BERYLLIUM SOIL SAMPLING PROGRAM

BWXT Nuclear Energy Canada Inc.
1160 Monaghan Road, Peterborough, Ontario

Prepared By:

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Project 207205.0018

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1. INTRODUCTION

Trinity Consultants Ontario Inc. (Trinity) is pleased to provide this report documenting the results of the beryllium soil sampling program for 2020.

1.1 Objective

BWXT Nuclear Energy Canada Inc. (BWXT) is licensed by the Canadian Nuclear Safety Commission (CNSC) to operate a nuclear fuel fabrication facility located at 1160 Monaghan Road in Peterborough, Ontario (the Site). BWXT has a comprehensive environmental protection program to monitor and control nuclear and hazardous substances release from the Site.

The CNSC has conducted an Independent Environmental Monitoring Program around the Site, at various parks around Peterborough and a school close to the facility. In addition, a background location located approximately 19 kilometers west of the facility and located north of Omemee was also sampled. This Independent Environmental Monitoring Program has been conducted by the CNSC in 2014, 2018 and 2019. It was understood that CNSC also planned to conduct this sampling program again in 2020.

Trinity was retained as a third-party independent consultant by BWXT, to collect surface soil samples at locations previously sampled by CNSC and CNSC soil sample locations proposed as part of their 2020 sampling program. The objective of the sampling program was to determine beryllium content at 19 designated sampling locations in various nearby parks, a local school (Prince of Wales), as well as a background location removed from the City of Peterborough (Emily-Omemee Community Centre) and provide third party verification for the reported beryllium content results.

1.2 Facility Location and Licensing

BWXT is located at 1160 Monaghan Road, southeast of the intersection of Monaghan Road and Wolfe Street in Peterborough, Ontario.

The facility is located in a mixed industrial, commercial, and residential community. The BWXT property is bounded by Wolfe Street and residential properties use to the north, Monaghan Road and BWXT employee parking lot to the west, GE Canada facility to the south and east.

2. SCOPE OF WORK

The Trinity scope of work was based on discussions with BWXT and sampling location information provided by CNSC. The following scope of work was completed as part of this program:

a) Collected a total of sixteen (16) representative soil samples at pre-determined locations, in parks around Peterborough, and a local school (GP01-S01, GP02-S02, GP03-S03, GP04-S04, GP05-S05, GP05-S05(NW), GP05-S05(W), GP05-S05(SW), GP05-S05(N), GP05-S05(S), GP05-S05(NE), GP05-S05(E), GP05-S05(SE), GP06-S06, GP07-S07, and GP08-S08);
b) Collected two (2) blind duplicate quality control soil samples (GP20-S20 and GP21-S21) as well as three (3) samples at a background location (GP11-S11, GP12-S12 and GP13-S13) approximately 19 kilometres west of the facility;
c) Stored all soil samples in a cooler with ice and transported to an accredited laboratory (ALS Laboratories) for determination of beryllium content; and

d) Prepared this technical report providing a summary of the analytical results, including applicable regulatory standards.

Sample locations are provided on **Figures 1 to 11**.

3. SOIL SAMPLING EQUIPMENT AND METHODOLOGY

3.1 Sampling Equipment

Trinity used the following tools and equipment to collect representative soil samples at selected locations:

- Stainless steel spoon and trowel;
- Spray bottle with Alconox™ soap and water solution and a spray bottle with distilled water;
- Paper towels and J-cloths;
- Large Zip-loc® bags;
- Metric tape measure;
- Laboratory supplied sample containers;
- Sample cooler; and
- Disposable nitrile gloves

3.2 Sampling Methodology

There is typically a high degree of small-scale variability encountered for most parameters in most soils. Therefore, soil sampling for analysis of potential contaminants such as beryllium was conducted by combining several samples from the location and depth of interest into one composite sample that will be representative of both the identified sample location and depth. This method helps to ensure that the sample represents the quality of the material at and nearest the point of interest. Collection of quality control samples from a location not suspected of contamination is also recommended.

The sampling methodology used at the BWXT site for the beryllium soil sampling program is based on the MECP "Guidelines on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario", December 1996, ISBN-0-7778-4056-1 and is further described below:

Surface soil sampling locations included all grassy areas, and sampling was carried out as follows:

a) The selected sample location was confirmed by Global Positioning System coordinates provided to BWXT by the CNSC measurement, using a hand-held Garmin GPSMAP 64st;
b) Prior to the sampling program being initiated, access to the properties was obtained by BWXT by contacting City of Peterborough, City of Kawartha Lakes and the Prince of Wales School;
c) The sampling location was cleared of debris, grass roots, stones and any other materials to allow for soil sample collection;
d) Four (4) discrete samples of surface soil (0-5 cm depth) were collected at north, south, west and east directions, within a 50 cm radius of each pre-determined soil sampling location;
e) The discrete samples from the sampling location, were placed onto the clean sample tray in the Zip-loc® bag and were mixed with the stainless-steel spoon. Once mixed the composite sample was placed into a laboratory prepared 250 ml clear glass sample jar. Any excess soil was placed back into the sample locations;
f) At sample location GP05-S05, a 10 m grid was placed centering around location GP05-S05. Additional samples were collected at 5 m intervals within this grid (GP05-S05(NW), GP05-

S05(W), GP05-S05(SW), GP05-S05(N), GP05-S05(S), GP05-S05(NE), GP05-S05(E), and GP05-S05(SE)). Each of these grid sampling points were their own sample location, and were sampled in the same manner described above;

g) Each sample jar was labeled noting, the name and address of the laboratory, client name, project identification number, sample designation, date sample collected, time sample collected, name of sampling personnel, analysis required and sample jar laboratory batch reference number;
h) Field personnel wore new disposable nitrile gloves for each sampling location and discarded the gloves after sample collection and sample jarring;
i) The sample jar was placed into a cooler packed with ice immediately after collection;
j) The stainless steel sampling spoon and trowel was washed between sampling locations with soap and water solution and then distilled water dispensed from hand-held spray bottles, wiped with clean (new) piece of paper towel, visually inspected for residual soil particles and when confirmed clean placed into a designated clean Zip-loc® for transport to the next sampling location;
k) The plastic Zip-loc® bag covering the sample mixing tray was removed from the sample tray and disposed into a garbage bag along with any soiled paper towels;
l) The sample tray was sprayed with soap and water and then distilled water, wiped with clean new piece of paper towel and when confirmed clean, inserted into a new plastic zip lock bag and placed into the clean box along with the sampling spoon; and
m) All waste materials including paper towels and plastic zip lock bags were stored in a labeled garbage bag at Trinity's office pending review of analytical results prior to disposal.

The soil sampling locations and coordinates for each are provided below in Table 3-1 below.

