EPA SW-846 3510C & 8270E	GC/MS
Fluorene	ORG-91-5105	modified from EPA SW-846 3510C & 8270E	GC/MS
Phenanthrene	ORG-91-5105	modified from EPA SW-846 3510C & 8270E	GC/MS
Anthracene	ORG-91-5105	modified from EPA SW-846 3510C & 8270E	GC/MS
Fluoranthene	ORG-91-5105	modified from EPA SW-846 3510C & 8270E	GC/MS
Pyrene	ORG-91-5105	modified from EPA SW-846 3510C & 8270E	GC/MS
Benz(a)anthracene	ORG-91-5105	modified from EPA SW-846 3510C & 8270E	GC/MS
Chrysene	ORG-91-5105	modified from EPA SW-846 3510C & 8270E	GC/MS
Benzo(b)fluoranthene	ORG-91-5105	modified from EPA SW-846 3510C & 8270E	GC/MS
Benzo(k)fluoranthene	ORG-91-5105	modified from EPA SW-846 3510C & 8270E	GC/MS
Benzo(a)pyrene	ORG-91-5105	modified from EPA SW-846 3510C & 8270E	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5105	modified from EPA SW-846 3510C & 8270E	GC/MS
Dibenz(a,h)anthracene	ORG-91-5105	modified from EPA SW-846 3510C & 8270E	GC/MS
Benzo(g,h,i)perylene	ORG-91-5105	modified from EPA SW-846 3510C & 8270E	GC/MS
2-and 1-methyl Naphthalene	ORG-91-5105	modified from EPA SW-846 3510C & 8270E	GC/MS
Naphthalene-d8	ORG-91-5105	modified from EPA SW-846 3510C & 8270E	GC/MS
Acenaphthene-d10	ORG-91-5105	modified from EPA SW-846 3510C & 8270E	GC/MS
Chrysene-d12	ORG-91-5105	modified from EPA SW-846 3510C & 8270E	GC/MS
F1 (C6-C10)	VOL-91- 5010	modified from MOE PHC-E3421	P&T GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5010	modified from MOE PHC-E3421	P&T GC/FID
F2 (C10 to C16)	VOL-91-5010	modified from MOE PHC-E3421	GC/FID
F2 (C10 to C16) minus Naphthalene	VOL-91-5010	modified from MOE PHC-E3421	GC/FID
F3 (C16 to C34)	VOL-91-5010	modified from MOE PHC-E3421	GC/FID
F3 (C16 to C34) minus PAHs	VOL-91-5010	modified from MOE PHC-E3421	GC/FID
F4 (C34 to C50)	VOL-91-5010	modified from MOE PHC-E3421	GC/FID
Gravimetric Heavy Hydrocarbons	VOL-91-5010	modified from MOE PHC-E3421	BALANCE
Terphenyl	VOL-91-5010	modified from MOE PHC-E3421	GC/FID
Dichlorodifluoromethane	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Vinyl Chloride	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Bromomethane	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS

Method Summary

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS
AGAT WORK ORDER: 20Z577416
PROJECT: 65080.01
ATTENTION TO: Andrius Paznekas
SAMPLING SITE:
SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Acetone	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Methylene Chloride	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
trans- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Methyl tert-butyl ether	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
cis- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Chloroform	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Benzene	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Trichloroethylene	VOL-91-5001	EPA SW-846 5230B & 8260D	(P&T)GC/MS
Bromodichloromethane	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Toluene	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Dibromochloromethane	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Chlorobenzene	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Ethylbenzene	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
m & p-Xylene	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Bromoform	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Styrene	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
o-Xylene	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Xylene Mixture	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
n-Hexane	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
Toluene-d8	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5001	EPA SW-846 5030C & 8260D	(P&T)GC/MS

Method Summary

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS
AGAT WORK ORDER: 20Z577416
PROJECT: 65080.01
ATTENTION TO: Andrius Paznekas
SAMPLING SITE:
SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Total Aluminum	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Antimony	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Arsenic	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Barium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Beryllium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Boron	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Cadmium	MET -93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Chromium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Chromium VI	INOR-93-6034	modified from SM 3500-CR B	SPECTROPHOTOMETER
Total Cobalt	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Copper	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Iron	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Lead	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Manganese	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Mercury	MET-93-6100	modified from EPA 245.2 and SM 3112 B	CVAAS
Total Molybdenum	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Nickel	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Selenium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Silver	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Strontium	INOR-93-6003	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Thallium	INOR-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Titanium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Tungsten	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Uranium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Vanadium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Zinc	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Zirconium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Electrical Conductivity	INOR-93-6016	SM 2510 B	EC METER
pH	INOR-93-6000	modified from SM 4500-H+ B	PC TITRATE