Table 3-1 – Inventory of Soil Sample Locations and Coordinates

Sample Identification	UTM Coordinates	Sample Identification	UTM Coordinates
GP01-S01	17T 713991 mE, 4907322 mN	GP05-S05(E)	17T 712526 mE, 4908271 mN
GP02-S02	17T 712587 mE, 4907662 mN	GP05-S05(SE)	17T 712526 mE, 4908266 mN
GP03-S03	17T 712012 mE, 4908150 mN	GP06-S06	17T 712780 mE, 4908463 mN
GP04-S04	17T 713940 mE, 4908177 mN	GP07-S07	17T 713953 mE, 4909512 mN
GP05-S05	17T 712521 mE, 4908271 mN	GP08-S08	17T 712305 mE, 4909533 mN
GP05-S05(NW)	17T 712516 mE, 4908270 mN	GP11-S11	17T 694043 mE, 4909939 mN
GP05-S05(W)	17T 712516 mE, 4908269 mN	GP12-S12	17T 694082 mE, 4909962 mN
GP05-S05(SW)	17T 712517 mE, 4908264 mN	GP13-S13	17T 694140 mE, 4909967 mN
GP05-S05(N)	17T 712519 mE, 4908274 mN	GP20-S20	Blind Duplicate of GP05-S05
GP05-S05(S)	17T 712523 mE, 4908263 mN	GP21-S21	Blind Duplicate of GP12-S12
GP05-S05(NE)	17T 712525 mE, 4908276 mN		

3.3 Analytical Procedure for Method Reference EPA 200.2/6020B(mod)

Prior to homogenization or drying, samples are to be inspected by the laboratory for multiphase conditions (free water, petroleum product, etc.) or other anomalies. Small amounts of free water or petroleum product may be mixed with the sample but large amounts of free water or petroleum product should be separated. The QP (qualified person) should be contacted and agreement reached on how to proceed. All such anomalies and the actions taken must be noted in the Certificate of Analysis or analytical report.

Drying may change the pH of the soil; therefore, pH is conducted on the sample as received.

The sample is mixed as well as possible and several aliquots taken to obtain the desired weight. Hard clay samples that cannot be mixed are "cored", using a spatula in different spots or sections of the jar. Stones, twigs, and other foreign materials are excluded. To ensure a representative subsample is obtained, a minimum 10 g aliquot is taken.

Physical reduction of large clay aggregates is required. Samples are then passed through a 2 mm sieve. Any portion that does not pass through this sieve is discarded.

A subsample of the 2 mm portion is then taken and ground to pass through a 355 µm sieve in its entirety. This portion is then used in the analysis of all metal parameters including hydride-forming metals, mercury and fraction organic carbon.

3.4 Laboratory Sample Preparation

A previously dried, ground (<0.355 mm) sample is subjected to digestion with a heated, hydrochloric acid solution. The digestate is separated from the soil residue and brought to volume with deionized water. This method provides environmentally available metals, not total metals.

Analysis is performed with inductively coupled plasma-optical atomic emission spectroscopy (ICP-OES) or inductively coupled plasma-mass spectrometry (ICP-MS) or atomic absorption spectrophotometry (AAS). The laboratory used ICP-MS to conduct the analysis.

4. QUALITY ASSURANCE/QUALITY CONTROL

All soil samples were analyzed by ALS Laboratories (ALS) in Waterloo, Ontario, who are accredited or approved for specific analyses including beryllium, under the Canadian Association for Laboratory Accreditation (CALA).

ALS is committed to maintaining the highest level of quality. ALS's quality assurance and quality control systems ensure the most precise and accurate analyses consistently providing reliable and defensible results. ALS continually monitors all laboratory operations and procedures to ensure compliance with internationally recognized standards, MECP standards, CCME soil quality guidelines, internal laboratory policies and procedures.

Internal laboratory protocols for Quality Assurance/Quality Control were implemented to assess the reliability of the soil analyses in terms of the following:

a) Precision and accuracy;
b) Potential for background effects from the laboratory environment, testing equipment;
c) The recovery efficiency of the analytical procedures; and
d) Potential effects from the sample matrix on recovery of the target parameter.

All analytical protocols followed O. Reg. 153/04 (as amended) document entitled "Protocol for Analytical Methods Used in the Assessment of Properties Under Part XV.1 of the Environmental Protection Act", March 9, 2004 (the Protocol).

4.1 Replicate Samples

These samples are also known as field duplicate samples and were collected and submitted for analysis to assess potential variability in the soil matrix and site contamination levels and assess the accuracy of the laboratory. Control samples were collected using the same methodology as above. These samples were designated GP20-S20 (duplicate of GP05-S05) and GP21-S21 (duplicate of GP12-S12).

4.2 Control Samples

In addition to field duplicate samples, three (3) soil samples were collected from a background location anticipated to represent Ontario natural background levels of beryllium in soil. The samples were designated GP11-S11, GP12-S12, and GP13-S13. The samples were collected at the Emily-Omemee Community Centre located approximately 19 kilometers west of the BWXT facility.

4.3 Third Party Laboratory

In addition, to the above QA/QC measures, Trinity obtained all of the samples back from ALS and submitted six (6) of the soil samples (GP05-S05, GP05-S05(NE), GP05-S05(SW), GP06-S06, GP12-S12, and GP21-S21) to another accredited laboratory, AGAT Laboratories (AGAT) in Mississauga, Ontario for analysis of beryllium to verify the ALS results.

A copy of the AGAT Certificate of Analysis is provided in **Appendix A**.

5. SELECTION OF ASSESSMENT CRITERIA AND RATIONALE

Generic remediation standards applicable to sites in Ontario were established under subsection 168.4(1) of the Environmental Protection Act and are summarized in the "Soil, Ground Water and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act" (the SGWS Standards). These generic criteria vary according to environmental site sensitivity, groundwater and land use, soil type and restoration depth. Quantitative criteria related to soil pH, overburden thickness and proximity to permanent and natural water bodies are specified in Ontario Regulation 153/04 that defines a potential environmentally – sensitive site (a PESS).

For comparison purposes, criteria listed in MECP Table 1 (Full Depth Background Site Condition Standards), the most stringent for Ontario were used for the assessment of the laboratory analytical results for all sample locations. Samples collected at the area parks and outside of the Emily-Omemee Community Centre are considered Parkland Property Use and the Prince of Wales School is Institutional Property Use.

6. RESULTS

6.1 Soil Quality

The analytical results for beryllium concentrations for all soil samples analyzed, without exception are well below the most stringent Ontario Table 1 Site Condition Standards published by the MECP under Ontario Regulation 153/04 (as amended).

All but two (2) of the twenty-one (21) samples submitted were non-detect with results below the laboratory reported detection limit (RDL) (<0.5 µg/g). One (1) sample (GP05-S05) was detected at the RDL of 0.5 µg/g

and one (1) sample had a detection marginally above the laboratory RDL at GP06-S06 with a concentration of 0.52 µg/g. All results, without exception are well below the most stringent Ontario typical background concentration of 2.5 µg/g.

The analytical results are summarized for reference on **Table 1**.

Copies of the laboratory certificate of analysis are provided in **Appendix A.**

6.2 Quality Assurance/Quality Control

A review of the results for all QA/QC samples shows good correlation in beryllium content between original sample and "replicate sample". Based on the QA/QC implemented in the field and laboratory, the soil sample results are considered reliable.

All results submitted to AGAT were well below Ontario's most stringent MECP Table 1 Site Condition Standards, and were below the laboratory reported detection limit (RDL) of 0.5 µg/g. These results confirm the results reported by ALS.

7. CONCLUSION AND RECOMMENDATION

The analytical results confirm that the beryllium content in shallow soil for every sample collected and analyzed is well below the most stringent Ontario background concentrations published in MECP Table 1 Site Condition Standards for O. Reg. 153/04 (as amended).

Based on the results of this sampling program, there is no evidence that beryllium used at the BWXT facility has had any impact on Peterborough soils, and no risk has been identified to the public.

8. DISCLAIMER

This report was prepared for the sole use of **BWXT Nuclear Energy Canada Inc**. Third party use of the information contained in this report is not permitted without prior written authorization from Trinity. Any use or reliance on the information contained in this report by a third party is the sole responsibility of such third party. Trinity accepts no responsibility or liability resulting from the use of the information contained in this report.

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Principal Consultant

9. REFERENCES

Canadian Nuclear Safety Commission, 2020:
Independent Environmental Monitoring Program, BWXT Nuclear Energy Canada Inc., Peterborough, https://nuclearsafety.gc.ca/eng/resources/maps-of-nuclear-facilities/iemp/bwxt-peterborough.cfm#background

Google Inc., 2020:
Aerial imagery

Ministry of the Environment, Conservation and Parks, 2011:
Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, O. Reg. 153/04 (as amended), April 15, 2011.

Ministry of the Environment, Conservation and Parks, 2004:
Protocol for Analytical Methods Used in the Assessment of Properties Under Part XV.1 of the Environmental Protection Act, March 9, 2004, amended July 1, 2011.

Ministry of the Environment, Conservation and Parks, 1996:
Guidelines on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario, December 1996.

FIGURES

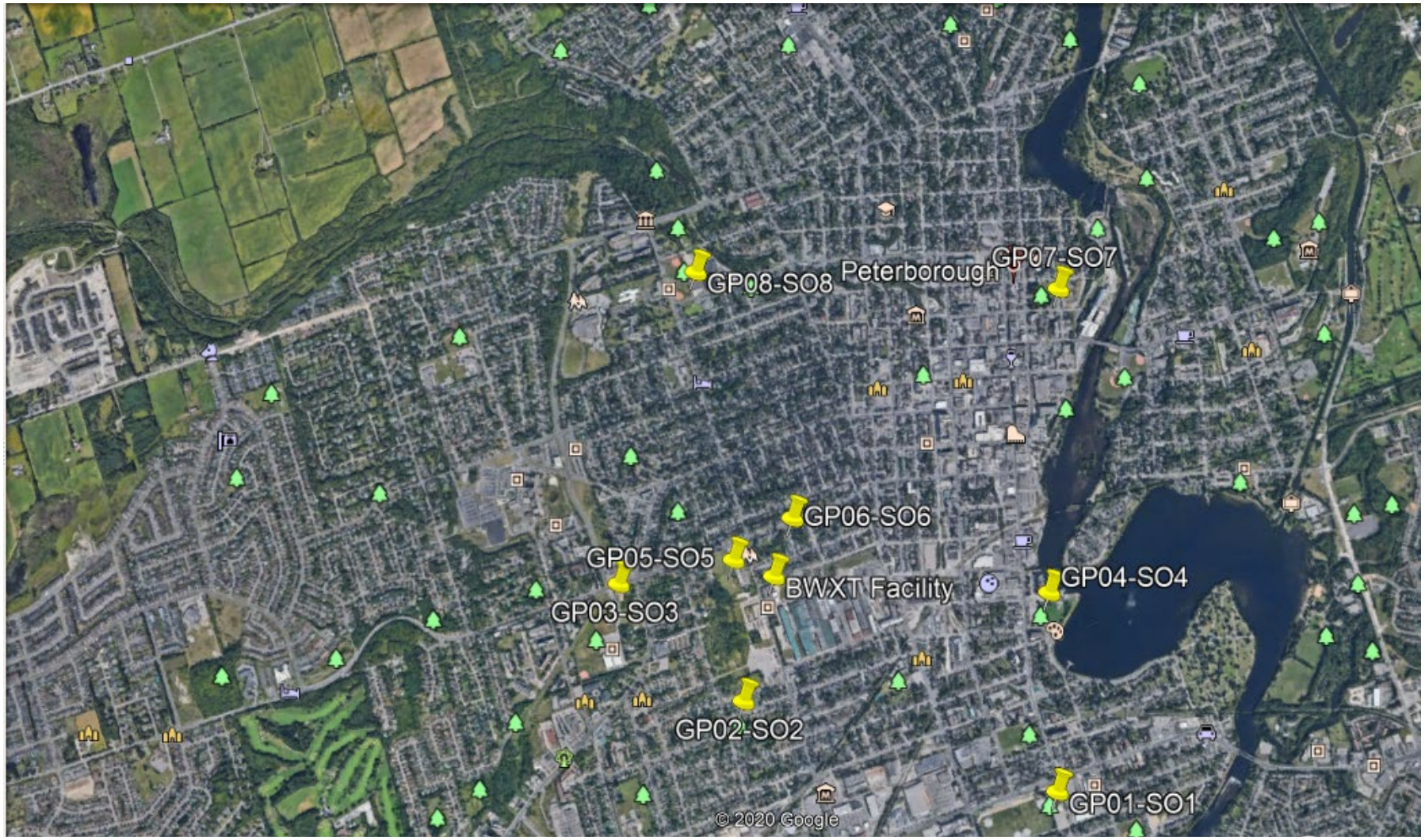

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Figure 1
Peterborough Soil Sampling Locations

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Figure 2
Background (Omemee) Soil Sampling Locations

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Trinity Consultants	Beryllium Soil Sampling Program Trinity Project 207205.0018 August 12, 2020 Figure 3 R. A. Morrow Memorial Park Soil Sampling Location GP01-S01	BWXT Nuclear Energy Canada Inc. 1160 Monaghan Road, Peterborough, ON