Method Summary

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS
AGAT WORK ORDER: 20Z577416
PROJECT: 65080.01
ATTENTION TO: Andrius Paznekas
SAMPLING SITE:
SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Total Hardness (as CaCO ₃) (Calculated)	MET-93-6105	modified from EPA SW-846 6010C & 200.7 & SM 2340 B	CALCULATION
Total Dissolved Solids	INOR-93-6028	modified from EPA 1684, ON MOECC E3139, SM 2540C, D	BALANCE
Alkalinity (as CaCO ₃)	INOR-93-6000	SM 2320 B	PC TITRATE
Fluoride	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Chloride	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Nitrate as N	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Ammonia as N	INOR-93-6059	modified from SM 4500-NH ₃ H	LACHAT FIA
Total Kjeldahl Nitrogen	INOR-93-6048	modified from EPA 351.2 and SM 4500-NORG D	LACHAT FIA
Dissolved Organic Carbon	INOR-93-6049	EPA 415.1 & SM 5310 B	SHIMADZU CARBON ANALYZER
Phenols	INOR-93-6050	MOE ROPHEN-E 3179 & SM 5530 D	TECHNICON AUTO ANALYZER
Hydrogen Sulphide	INOR-93-6054	SM 4500 S ₂ - D	SPECTROPHOTOMETER
Colour	INOR-93-6046	SM 2120 C	SPECTROPHOTOMETER
Turbidity	INOR-93-6044	modified from SM 2130 B	NEPHELOMETER
Tannins and Lignins	INOR-93-6058	SM 550B, 21st Edition	SPECTROPHOTOMETER
Total Calcium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Total Magnesium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Total Sodium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Total Potassium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
% Difference/ Ion Balance (Calculated)		SM 1030 E	CALCULATION

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS
32 STEACIE DRIVE
OTTAWA, ON K2K 2A9
(613) 836-1422

ATTENTION TO: Andrius Paznekas

PROJECT: 65080.01

AGAT WORK ORDER: 20Z581540

TRACE ORGANICS REVIEWED BY: Oksana Gushyla, Trace Organics Lab Supervisor

DATE REPORTED: Mar 06, 2020

PAGES (INCLUDING COVER): 5

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*Notes

Disclaimer:

- All work conducted herein has been done using accepted standard protocols, and generally accepted practices and methods. AGAT test methods may incorporate modifications from the specified reference methods to improve performance.
- All samples will be disposed of within 30 days following analysis, unless expressly agreed otherwise in writing. Please contact your Client Project Manager if you require additional sample storage time.
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- All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 20Z581540

PROJECT: 65080.01

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

ATTENTION TO: Andrius Paznekas

SAMPLING SITE:

SAMPLED BY:

O. Reg. 170/03 Schedule 24 - THM (mg/L)

DATE RECEIVED: 2020-03-05

DATE REPORTED: 2020-03-06

		SAMPLE DESCRIPTION:		TW2
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2020-03-05
Parameter	Unit	G / S	RDL	994825
Chloroform	mg/L		0.0002	0.014
Bromodichloromethane	mg/L		0.0002	0.0007
Dibromochloromethane	mg/L		0.0002	0.0005
Bromoform	mg/L		0.0003	<0.0003
Trihalomethanes	mg/L	100	0.00032	0.015
Analysis Approval Date		2020/03/06		
Analysis Approval Time		12:10		
Analysis Start Date		2020/03/06		
Surrogate	Unit	Acceptable Limits		
Toluene-d8	% Recovery	60-130	103	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to O. Reg 169/03 - Ontario Drinking Water Quality Standards. Na value derived from O. Reg 248
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

994825 Trihalomethanes is a calculated parameter. The calculated value is a sum of Chloroform, Bromodichloromethane, Dibromochloromethane and Bromoform.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



Quality Assurance

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

AGAT WORK ORDER: 20Z581540

PROJECT: 65080.01

ATTENTION TO: Andrius Paznekas

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis

RPT Date: Mar 06, 2020

RPT Date: Mar 06, 2020			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE			MATRIX SPIKE			
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

O. Reg. 170/03 Schedule 24 - THM (mg/L)

Chloroform	978212	< 0.0002	< 0.0002	NA	< 0.0002	95%	60%	140%	100%	60%	140%	111%	60%	140%
Bromodichloromethane	978212	< 0.0002	< 0.0002	NA	< 0.0002	101%	60%	140%	102%	60%	140%	101%	60%	140%
Dibromochloromethane	978212	< 0.0002	< 0.0002	NA	< 0.0002	112%	60%	140%	97%	60%	140%	112%	60%	140%
Bromoform	978212	< 0.0003	< 0.0003	NA	< 0.0003	103%	60%	140%	94%	60%	140%	97%	60%	140%

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By:

Method Summary

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

AGAT WORK ORDER: 20Z581540

PROJECT: 65080.01

ATTENTION TO: Andrius Paznekas

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Chloroform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromoform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trihalomethanes	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Analysis Approval Date			
Analysis Approval Time			
Analysis Start Date			