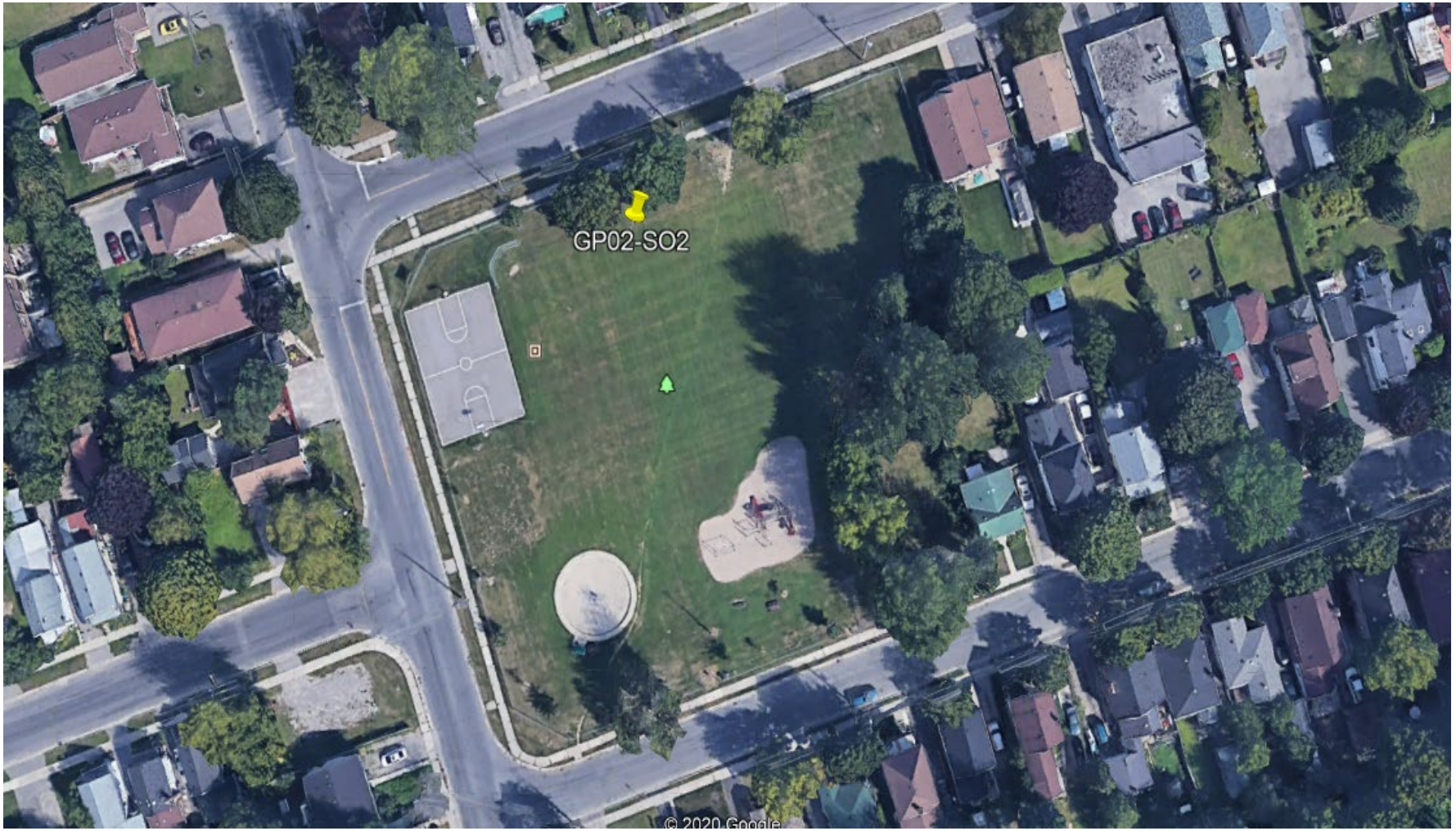

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Figure 4
Turner Park Soil Sampling Location GP02-S02

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Figure 5
Kinsmen Park Soil Sampling Location GP03-S03

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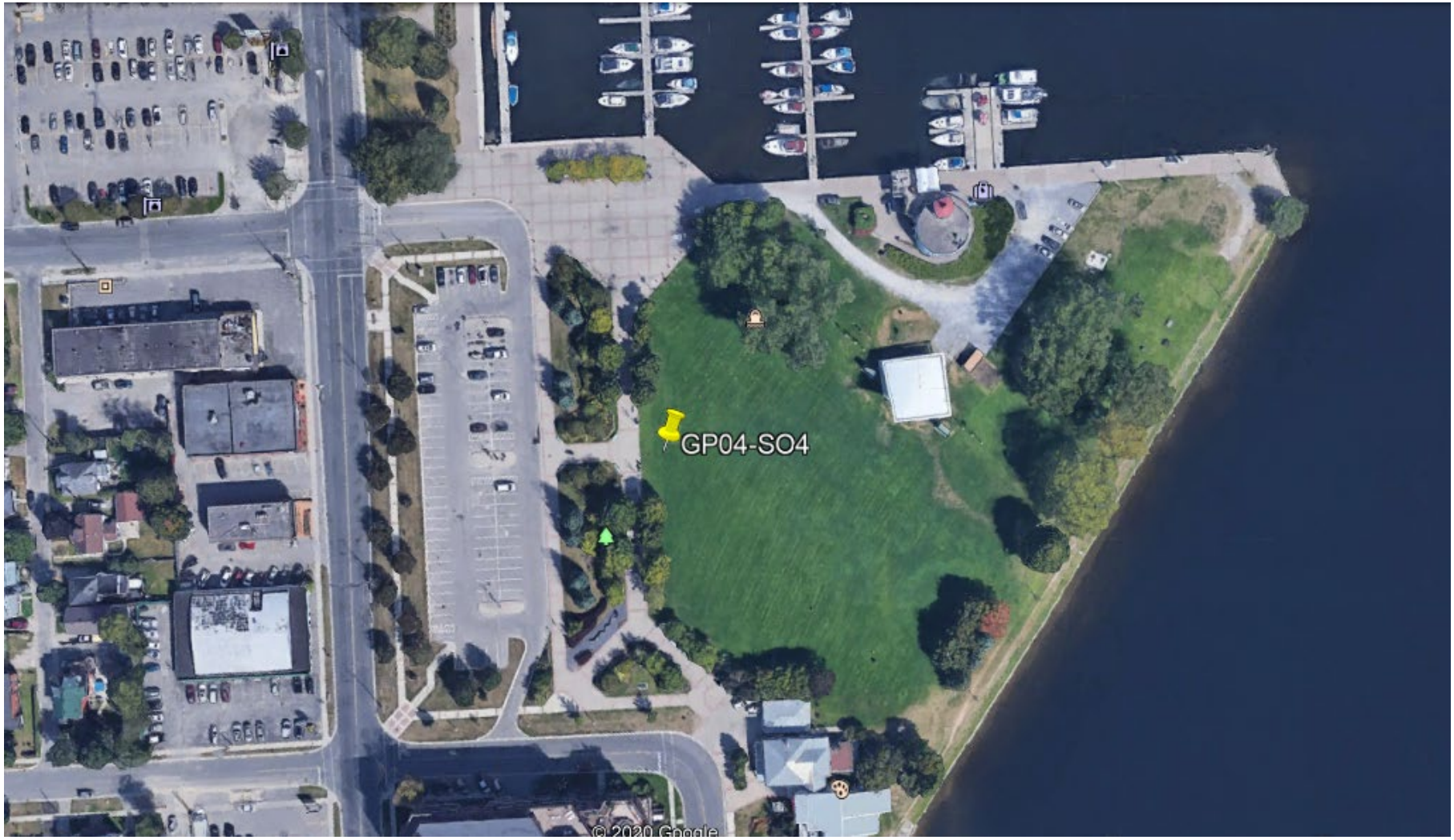

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Figure 6
Del Crary Park Soil Sampling Location GP04-S04

BWXT Nuclear Energy Canada Inc.
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Figure 7
Prince of Wales School Soil Sampling Location
GP05-S05

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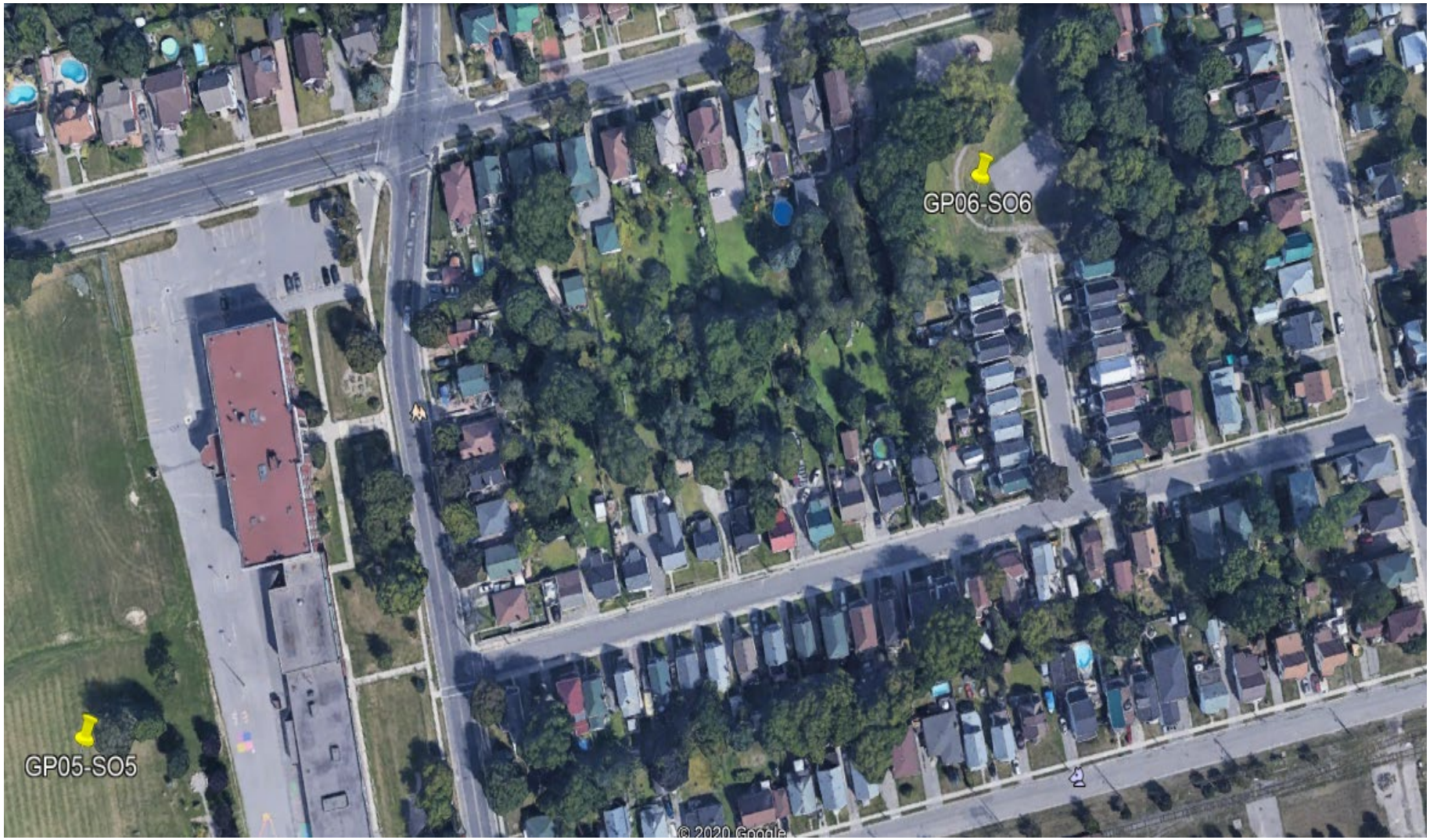

Trinity Consultants	Beryllium Soil Sampling Program Trinity Project 207205.0018 August 12, 2020 Figure 8 Park off Adeline Street at Patterson Street Soil Sampling Location GP06-S06	BWXT Nuclear Energy Canada Inc. 1160 Monaghan Road, Peterborough, ON

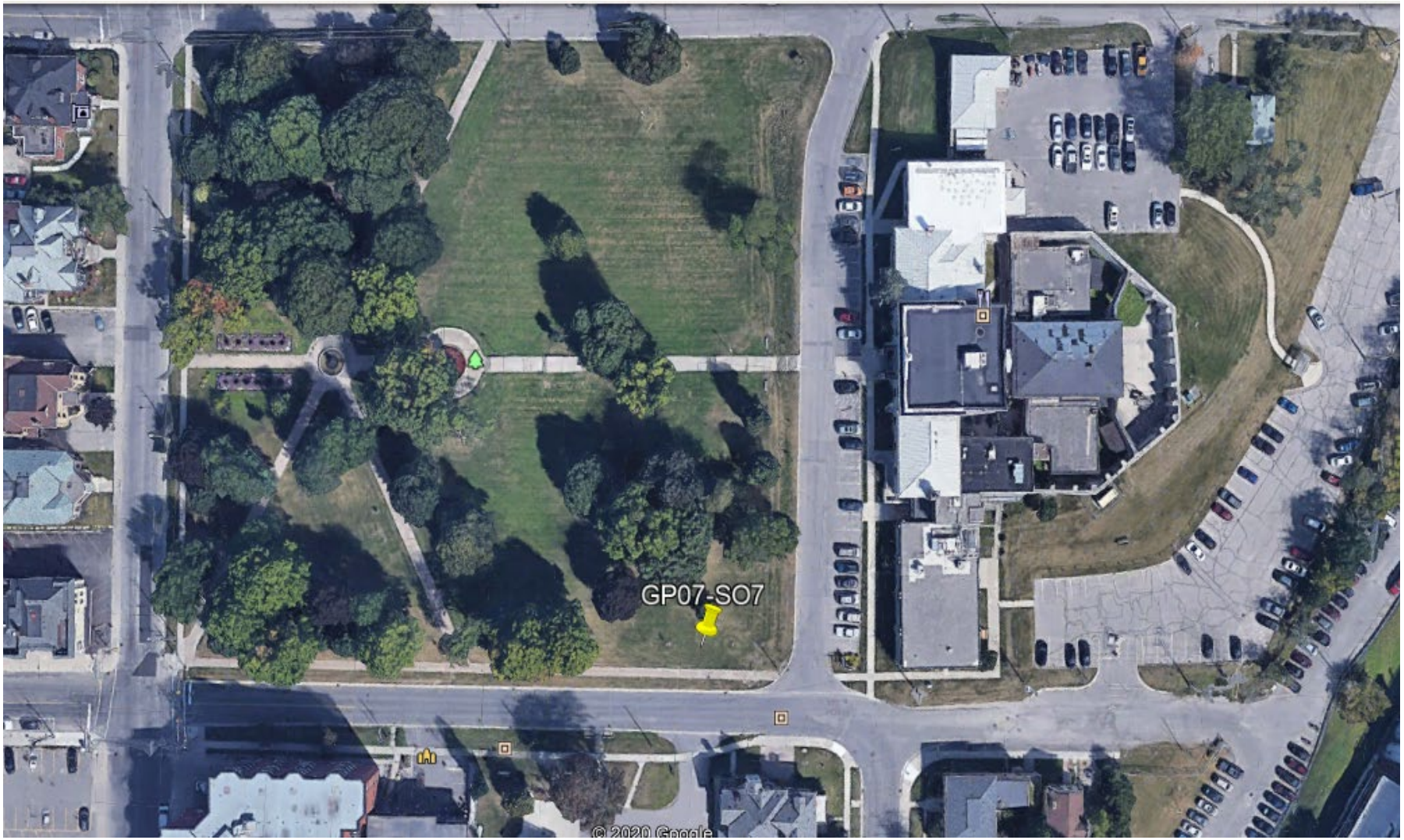

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Figure 9
Victoria Park Soil Sampling Location GP07-S07

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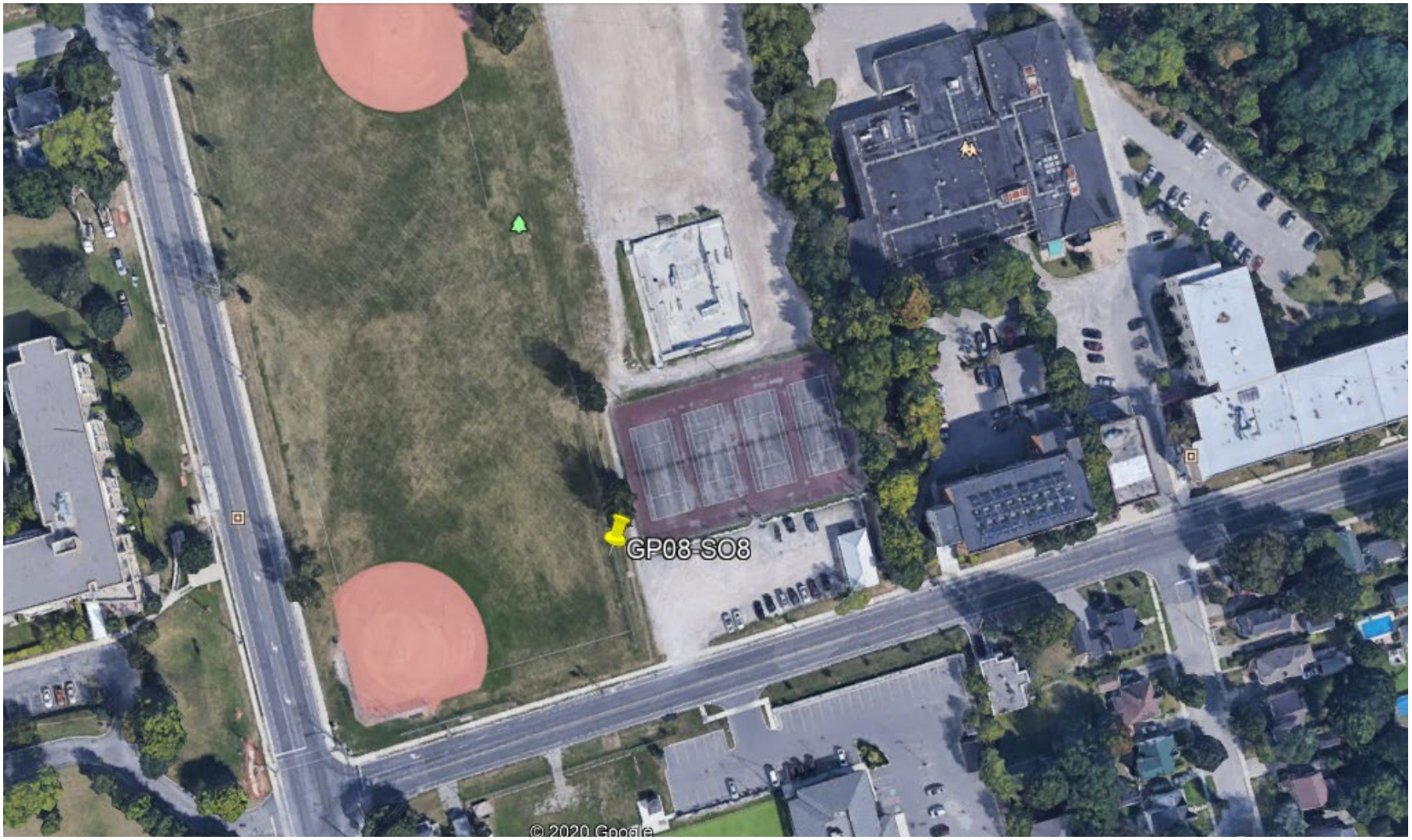

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Figure 10
Bonnerworth Park Soil Sampling Location GP08-S08

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Figure 11
Emily-Omemee Community Centre and Arena
Soil Sampling Locations
(GP11-S11, GP12-S12 and GP13-S13)

BWXT Nuclear Energy Canada Inc.
1160 Monaghan Road, Peterborough, ON

TABLES

Table 1: Summary of Analytical Results for Beryllium

Sample Number	Sample Location Description	Property Use	MECP Table 1 Standard (µg/g)	ALS Result (µg/g)	AGAT Result (µg/g)
GP01–S01	R.A. Morrow Memorial Park	Parkland	2.5	**<0.50**	
GP02–S02	Turner Park	Parkland	2.5	**<0.50**	
GP03-S03	Kinsmen Park	Parkland	2.5	**<0.50**	
GP04-S04	Del Crary Park	Parkland	2.5	**<0.50**	
GP05-S05	Prince of Wales School	Institutional	2.5	**0.50**	**<0.50**
GP05-S05(NW)	Prince of Wales School	Institutional	2.5	**<0.50**	
GP05-S05(W)	Prince of Wales School	Institutional	2.5	**<0.50**	
GP05-S05(SW)	Prince of Wales School	Institutional	2.5	**<0.50**	**<0.50**
GP05-S05(S)	Prince of Wales School	Institutional	2.5	**<0.50**	
GP05-S05(N)	Prince of Wales School	Institutional	2.5	**<0.50**	
GP05-S05(NE)	Prince of Wales School	Institutional	2.5	**<0.50**	**<0.50**
GP05-S05(E)	Prince of Wales School	Institutional	2.5	**<0.50**	
GP05-S05(SE)	Prince of Wales School	Institutional	2.5	**<0.50**	
GP06-S06	Park on Adeline St. off Patterson St.	Parkland	2.5	**0.52**	**<0.50**
GP07-S07	Victoria Park	Parkland	2.5	**<0.50**	
GP08-S08	Bonnerworth Park	Parkland	2.5	**<0.50**	
GP11-S11	Emily-Omemee Community Centre	Parkland	2.5	**<0.50**	
GP12-S12	Emily-Omemee Community Centre	Parkland	2.5	**<0.50**	**<0.50**
GP13-S13	Emily-Omemee Community Centre	Parkland	2.5	**<0.50**	
GP20-S20	Duplicate of GP05-S05	Institutional	2.5	**<0.50**	
GP21-S21	Duplicate of GP12-S12	Parkland	2.5	**<0.50**	**<0.50**

All results are in µg/g.
MECP Standards – "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", Table 1 Standards (April 15, 2011).
Exceeds MECP Table 1 Standards

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APPENDIX A: LABORATORY CERTIFICATES OF ANALYSIS

TRINITY CONSULTANTS ONTARIO INC.
ATTN: BRIAN SCHUYLER
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Date Received: 23-JUL-20
Report Date: 29-JUL-20 15:00 (MT)
Version: FINAL

Client Phone: 416-391-2527

Certificate of Analysis

Lab Work Order #: L2478724

Project P.O. #: NOT SUBMITTED
Job Reference: 207205.0018
C of C Numbers: 17-797254, 17-797255
Legal Site Desc:

Aaron Payne
Account Manager

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
L2478724-1 GP01-S01 Sampled By: CLIENT on 22-JUL-20 @ 15:10 Matrix: SOIL						#1	#2		
Metals									
Beryllium (Be)	<0.50		0.50	ug/g	24-JUL-20	2.5	2.5		
L2478724-2 GP02-S02 Sampled By: CLIENT on 22-JUL-20 @ 14:35 Matrix: SOIL						#1	#2		
Metals									
Beryllium (Be)	<0.50		0.50	ug/g	24-JUL-20	2.5	2.5		
L2478724-3 GP03-S03 Sampled By: CLIENT on 22-JUL-20 @ 14:00 Matrix: SOIL						#1	#2		
Metals									
Beryllium (Be)	<0.50		0.50	ug/g	24-JUL-20	2.5	2.5		
L2478724-4 GP04-S04 Sampled By: CLIENT on 22-JUL-20 @ 15:40 Matrix: SOIL						#1	#2		
Metals									
Beryllium (Be)	<0.50		0.50	ug/g	24-JUL-20	2.5	2.5		
L2478724-5 GP05-S05 Sampled By: CLIENT on 22-JUL-20 @ 10:45 Matrix: SOIL						#1	#2		
Metals									
Beryllium (Be)	<0.50		0.50	ug/g	24-JUL-20	2.5	2.5		
L2478724-6 GP05-S05 (NW) Sampled By: CLIENT on 22-JUL-20 @ 11:10 Matrix: SOIL						#1	#2		
Metals									
Beryllium (Be)	<0.50		0.50	ug/g	24-JUL-20	2.5	2.5		
L2478724-7 GP05-S05 (W) Sampled By: CLIENT on 22-JUL-20 @ 11:30 Matrix: SOIL						#1	#2		
Metals									
Beryllium (Be)	<0.50		0.50	ug/g	24-JUL-20	2.5	2.5		
L2478724-8 GP0=5-S05 (SW) Sampled By: CLIENT on 22-JUL-20 @ 11:50 Matrix: SOIL						#1	#2		
Metals									
Beryllium (Be)	0.50		0.50	ug/g	24-JUL-20	2.5	2.5		

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON511/11-T1-SOIL

#1: T1-Soil-Agricultural or Other Property Use

#2: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
L2478724-9 GP05-S05 (S) Sampled By: CLIENT on 22-JUL-20 @ 12:10 Matrix: SOIL						#1	#2		
Metals									
Beryllium (Be)	<0.50		0.50	ug/g	24-JUL-20	2.5	2.5		
L2478724-10 GP05-S05 (N) Sampled By: CLIENT on 22-JUL-20 @ 12:20 Matrix: SOIL						#1	#2		
Metals									
Beryllium (Be)	<0.50		0.50	ug/g	24-JUL-20	2.5	2.5		
L2478724-11 GP05-S05 (NE) Sampled By: CLIENT on 22-JUL-20 @ 12:30 Matrix: SOIL						#1	#2		
Metals									
Beryllium (Be)	<0.50		0.50	ug/g	24-JUL-20	2.5	2.5		
L2478724-12 GP05-S05 (E) Sampled By: CLIENT on 22-JUL-20 @ 12:40 Matrix: SOIL						#1	#2		
Metals									
Beryllium (Be)	<0.50		0.50	ug/g	24-JUL-20	2.5	2.5		
L2478724-13 GP05-S05 (SE) Sampled By: CLIENT on 22-JUL-20 @ 12:50 Matrix: SOIL						#1	#2		
Metals									
Beryllium (Be)	<0.50		0.50	ug/g	24-JUL-20	2.5	2.5		
L2478724-14 GP06-S06 Sampled By: CLIENT on 22-JUL-20 @ 13:30 Matrix: SOIL						#1	#2		
Metals									
Beryllium (Be)	0.52		0.50	ug/g	24-JUL-20	2.5	2.5		
L2478724-15 GP07-S07 Sampled By: CLIENT on 22-JUL-20 @ 16:10 Matrix: SOIL						#1	#2		
Metals									
Beryllium (Be)	<0.50		0.50	ug/g	24-JUL-20	2.5	2.5		
L2478724-16 GP08-S08 Sampled By: CLIENT on 22-JUL-20 @ 16:45 Matrix: SOIL						#1	#2		
Metals									
Beryllium (Be)	<0.50		0.50	ug/g	24-JUL-20	2.5	2.5		

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON511/11-T1-SOIL

#1: T1-Soil-Agricultural or Other Property Use

#2: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
L2478724-17 GP11-S11 Sampled By: CLIENT on 22-JUL-20 @ 17:30 Matrix: SOIL						#1	#2		
Metals									
Beryllium (Be)	<0.50		0.50	ug/g	24-JUL-20	2.5	2.5		
L2478724-18 GP12-S12 Sampled By: CLIENT on 22-JUL-20 @ 17:53 Matrix: SOIL						#1	#2		
Metals									
Beryllium (Be)	<0.50		0.50	ug/g	24-JUL-20	2.5	2.5		
L2478724-19 GP13-S13 Sampled By: CLIENT on 22-JUL-20 @ 18:10 Matrix: SOIL						#1	#2		
Metals									
Beryllium (Be)	<0.50		0.50	ug/g	24-JUL-20	2.5	2.5		
L2478724-20 GP20-S20 Sampled By: CLIENT on 22-JUL-20 Matrix: SOIL						#1	#2		
Metals									
Beryllium (Be)	<0.50		0.50	ug/g	24-JUL-20	2.5	2.5		
L2478724-21 GP21-S21 Sampled By: CLIENT on 22-JUL-20 Matrix: SOIL						#1	#2		
Metals									
Beryllium (Be)	<0.50		0.50	ug/g	29-JUL-20	2.5	2.5		

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON511/11-T1-SOIL

#1: T1-Soil-Agricultural or Other Property Use

#2: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference***
MET-200.2-CCMS-WT	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020B (mod)

Soil/sediment is dried, disaggregated, and sieved (2 mm). For tests intended to support Ontario regulations, the <2mm fraction is ground to pass through a 0.355 mm sieve. Strong Acid Leachable Metals in the <2mm fraction are solubilized by heated digestion with nitric and hydrochloric acids. Instrumental analysis is by Collision / Reaction Cell ICPMS.

Limitations: This method is intended to liberate environmentally available metals. Silicate minerals are not solubilized. Some metals may be only partially recovered (matrix dependent), including Al, Ba, Be, Cr, S, Sr, Ti, Tl, V, W, and Zr. Elemental Sulfur may be poorly recovered by this method. Volatile forms of sulfur (e.g. sulfide, H2S) may be excluded if lost during sampling, storage, or digestion.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

*** ALS test methods may incorporate modifications from specified reference methods to improve performance.

Chain of Custody numbers:

17-797254 17-797255

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location	Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA		

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guideline limits are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Quality Control Report

Workorder: L2478724 Report Date: 29-JUL-20

Client: TRINITY CONSULTANTS ONTARIO INC.
106-885 DON MILLS ROAD
TORONTO ON M3C1V9
Contact: BRIAN SCHUYLER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R5166451								
WG3369336-2 CRM		**WT-SS-1**						
Beryllium (Be)			99.6		%		70-130	24-JUL-20
WG3369336-4 DUP		**L2478724-17**						
Beryllium (Be)		<0.50	<0.50	RPD-NA	ug/g	N/A	30	24-JUL-20
WG3369336-3 LCS								
Beryllium (Be)			99.9		%		80-120	24-JUL-20
WG3369336-1 MB								
Beryllium (Be)			<0.10		mg/kg		0.1	24-JUL-20
Batch R5170717								
WG3372020-2 CRM		**WT-SS-1**						
Beryllium (Be)			97.6		%		70-130	29-JUL-20
WG3372020-6 DUP		**WG3372020-5**						
Beryllium (Be)		0.86	0.88		ug/g	2.6	30	29-JUL-20
WG3372020-4 LCS								
Beryllium (Be)			96.2		%		80-120	29-JUL-20
WG3372020-1 MB								
Beryllium (Be)			<0.10		mg/kg		0.1	29-JUL-20

Quality Control Report

Workorder: L2478724 Report Date: 29-JUL-20

Client: TRINITY CONSULTANTS ONTARIO INC.
106-885 DON MILLS ROAD
TORONTO ON M3C1V9
Contact: BRIAN SCHUYLER

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

AGAT Laboratories

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

CLIENT NAME: TRINITY CONSULTANTS ONTARIO INC.
106-885 DON MILLS ROAD
DON MILLS , ON M3C1V9
(416) 391-2527
ATTENTION TO: Brian Schuyler
PROJECT: 207205.0018
AGAT WORK ORDER: 20T640886
SOIL ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Lab Manager
DATE REPORTED: Aug 24, 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.*
- *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 Certificate shall not be reproduced except in full, without the written approval of the laboratory.*
- *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 guidelines contained in this document.*
- *All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.*

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Certificate of Analysis

AGAT WORK ORDER: 20T640886

PROJECT: 207205.0018

CLIENT NAME: TRINITY CONSULTANTS ONTARIO INC.

ATTENTION TO: Brian Schuyler

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - Metals

DATE RECEIVED: 2020-08-21 **DATE REPORTED: 2020-08-24**

		SAMPLE DESCRIPTION:		GP05-S05	GP05-S05 (NE)	GP05-S05 (SW)	GP06-S06	GP12-S12	GP21-S21
		SAMPLE TYPE:		Soil	Soil	Soil	Soil	Soil	Soil
		DATE SAMPLED:		2020-07-22	2020-07-22	2020-07-22	2020-07-22	2020-07-22	2020-07-22
Parameter	Unit	G / S	RDL	1374048	1374049	1374050	1374051	1374052	1374053
Beryllium	µg/g	2.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 1: Full Depth Background Site Condition Standards - Soil - Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use
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 *)

Certified By:

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
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FAX (905)712-5122
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Quality Assurance

CLIENT NAME: TRINITY CONSULTANTS ONTARIO INC.

AGAT WORK ORDER: 20T640886

PROJECT: 207205.0018

ATTENTION TO: Brian Schuyler

SAMPLING SITE:

SAMPLED BY:

Soil Analysis

RPT Date: Aug 24, 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
O. Reg. 153(511) - Metals															
Beryllium	1374048	1374048	<0.5	<0.5	NA	< 0.5	77%	70%	130%	92%	80%	120%	84%	70%	130%

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

Certified By:

AGAT Laboratories

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Method Summary

CLIENT NAME: TRINITY CONSULTANTS ONTARIO INC.

AGAT WORK ORDER: 20T640886

PROJECT: 207205.0018

ATTENTION TO: Brian Schuyler

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Beryllium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS