



February 10, 2021

Reference No. 11221080

Mr. Peter Graham
Ted North (295 Mountain Road) Ltd.
c/o GWD Developments Ltd.
80 Southgate Drive
Guelph, Ontario
N1G 4P5

Dear Mr. Graham:

Re: Risk Evaluation
295 Mountain Road, Collingwood, Ontario (Site or Property)

1. Introduction

GHD Limited (GHD) was retained by Ted North (295 Mountain Road) Ltd. to complete a Risk Evaluation (RE) for their property located at 295 Mountain Road in Collingwood, Ontario (Site or Property). GHD understands that the Property has been used for agricultural purposes, including the use of a portion of the Property as an orchard, and that Ted North (295 Mountain Road) Ltd. is planning to develop the Property for residential purposes. To facilitate the development of the Property, Ted North (295 Mountain Road) Ltd. retained Chung & Vander Doelen (CVD) to complete a Phase II Environmental Site Assessment (ESA) of the Property. The results of the Phase II ESA were summarized in the report entitled "*Phase II Environmental Site Assessment, 295 Mountain Road, Collingwood, Ontario*," dated March 6, 2020 (CVD Phase II ESA).

In response to the Town of Collingwood's peer reviewer (EXP) comments regarding the CVD Phase II ESA, Peto McCallum Ltd. (PML) was retained by Ted North (295 Mountain Road) Ltd. to collect additional groundwater samples from monitoring wells located along the eastern portion of the Site in June 2020. The results of the PML groundwater sampling program were summarized in the CVD letter-report entitled "295 Mountain Road, Collingwood, Ontario", dated July 14, 2020 (CVD July 2020 Report).

The soil and groundwater data provided in the CVD Phase II ESA and CVD July 2020 Report are provided in Tables A.1 and A.2 of Attachment A. A figure from the CVD Phase II ESA report that shows the investigative locations at the Property is provided in Attachment B. All soil and groundwater analytical results reported in the CVD Phase II ESA and CVD July 2020 Report and presented in the data tables in Attachment A were considered in this RE.

The CVD Phase II ESA identified concentrations of arsenic, certain pesticides, and electrical conductivity (Contaminants of Concern [COC]) in soil above the applicable Ministry of the Environment, Conservation and Parks (MECP) soil quality standards. The COCs were identified in shallow soil (0 to 0.61 metres below ground surface [m bgs]) at locations BH4, BH8, BH9, and BH11. Groundwater at the Site was reported to meet the applicable MECP groundwater quality standards.



This RE includes the identification of Contaminants of Concern (COCs), an exposure pathway analysis, and the selection/development of Risk-Based Component Values (RBCVs) that are protective of human health and the environment consistent with the general methodology under Ontario Regulation (O. Reg.) 153/04 for completing Risk Assessments. This RE is not intended to represent a Risk Assessment that would undergo a formal, comprehensive MECP technical review under O. Reg. 153/04.

The RE is organized as follows:

- Section 2 presents the identification of the COCs for the Site
- Section 3 presents the exposure pathway analysis
- Section 4 presents the RE results, including risk management measures
- Section 5 presents the conclusions/recommendations of the RE

2. Identification of Contaminants of Concern (COCs)

The applicable site condition standards for the Property were selected based on the following:

- The Site is located in the Town of Collingwood (Town) which relies on Georgian Bay as a drinking water source; however, the Town drinking water services do not extend to the Site. Based on information provided in the CVD Phase II ESA, potable water wells are located in the vicinity of the Site.
- The soil texture was classified as coarse-grained soil based on the results of the grain size analysis presented in the CVD Phase II ESA.
- In the development of the generic MECP soil and groundwater standards, the MECP applies an assumed depth to groundwater of 3 m bgs for component values that are based on the protection of indoor air. Shallow groundwater at the Site was identified at a depth of less than 3 m bgs.
- The nearest surface water body was identified as Black Ash Creek located 925 metres (m) to the east of the Site. Georgian Bay is also located approximately 1.73 kilometres (km) east of the Site. The shallow groundwater flow on the Site is in an easterly direction towards these surface water bodies.
- The proposed future land use of the Site is residential.

Based on the above-noted Site conditions, the MECP Table 6: Generic Site Condition Standards for Shallow Soils in a Potable Ground Water Condition for Residential/Parkland/Institutional Property Use for coarse textured soils contained in the MECP document entitled "*Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*," dated April 15, 2011 (MECP Table 6 Standards), have been conservatively considered in the selection of the COCs for the Site.

Table 1 presents the soil quality screening assessment, based on a comparison of the maximum soil concentrations reported in the CVD Phase II ESA to the MECP Table 6 Standards. As presented in



Table 1, GHD identified the following parameters as COCs within soil based on the soil quality screening assessment:

- Arsenic
- Dichlorodiphenyldichloroethylene (DDE)
- Dichlorodiphenyltrichloroethane (DDT)
- Dieldrin
- Electrical conductivity (EC)

Table 2 presents the groundwater quality screening assessment, based on a comparison of the maximum groundwater concentrations reported in the CVD Phase II ESA and CVD July 2020 Report to the MECP Table 6 Standards. As presented in Table 2, no COCs were identified in groundwater at the Site and therefore exposure to groundwater was not evaluated further in the RE.

3. Exposure Pathway Analysis

As indicated previously, this RE has been conducted assuming that the Property will be developed in the future for residential land use. GHD selected RBCVs from MECP's Modified Generic Risk Assessment (MGRA) Model (MECP, 2016¹) and toxicity updates that are protective of human and ecological health. The exposure pathways that were considered in the selection of the RBCVs (with the corresponding MECP RBCV in parentheses) are summarized as follows:

- Resident direct contact exposure (incidental ingestion, dermal contact, and inhalation) to soil (S1 Risk)
- Subsurface worker direct contact exposure (incidental ingestion, dermal contact, and inhalation) to soil (S3 Risk)
- Volatile soil COCs migrating to indoor air (S-IA)
- Volatile soil COCs migrating to outdoor air (S-OA)
- Soil leaching to potable groundwater (S-GW1)
- Soil leaching to groundwater and groundwater discharging to surface water for the protection of off-Site aquatic life (S-GW3)
- Plants and soil organisms direct contact exposure to soil (Plants & Soil Organisms)
- Mammals and birds direct contact exposure to soil (Mammals & Birds)

¹ MECP, 2016. Modified Generic Risk Assessment (MGRA) (Tier 2) Approved Model (Version 2), dated November, 2016.



4. Risk Evaluation Results

4.1 Soil COCs

Table 3 presents a comparison of the maximum COC concentrations to the soil RBCVs for the applicable exposure pathways. The soil COCs identified in Section 2 (Table 1) are not considered to be volatile, therefore the volatile soil to indoor air (S-IA) and outdoor air (S-OA) exposure pathways were considered incomplete (i.e., indoor and outdoor air quality is not a concern at the Property). A summary of the RBCV comparison for each maximum COC concentration is provided below.

Arsenic

The maximum concentration for arsenic is above the S1 Risk and Plants & Soil Organisms RBCVs, and therefore could represent a potential for unacceptable health risks to residents, soil for plants, and soil organisms through direct contact with soil at the Property. All twelve samples have concentrations of arsenic that are above the S1 Risk (0.95 µg/g) RBCV; however, only one sample (BH4-1; 32.9 µg/g), collected from location BH4, was above the Plants & Soil Organisms RBCV (20 µg/g) and the Ontario background soil concentration of (18 µg/g). When a component value such as the S1 Risk for arsenic is below the Ontario background soil concentration, the MECP uses the Ontario background soil concentration as the soil standard. This is based on the expectation that soils would not need to be cleaned/remediated or managed if they are below the background concentrations. Therefore, a physical barrier (hard cap or fill cap) is required as a risk management measure to prevent exposure to the arsenic in the soil in the vicinity of BH4.

DDE

The maximum concentration for DDE is higher than the S1 Risk and Plants & Soil Organisms RBCVs, and therefore could represent a potential for unacceptable health risks to residents, soil for plants, and soil organisms through direct contact with soil at the Property. Four of the twelve soil samples (BH4-1, 11.5 µg/g; BH8-1, 12.9 µg/g; BH9-1, 2.37 µg/g; and BH11-1, 2.97 µg/g), collected from locations BH4, BH8, BH9, and BH11, respectively, have concentrations of DDE that are above the S1 Risk (2.3 µg/g) and Plants & Soil Organisms (0.26 µg/g) RBCVs. Therefore, a physical barrier (hard cap or fill cap) is required as a risk management measure to prevent exposure to the DDE in the soil at these four locations for the S1 Risk and Plants & Soil Organisms.

DDT

The maximum concentration for DDT is higher than the S1 Risk, Plants & Soil Organisms, and Mammals & Birds RBCVs, and therefore could represent a potential for unacceptable health risks to residents, soil for plants, soil organisms, mammals, and birds through direct contact with soil at the Property. Only one sample, BH4-1, has a concentration that is above the S1 Risk and Plants & Soil Organisms RBCVs. The soil concentration in sample BH4-1 (2.32 µg/g) is only marginally above the S1 Risk RBCV of 2.30 µg/g, therefore it is unlikely to represent an unacceptable health risk to residents. BH4-1 is the only sample that is above the Plants & Soil Organism RBCV. All locations with detected



concentrations (7 of 12 samples) are above the Mammals & Birds RBCV (0.0011 µg/g); however, the Mammals & Birds RBCV is below the Ontario background concentration for DDT established by the MECP (1.4 µg/g). As previously mentioned, when a component value such as the Mammals & Birds RBCV for DDT is below the Ontario background soil concentration, the MECP uses the Ontario background soil concentration as the soil standard. Sample BH4-1 is the only location that is above the Ontario Background concentration for DDT. Therefore, a physical barrier (hard cap or fill cap) is required in the vicinity of BH4 as a risk management measure to prevent exposure to the DDT in the soil for the Plants & Soil Organisms and Mammals & Birds. The physical barrier required to address exposure to DDT in soils for the Plants & Soil Organisms and Mammals & Birds will also prevent exposure for the S1 Risk.

Dieldrin

The maximum concentration for dieldrin is higher than the Plants & Soil Organisms and Mammals & Birds RBCVs, and therefore could represent a potential for unacceptable health risks to soil for plants, soil organisms, mammals, and birds through direct contact with soil at the Property. All sample locations with detected concentrations (BH4-1, 0.092 µg/g; BH8-1, 0.094 µg/g; BH9-1, 0.025 µg/g; and BH11-1, 0.07 µg/g) are above the Plants & Soil Organisms and Mammals & Birds RBCVs. As a result, a physical barrier (hard cap or fill cap) is required as a risk management measure to prevent exposure to the dieldrin in the soil in the vicinity of BH4, BH8, BH9, and BH11 for Plants & Soil Organisms and Mammals & Birds.

Electrical Conductivity (EC)

The maximum concentration for EC exceeds the Plants & Soil Organisms RBCV, and therefore could be a potential for unacceptable health risks to soil for plants and soil organisms through direct contact with soil at the Property. Only two sample locations, BH8-1 (0.793 mS/cm) and BH11-1 (0.754 mS/cm) have concentrations that are marginally above the Plants & Soil Organisms RBCV of 0.7 mS/cm, therefore it is unlikely for EC to result in unacceptable health risks for plants and soil organisms at the Property. A physical barrier (hard cap or fill cap) is required as a risk management measure to prevent exposure to the EC in the soil in the vicinity of BH8 and BH11 for the Plants & Soil Organism RBCV.

Summary

Based on a comparison of the COCs to the RBCVs, a physical barrier (hard cap or fill cap) is required as a risk management measure to prevent exposure to the COCs in the soil in the vicinity of investigative locations BH4, BH8, BH9, and BH11.

4.2 Physical Barrier Construction Details and Monitoring Requirements

The minimum requirements for physical barrier risk management measure options to prevent exposure to the underlying soils, as expected by the MECP on a record of site condition site, consist of the following:

1. **Hard Cap Barrier:** An asphalt or concrete cover layer, located above the COCs, that is at least 200 millimetres thick, and consists of at least 50 millimetres thickness of hot mix asphalt or poured concrete or pavers underlain by Granular "A" aggregate or equivalent material, and includes a building slab or building foundation and floor slab meeting these specifications, or



2. Fill Cap Barrier: A barrier of soil measuring at least 1.0 metre in thickness, consisting of soil that meets the MECP Table 6 Standards, located above the COCs.

Typical profiles for hard cap and fill cap application is illustrated on Figure 1. To ensure that the physical barrier components remains intact and continues to be protective, the barriers should be inspected on a semi-annual basis (spring and fall). Any observed deficiencies (e.g., deterioration exposing underlying native soils) should be repaired as quickly as practical.

The barrier inspection should consist of a walking tour of the exterior areas of the Site. Visual observations should be made of the condition of the Site barrier components, for example, deterioration and breaches potentially exposing underlying native soils. Any damaged physical barriers that could result in the underlying soils being exposed should be repaired. The barrier inspections, as well as any completed repairs, should be recorded in a logbook that is maintained at the Site.

The construction of a physical barrier to prevent exposure to underlying impacted soil is an accepted practice by the MECP and is the most common engineering control implemented to effectively manage in place soil impacts at properties in Ontario.

5. Conclusions and Recommendations

Based on the results of the RE, GHD provides the following conclusions:

1. The objective of the RE was to assess the potential human health and ecological risks associated with exposure to the soil and groundwater quality conditions identified at the Site in the CVD Phase II ESA and CVD July 2020 Report.
2. GHD screened the soil quality analytical data to the MECP Table 6: Generic Site Condition Standards for Shallow Soils in a Potable Ground Water Condition, Soil Standards, Residential/Parkland/Institutional Property Use, Coarse Textured Soils (MECP Table 6 Standards). Based on this screening assessment, arsenic, DDE, DDT, dieldrin, and conductivity were identified as soil COCs for the Site.
3. GHD screened the groundwater quality analytical data to the MECP Table 6: Generic Site Condition Standards for Shallow Soils in a Potable Ground Water Condition, All Types of Property Use (MECP Table 6 Standards). No groundwater COCs were identified for the Site.
4. Based on the proposed Site re-development to residential land use and the chemical properties of the identified soil COCs, receptors and complete exposure pathways considered in the RE consisted of residents, short-term worker, terrestrial ecological receptor, and terrestrial wildlife receptor direct contact with soil, soil leaching to potable water source, and off-Site aquatic life exposure to soil leaching to groundwater discharging to surface water.
5. RBCVs for all of the complete exposure pathways associated with the future residential land use of the Site were obtained from the MECP MGRA Model and associated toxicity updates, as necessary.



6. The maximum concentrations of arsenic, DDE, DDT, and dieldrin in Site soils were above MECP component values protective of residential direct contact with soils (S1 Risk) and/or ecological receptors direct contact with soils (Plants & Soil Organisms, and Mammals & Birds); therefore, there is potential for unacceptable health risks to these human and ecological receptors through direct contact with these COCs in soil at the Property. The maximum EC concentration is marginally above the Plants & Soil Organisms RBCV; therefore, it is unlikely to pose a significant risk to ecological receptors.

Based on the findings summarized above, a risk management measure consisting of a physical barrier (hard cap or fill cap) is required in the vicinity of investigative locations BH4, BH8, BH9, and BH11 to prevent direct exposure to the underlying soils. If a physical barrier is constructed, no unacceptable risk to human health or ecological receptors would remain based on the soil and groundwater conditions at the Property.

The construction of a physical barrier to prevent exposure to underlying impacted soil is an accepted practice by the MECP and is the most common engineering control implemented to effectively manage in place soil impacts at properties in Ontario.

On-Site Re-use of Impacted Soils

The soils that contain concentrations of arsenic, DDE, DDT, dieldrin, and EC above the MECP Table 6 Standards can be excavated and re-used at a different location on the Property if preferred (e.g., the soils could be used to construct a berm or for landscaping purposes); however, it is recommended that the new location of the impacted soil be documented for future reference. The required physical barrier (hard cap or fill cap) will need to be constructed above the impacted soil following final placement of the soils.

Following the excavation of the impacted soils, confirmatory soil samples should be collected to confirm that the remaining soil meets the MECP Table 6 Standards. It is recommended that the number and location of the confirmatory soil samples collected conform to the confirmatory soil sampling requirements provided in O. Reg. 153/04, Schedule E, Table 3.

Off-Site Removal of Impacted Soils

If the soils that contain concentrations of arsenic, DDE, DDT, dieldrin, and EC above the MECP Table 6 Standards are removed from the Site during the development of the Property, no risk management measures would be required to facilitate the development of the Property for residential purposes. If the impacted soil is removed from the Site, confirmatory soil samples should be collected in accordance with O. Reg. 153/04, Schedule E, Table 3, to confirm that the remaining soil meets the MECP Table 6 Standards.



Please contact the undersigned if you have any questions.

Sincerely,

GHD

A handwritten signature in black ink that reads 'April Gowing' in a cursive script.

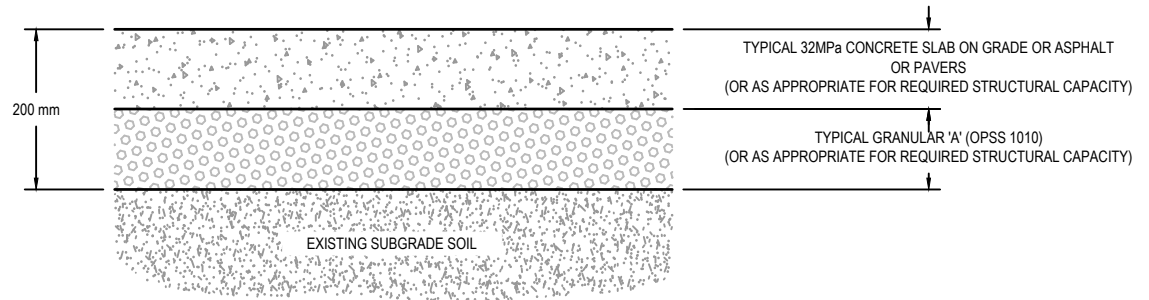
April Gowing, Ph.D., P. Eng., QP_{RA}

AG/nv/1

Encl.

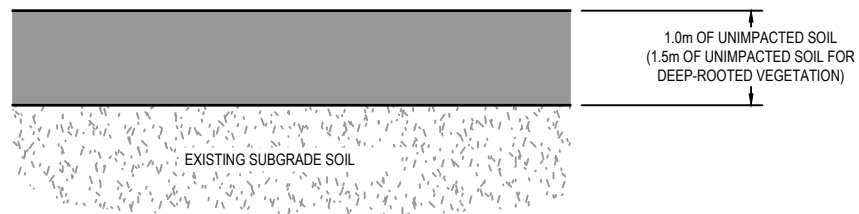
A handwritten signature in blue ink that reads 'Trevor M. Beattie' in a cursive script.

Trevor M. Beattie, P. Eng.



TYPICAL HARD CAP DETAIL

N.T.S.



TYPICAL FILL CAP DETAIL

N.T.S.



295 MOUNTAIN ROAD
COLLINGWOOD, ONTARIO
RISK EVALUATION

Project No. 11221080
Date January 2021

TYPICAL PHYSICAL BARRIER DETAILS

FIGURE 1

Table 1

Occurrence, Distribution, and Identification of Contaminants of Concern (COC) in Soil
Risk Evaluation
295 Mountain Road, Collingwood, Ontario

Medium: Soil
Exposure Medium: Soil

CAS Number	Contaminant	Minimum Concentration (1, 2)	Maximum Concentration (1, 2)	Units	Location of Maximum Concentration	Detection Frequency (2)	Range of Detection Limits (2)	Maximum Concentration Used for Screening (3)	Applicable Site Condition Standard (SCS) (4)	Contaminant Retained for RA Y - Yes	Rationale for Contaminant Deletion or Selection (5)	Potential for Exceedance of Applicable SCS at nearest off-Site Receptor (6) N - No
7440-36-0	Metals Antimony	ND	ND	µg/g	--	0/12	1	1	7.5		DLBSS	N
7440-38-2	Arsenic	3.3	32.9	µg/g	BH4-1: 0-0.61 m BGS (2/12/2020)	12/12	--	32.9	18	Y	ASS	N
7440-39-3	Barium	22.1	52.1	µg/g	BH10-1: 0-0.61 m BGS (2/12/2020)	12/12	--	52.1	390		BSS	N
7440-41-7	Beryllium	0.5	0.54	µg/g	BH7-1: 0-0.61 m BGS (2/12/2020)	3/12	0.5	0.54	4		BSS; DLBSS	N
7440-42-8	Boron (total)	7	14.4	µg/g	BH7-1: 0-0.61 m BGS (2/12/2020)	12/12	--	14.4	120		BSS	N
7440-42-8 HWS	Boron (Hot Water Soluble) (7)	0.13	1.33	µg/g	BH8-1: 0-0.61 m BGS (2/12/2020)	12/12	--	1.33	1.5		BSS	N
7440-43-9	Cadmium	ND	ND	µg/g	--	0/12	0.5	0.5	1.2		DLBSS	N
7440-47-3	Chromium Total	10.6	21	µg/g	BH3-1: 0-0.61 m BGS (2/12/2020)	12/12	--	21	160		BSS	N
18540-29-9	Chromium VI	ND	ND	µg/g	--	0/12	0.2	0.2	8		DLBSS	N
7440-48-4	Cobalt	2.7	7.4	µg/g	BH7-1: 0-0.61 m BGS (2/12/2020)	12/12	--	7.4	22		BSS	N
7440-50-8	Copper	8.9	23	µg/g	BH4-1: 0-0.61 m BGS (2/12/2020)	12/12	--	23	140		BSS	N
57-12-5	Cyanide (CN-)	ND	ND	µg/g	--	0/12	0.05	0.05	0.051		DLBSS	N
7439-92-1	Lead	7.1	96.4	µg/g	BH4-1: 0-0.61 m BGS (2/12/2020)	12/12	--	96.4	120		BSS	N
7439-97-6	Mercury	0.0149	0.129	µg/g	BH4-1: 0-0.61 m BGS (2/12/2020)	12/12	--	0.129	0.27		BSS	N
7439-98-7	Molybdenum	ND	ND	µg/g	--	0/12	1	1	6.9		DLBSS	N
7440-02-0	Nickel	6.7	16.2	µg/g	BH7-1: 0-0.61 m BGS (2/12/2020)	12/12	--	16.2	100		BSS	N
7782-49-2	Selenium	ND	ND	µg/g	--	0/12	1	1	2.4		DLBSS	N
7440-22-4	Silver	ND	ND	µg/g	--	0/12	0.2	0.2	20		DLBSS	N
7440-28-0	Thallium	ND	ND	µg/g	--	0/12	0.5	0.5	1		DLBSS	N
7440-61-1	Uranium	ND	ND	µg/g	--	0/12	1	1	23		DLBSS	N
7440-62-2	Vanadium	16.3	32.6	µg/g	BH3-1: 0-0.61 m BGS (2/12/2020)	12/12	--	32.6	86		BSS	N
7440-66-6	Zinc	31.1	59.6	µg/g	BH4-1: 0-0.61 m BGS (2/12/2020)	12/12	--	59.6	340		BSS	N
72-54-8	Pesticides DDD	0.208	2.33	µg/g	BH8-1: 0-0.61 m BGS (2/12/2020)	4/12	0.028	2.33	3.3		BSS; DLBSS	N
72-55-9	DDE	0.029	12.9	µg/g	BH8-1: 0-0.61 m BGS (2/12/2020)	10/12	0.028	12.9	0.26	Y	ASS	N
50-29-3	DDT	0.033	2.32	µg/g	BH4-1: 0-0.61 m BGS (2/12/2020)	7/12	0.028	2.32	1.4	Y	ASS	N
309-00-2	Aldrin	ND	ND	µg/g	--	0/12	0.02	0.02	0.05		DLBSS	N
57-74-9	Chlordane	ND	ND	µg/g	--	0/12	0.028	0.028	0.05		DLBSS	N
60-57-1	Dieldrin	0.025	0.094	µg/g	BH8-1: 0-0.61 m BGS (2/12/2020)	4/12	0.02	0.094	0.05	Y	ASS	N
115-29-7	Endosulfan	ND	ND	µg/g	--	0/12	0.028	0.028	0.04		DLBSS	N
72-20-8	Endrin	ND	ND	µg/g	--	0/12	0.02 - 0.04	0.04	0.04		DLBSS	N
58-89-9	Hexachlorocyclohexane Gamma-	ND	ND	µg/g	--	0/12	0.01	0.01	0.056		DLBSS	N
76-44-8	Heptachlor	ND	ND	µg/g	--	0/12	0.02	0.02	0.15		DLBSS	N
1024-57-3	Heptachlor Epoxide	ND	ND	µg/g	--	0/12	0.02	0.02	0.05		DLBSS	N
118-74-1	Hexachlorobenzene	ND	ND	µg/g	--	0/12	0.01	0.01	0.52		DLBSS	N
87-68-3	Hexachlorobutadiene	ND	ND	µg/g	--	0/12	0.01	0.01	0.012		DLBSS	N
67-72-1	Hexachloroethane	ND	ND	µg/g	--	0/12	0.01	0.01	0.089		DLBSS	N
72-43-5	Methoxychlor	ND	ND	µg/g	--	0/12	0.02	0.02	0.13		DLBSS	N

Table 1

Occurrence, Distribution, and Identification of Contaminants of Concern (COC) in Soil
Risk Evaluation
295 Mountain Road, Collingwood, Ontario

Medium: Soil
Exposure Medium: Soil

CAS Number	Contaminant	Minimum Concentration (1, 2)	Maximum Concentration (1, 2)	Units	Location of Maximum Concentration	Detection Frequency (2)	Range of Detection Limits (2)	Maximum Concentration Used for Screening (3)	Applicable Site Condition Standard (SCS) (4)	Contaminant Retained for RA Y - Yes	Rationale for Contaminant Deletion or Selection (5)	Potential for Exceedance of Applicable SCS at nearest off-Site Receptor (6) N - No
--	General Chemistry											
--	Electrical Conductivity (EC)	0.121	0.793	mS/cm	BH8-1: 0-0.61 m BGS (2/12/2020)	12/12	--	0.793	0.7	Y	ASS	N
--	pH	6.98	7.97	st units	BH1-1: 3.05-3.66 m BGS (2/12/2020)	13/13	--	7.97	--		--	--
--	Sodium adsorption ratio (SAR)	0.13	0.4	-	BH3-1: 0-0.61 m BGS (2/12/2020)	8/12	0.1	0.4	5		BSS; DLBSS	N

Notes:

ND

Not Detected.

--

Not Available.

(1)

Minimum/maximum detected concentration.

(2)

Based on data collected from sampling locations: BH1-1, BH2-1, BH3-1, BH4-1, BH5-1, BH6-1, BH7-1, BH8-1, BH9-1, BH10-1, BH11-1, BH12-1.

(3)

Maximum concentration used for screening is the maximum detected concentration or the maximum detection limit, whichever is higher.

(4)

MECP Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011 and updates.

(5)

Table 6: Generic Site Condition Standards for Shallow Soils in a Potable Ground Water Condition, Soil Standards, Residential/Parkland/Institutional Property Use, Coarse Textured Soils.

(6)

Rationale Codes

Selection Reason: Maximum detected above Screening Standard (ASS)

Maximum Detection Limit above Screening Standard (DLASS)

Analyte Detected and no MECP standard available (AD)

Deletion Reason: Maximum detected below Screening Standard (BSS)

Maximum Detection Limit below Screening Standard (DLBSS)

No MECP standard available, but analyte Not Detected and therefore not present (ND)

(7)

For soil, lateral migration of potential COCs is not expected to occur and therefore, there is no potential exceedance of the applicable SCS for off-Site properties.

(7)

Consistent with the development of the MECP Standards, the Table 6 Standard for hot water soluble boron is only applicable to surface soils, since plant protection for soils below the root zone is not a significant concern.

Table 2

Occurrence, Distribution, and Identification of Contaminants of Concern (COC) in Groundwater
Risk Evaluation
295 Mountain Road, Collingwood, Ontario

Medium: Groundwater
Exposure Medium: Groundwater

CAS Number	Contaminant	Minimum Concentration (1, 2)	Maximum Concentration (1, 2)	Units	Location of Maximum Concentration	Detection Frequency (2)	Range of Detection Limits (2)	Maximum Concentration Used for Screening (3)	Applicable Site Condition Standard (SCS) (4)	Contaminant Retained for RA Y - Yes	Rationale for Contaminant Deletion or Selection (5)	Potential for Exceedance of Applicable SCS at nearest off-Site Receptor (6) N - No; Y - Yes
	Volatile Organic Compounds											
67-64-1	Acetone	ND	ND	µg/L	--	0/2	30	30	2700		DLBSS	N
71-43-2	Benzene	ND	ND	µg/L	--	0/2	0.5	0.5	0.5		DLBSS	N
75-27-4	Bromodichloromethane	ND	ND	µg/L	--	0/2	2	2	16		DLBSS	N
75-25-2	Bromoform	ND	ND	µg/L	--	0/2	5	5	5		DLBSS	N
74-83-9	Bromomethane	ND	ND	µg/L	--	0/2	0.5	0.5	0.89		DLBSS	N
56-23-5	Carbon Tetrachloride	ND	ND	µg/L	--	0/2	0.2	0.2	0.2		DLBSS	N
108-90-7	Chlorobenzene	ND	ND	µg/L	--	0/2	0.5	0.5	30		DLBSS	N
67-66-3	Chloroform	ND	ND	µg/L	--	0/2	1	1	2		DLBSS	N
124-48-1	Dibromochloromethane	ND	ND	µg/L	--	0/2	2	2	25		DLBSS	N
95-50-1	Dichlorobenzene, 1,2-	ND	ND	µg/L	--	0/2	0.5	0.5	3		DLBSS	N
541-73-1	Dichlorobenzene, 1,3-	ND	ND	µg/L	--	0/2	0.5	0.5	59		DLBSS	N
106-46-7	Dichlorobenzene, 1,4-	ND	ND	µg/L	--	0/2	0.5	0.5	0.5		DLBSS	N
75-71-8	Dichlorodifluoromethane	ND	ND	µg/L	--	0/2	2	2	590		DLBSS	N
75-34-3	Dichloroethane, 1,1-	ND	ND	µg/L	--	0/2	0.5	0.5	5		DLBSS	N
107-06-2	Dichloroethane, 1,2-	ND	ND	µg/L	--	0/2	0.5	0.5	0.5		DLBSS	N
75-35-4	Dichloroethylene, 1,1-	ND	ND	µg/L	--	0/2	0.5	0.5	0.5		DLBSS	N
156-59-2	Dichloroethylene, 1,2-cis-	ND	ND	µg/L	--	0/2	0.5	0.5	1.6		DLBSS	N
156-60-5	Dichloroethylene, 1,2-trans-	ND	ND	µg/L	--	0/2	0.5	0.5	1.6		DLBSS	N
78-87-5	Dichloropropane, 1,2-	ND	ND	µg/L	--	0/2	0.5	0.5	0.58		DLBSS	N
10061-01-5/ 10061-02-6	Dichloropropene, 1,3- (cis & trans)	ND	ND	µg/L	--	0/2	0.5	0.5	0.5		DLBSS	N
100-41-4	Ethylbenzene	ND	ND	µg/L	--	0/2	0.5	0.5	2.4		DLBSS	N
106-93-4	Ethylene dibromide	ND	ND	µg/L	--	0/2	0.2	0.2	0.2		DLBSS	N
118-74-1	Hexachlorobenzene	ND	ND	µg/L	--	0/5	0.01	0.01	1		DLBSS	N
87-68-3	Hexachlorobutadiene	ND	ND	µg/L	--	0/5	0.01	0.01	0.012		DLBSS	N
67-72-1	Hexachloroethane	ND	ND	µg/L	--	0/5	0.01	0.01	0.17		DLBSS	N
110-54-3	Hexane (n)	ND	ND	µg/L	--	0/2	5	5	5		DLBSS	N
78-93-3	Methyl Ethyl Ketone	ND	ND	µg/L	--	0/2	20	20	1800		DLBSS	N
108-10-1	Methyl Isobutyl Ketone	ND	ND	µg/L	--	0/2	20	20	640		DLBSS	N
1634-04-4	Methyl tert-Butyl Ether (MTBE)	ND	ND	µg/L	--	0/2	2	2	15		DLBSS	N
75-09-2	Methylene chloride	ND	ND	µg/L	--	0/2	5	5	26		DLBSS	N
100-42-5	Styrene	ND	ND	µg/L	--	0/2	0.5	0.5	5.4		DLBSS	N
630-20-6	Tetrachloroethane, 1,1,1,2-	ND	ND	µg/L	--	0/2	0.5	0.5	1.1		DLBSS	N
79-34-5	Tetrachloroethane, 1,1,2,2-	ND	ND	µg/L	--	0/2	0.5	0.5	0.5		DLBSS	N
127-18-4	Tetrachloroethylene	ND	ND	µg/L	--	0/2	0.5	0.5	0.5		DLBSS	N
108-88-3	Toluene	ND	ND	µg/L	--	0/2	0.5	0.5	24		DLBSS	N
71-55-6	Trichloroethane, 1,1,1-	ND	ND	µg/L	--	0/2	0.5	0.5	23		DLBSS	N
79-00-5	Trichloroethane, 1,1,2-	ND	ND	µg/L	--	0/2	0.5	0.5	0.5		DLBSS	N
79-01-6	Trichloroethylene	ND	ND	µg/L	--	0/2	0.5	0.5	0.5		DLBSS	N
75-69-4	Trichlorofluoromethane	ND	ND	µg/L	--	0/2	5	5	150		DLBSS	N
75-01-4	Vinyl Chloride	ND	ND	µg/L	--	0/2	0.2	0.2	0.5		DLBSS	N
1330-20-7	Xylenes, Total	ND	ND	µg/L	--	0/2	1.1	1.1	72		DLBSS	N

Table 2

Occurrence, Distribution, and Identification of Contaminants of Concern (COC) in Groundwater
Risk Evaluation
295 Mountain Road, Collingwood, Ontario

Medium: Groundwater
Exposure Medium: Groundwater

CAS Number	Contaminant	Minimum Concentration (1, 2)	Maximum Concentration (1, 2)	Units	Location of Maximum Concentration	Detection Frequency (2)	Range of Detection Limits (2)	Maximum Concentration Used for Screening (3)	Applicable Site Condition Standard (SCS) (4)	Contaminant Retained for RA Y - Yes	Rationale for Contaminant Deletion or Selection (5)	Potential for Exceedance of Applicable SCS at nearest off-Site Receptor (6) N - No; Y - Yes
	Metals											
7440-36-0	Antimony	0.11	0.23	µg/L	BH2 (2/19/2020)	2/5	0.1 - 1	1	6		BSS; DLBSS	N
7440-38-2	Arsenic	0.28	1.3	µg/L	BH110 (2/19/2020)	5/5	--	1.3	25		BSS	N
7440-39-3	Barium	26.1	111	µg/L	BH108 (2/19/2020)	5/5	--	111	1000		BSS	N
7440-41-7	Beryllium	ND	ND	µg/L	--	0/5	0.1 - 1	1	4		DLBSS	N
7440-42-8	Boron (total)	23	110	µg/L	BH110 (2/19/2020)	5/5	--	110	5000		BSS	N
7440-43-9	Cadmium	ND	ND	µg/L	--	0/5	0.01 - 0.05	0.05	2.1		DLBSS	N
7440-47-3	Chromium Total	0.73	0.73	µg/L	BH3 (2/19/2020)	1/5	0.5 - 5	5	50		BSS; DLBSS	N
7440-48-4	Cobalt	0.22	0.48	µg/L	BH3 (2/19/2020)	3/5	0.1 - 1	1	3.8		BSS; DLBSS	N
7440-50-8	Copper	0.41	6.4	µg/L	BH110 (2/19/2020)	5/5	--	6.4	69		BSS	N
57-12-5	Cyanide (CN-)	ND	ND	µg/L	--	0/5	2	2	52		DLBSS	N
7439-92-1	Lead	0.818	0.818	µg/L	BH3 (2/19/2020)	1/5	0.05 - 0.5	0.818	10		BSS; DLBSS	N
7439-97-6	Mercury	0.0074	0.0074	µg/L	BH3 (2/19/2020)	1/5	0.005	0.0074	0.1		BSS; DLBSS	N
7439-98-7	Molybdenum	0.619	25.1	µg/L	BH110 (2/19/2020)	5/5	--	25.1	70		BSS	N
7440-02-0	Nickel	0.86	3.09	µg/L	BH1 (2/19/2020)	4/5	5	5	100		BSS; DLBSS	N
7782-49-2	Selenium	0.083	0.551	µg/L	BH3 (2/19/2020)	4/5	0.5	0.551	10		BSS; DLBSS	N
7440-22-4	Silver	ND	ND	µg/L	--	0/5	0.05 - 0.5	0.5	1.2		DLBSS	N
7440-28-0	Thallium	0.012	0.019	µg/L	BH1 (2/19/2020)	2/5	0.01 - 0.1	0.1	2		BSS; DLBSS	N
7440-61-1	Uranium	1.43	3.24	µg/L	BH110 (2/19/2020)	5/5	--	3.24	20		BSS	N
7440-62-2	Vanadium	0.63	1.29	µg/L	BH3 (2/19/2020)	2/5	0.5 - 5	5	6.2		BSS; DLBSS	N
7440-66-6	Zinc	1.5	2.6	µg/L	BH3 (2/19/2020)	2/5	1 - 10	10	890		BSS; DLBSS	N
	Pesticides											
72-54-8	DDD	ND	ND	µg/L	--	0/5	0.042	0.042	1.8		DLBSS	N
72-55-9	DDE	ND	ND	µg/L	--	0/5	0.011	0.011	10		DLBSS	N
50-29-3	DDT	ND	ND	µg/L	--	0/5	0.042	0.042	0.05		DLBSS	N
309-00-2	Aldrin	ND	ND	µg/L	--	0/5	0.01	0.01	0.35		DLBSS	N
57-74-9	Chlordane	ND	ND	µg/L	--	0/5	0.057	0.057	0.06		DLBSS	N
60-57-1	Dieldrin	ND	ND	µg/L	--	0/5	0.05	0.05	0.35		DLBSS	N
115-29-7	Endosulfan	ND	ND	µg/L	--	0/5	0.042	0.042	0.56		DLBSS	N
72-20-8	Endrin	ND	ND	µg/L	--	0/5	0.04	0.04	0.36		DLBSS	N
58-89-9	Hexachlorocyclohexane Gamma-	ND	ND	µg/L	--	0/5	0.01 - 0.35	0.35	0.95		DLBSS	N
76-44-8	Heptachlor	ND	ND	µg/L	--	0/5	0.01	0.01	0.038		DLBSS	N
1024-57-3	Heptachlor Epoxide	ND	ND	µg/L	--	0/5	0.01	0.01	0.038		DLBSS	N
118-74-1	Hexachlorobenzene	ND	ND	µg/L	--	0/5	0.01	0.01	1		DLBSS	N
87-68-3	Hexachlorobutadiene	ND	ND	µg/L	--	0/5	0.01	0.01	0.012		DLBSS	N
67-72-1	Hexachloroethane	ND	ND	µg/L	--	0/5	0.01	0.01	0.17		DLBSS	N
72-43-5	Methoxychlor	ND	ND	µg/L	--	0/5	0.05 - 0.2	0.2	0.3		DLBSS	N

Table 2

**Occurrence, Distribution, and Identification of Contaminants of Concern (COC) in Groundwater
Risk Evaluation
295 Mountain Road, Collingwood, Ontario**

Medium: Groundwater
Exposure Medium: Groundwater

CAS Number	Contaminant	Minimum Concentration (1, 2)	Maximum Concentration (1, 2)	Units	Location of Maximum Concentration	Detection Frequency (2)	Range of Detection Limits (2)	Maximum Concentration Used for Screening (3)	Applicable Site Condition Standard (SCS) (4)	Contaminant Retained for RA Y - Yes	Rationale for Contaminant Deletion or Selection (5)	Potential for Exceedance of Applicable SCS at nearest off-Site Receptor (6) N - No; Y - Yes
PHC F1	Petroleum Hydrocarbons (PHCs) PHC F1 (C6-C10)	ND	ND	µg/L	--	0/2	50	50	420		DLBSS	N
PHC F2	PHC F2 (C10-C16)	ND	ND	µg/L	--	0/2	50	50	150		DLBSS	N
PHC F3	PHC F3 (C16-C34)	ND	ND	µg/L	--	0/2	400	400	500		DLBSS	N
PHC F4	PHC F4 (C34-C50)	ND	ND	µg/L	--	0/2	400	400	500		DLBSS	N
--	General Chemistry Chloride	7590	465000	µg/L	BH108 (2/19/2020)	5/5	--	465000	790000		BSS	N

Notes:

ND Not Detected
-- Not Available

(1) Minimum/maximum detected concentration.

(2) Based on data collected from sampling locations: BH1, BH2, BH3, BH108, BH110.

(3) Maximum concentration used for screening is the maximum detected concentration or the maximum detection limit, whichever is higher.

(4) MECP Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011 and updates.

(4) Table 6: Generic Site Condition Standards for Shallow Soils in a Potable Ground Water Condition, All Types of Property Use.

(5) Rationale Codes

Selection Reason: Maximum detected above Screening Standard (ASS)

Maximum Detection Limit above Screening Standard (DLASS)

Analyte Detected and no MECP standard available (AD)

Deletion Reason: Maximum detected below Screening Standard (BSS)

Maximum Detection Limit below Screening Standard (DLBSS)

No MECP standard available, but analyte Not Detected and therefore not present (ND)

Naturally Occurring (NAT)

Non-Site Related COC (NSR)

(6) For groundwater, all chemicals with detected concentrations above the Table 6 Standards were identified as having the potential to be exceeded at the nearest off-Site property.

The Table 6 Standards for groundwater are applicable for All Types of Property Use.

Table 3

Summary of Risk-Based Soil Component Values (RBCVs)
Risk Evaluation
295 Mountain Road, Collingwood, Ontario

Contaminants of Concern (COCs)	Units	Soil (1)		Ontario Background	MOECC Table 2 (Table 6) Risk-Based Component Values (RBCVs) (2)								
		Maximum	Maximum		Plants & Soil Organisms	Mammals & Birds	Soil Contact		Soil Leaching		Indoor Air		Outdoor Air
		Detected	Detection Limit				S1	S3	S-GW1	S-GW3	S-IA	S-Odour	
Metals													
Arsenic	µg/g	32.9	--	18	<u>20</u>	51	<u>0.8</u>	39	NV	NV	NA	NA	NA
Pesticides													
DDE	µg/g	12.9	0.028	0.05	<u>0.26</u>	NV	<u>2.3</u>	110	1,300	310,000,000	NV	NV	NV
DDT	µg/g	2.32	0.028	1.4	<u>1</u>	<u>0.0011</u>	<u>2.3</u>	110	1,800	730,000,000	NV	NV	NV
Dieldrin	µg/g	0.094	0.02	0.05	<u>0.044</u>	<u>0.00096</u>	0.94	16	3.1	0.11	NV	NV	NV
General Chemistry													
Electrical Conductivity	mS/cm	0.793	--	0.57	<u>0.7</u>	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

 RBCV is exceeded by maximum concentration.

Bold Component value is exceeded by maximum concentration.

NA Not applicable

NV No component value provided by the MECP

S1 Resident direct contact with soil exposure pathway

S2 Long-term worker (outdoor worker) direct contact with soil exposure pathway

S3 Short-term worker (construction/utility worker) direct contact with soil exposure pathway

S-GW1 Human health exposure to soil leaching to groundwater as a drinking water source

S-GW3 Aquatic receptor exposure to soil leaching to groundwater discharging to surface water

S-IA Soil to indoor air exposure pathway

S-Odour Soil to indoor air exposure pathway - impact through odour for indoor worker

S-OA Resident or outdoor worker inhalation exposure to soil via outdoor air

(1) Maximum detected and detection limit concentrations were determined based on data collected from sampling locations: BH1-1, BH2-1, BH3-1, BH4-1, BH5-1, BH6-1, BH7-1, BH8-1, BH9-1, BH10-1, BH11-1, BH12-1.

(2) MGRA 2016 with updated toxicity values based on residential landuse and coarse grained soils.

References:

MECP, 2016: Modified Generic Risk Assessment (MGRA) (Tier 2) Approved Model (Version 2), dated November 1, 2016

Attachment A

Table A.1

**Summary of Soil Analytical Data
Risk Evaluation
295 Mountain Road, Collingwood, Ontario**

Investigative Location		BH1	BH1	BH2	BH3	BH4	BH5	BH6
Sample ID		BH1-1	BH1-1	BH2-1	BH3-1	BH4-1	BH5-1	BH6-1
Sample Date		2/12/2020	2/12/2020	2/12/2020	2/12/2020	2/12/2020	2/12/2020	2/12/2020
Sample Depth		0-0.61 m BGS	3.05-3.66 m BGS	0-0.61 m BGS	0-0.61 m BGS	0-0.61 m BGS	0-0.61 m BGS	0-0.61 m BGS
Parameters	Units							
Metals								
Antimony	µg/g	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0
Arsenic	µg/g	8.4	-	3.7	3.3	32.9	8.8	7.1
Barium	µg/g	44.7	-	41.5	46.4	39.4	22.1	41.5
Beryllium	µg/g	0.5	-	<0.50	<0.50	<0.50	<0.50	0.53
Boron	µg/g	8	-	9.4	11.6	7.8	7	12.8
Boron (HWS)	µg/g	0.24	-	0.29	0.27	0.55	0.4	0.37
Cadmium	µg/g	<0.50	-	<0.50	<0.50	<0.50	<0.50	<0.50
Chromium	µg/g	17.3	-	18.5	21	14.4	10.6	17.8
Chromium VI	µg/g	<0.20	-	<0.20	<0.20	<0.20	<0.20	<0.20
Cobalt	µg/g	5.5	-	6	7.2	4	2.7	7.1
Copper	µg/g	13.6	-	16.5	14.9	23	8.9	16.6
Cyanide	µg/g	<0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050
Lead	µg/g	17.2	-	8.4	8.5	96.4	24.8	18.3
Mercury	µg/g	0.0501	-	0.0268	0.0292	0.129	0.0347	0.0255
Molybdenum	µg/g	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0
Nickel	µg/g	12.2	-	13.4	15.5	9.9	6.7	15.1
Selenium	µg/g	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0
Silver	µg/g	<0.20	-	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium	µg/g	<0.50	-	<0.50	<0.50	<0.50	<0.50	<0.50
Uranium	µg/g	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0
Vanadium	µg/g	27.5	-	29	32.6	21.4	17.1	27.1
Zinc	µg/g	42.8	-	37.4	38.4	59.6	31.9	34
Pesticides								
Aldrin	µg/g	<0.020	-	<0.020	<0.020	<0.020	<0.020	<0.020
gamma-Hexachlorocyclohexane (Lindane)	µg/g	<0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010
alpha-Chlordane	µg/g	<0.020	-	<0.020	<0.020	<0.020	<0.020	<0.020
Chlordane	µg/g	<0.028	-	<0.028	<0.028	<0.028	<0.028	<0.028
gamma-Chlordane	µg/g	<0.020	-	<0.020	<0.020	<0.020	<0.020	<0.020
op-DDD	µg/g	<0.020	-	<0.020	<0.020	0.222	<0.020	<0.020
pp-DDD	µg/g	<0.020	-	<0.020	<0.020	0.68	<0.020	<0.020
Total DDD	µg/g	<0.028	-	<0.028	<0.028	0.901	<0.028	<0.028

Table A.1

**Summary of Soil Analytical Data
Risk Evaluation
295 Mountain Road, Collingwood, Ontario**

Investigative Location		BH1	BH1	BH2	BH3	BH4	BH5	BH6
Sample ID		BH1-1	BH1-1	BH2-1	BH3-1	BH4-1	BH5-1	BH6-1
Sample Date		2/12/2020	2/12/2020	2/12/2020	2/12/2020	2/12/2020	2/12/2020	2/12/2020
Sample Depth		0-0.61 m BGS	3.05-3.66 m BGS	0-0.61 m BGS	0-0.61 m BGS	0-0.61 m BGS	0-0.61 m BGS	0-0.61 m BGS
Parameters	Units							
Pesticides (cont.'d)								
op-DDE	µg/g	<0.020	-	<0.020	<0.020	0.084	<0.020	<0.020
pp-DDE	µg/g	0.232	-	0.032	<0.020	11.5	0.089	0.233
Total DDE	µg/g	0.232	-	0.032	<0.028	11.5	0.089	0.233
op-DDT	µg/g	<0.020	-	<0.020	<0.020	0.371	<0.020	<0.020
pp-DDT	µg/g	0.057	-	<0.020	<0.020	1.95	0.033	0.021
Total DDT	µg/g	0.057	-	<0.028	<0.028	2.32	0.033	<0.028
Dieldrin	µg/g	<0.020	-	<0.020	<0.020	0.092	<0.020	<0.020
Endosulfan I	µg/g	<0.020	-	<0.020	<0.020	<0.020	<0.020	<0.020
Endosulfan II	µg/g	<0.020	-	<0.020	<0.020	<0.020	<0.020	<0.020
Endosulfan	µg/g	<0.028	-	<0.028	<0.028	<0.028	<0.028	<0.028
Endrin	µg/g	<0.020	-	<0.020	<0.020	<0.020	<0.020	<0.020
Heptachlor	µg/g	<0.020	-	<0.020	<0.020	<0.020	<0.020	<0.020
Heptachlor epoxide	µg/g	<0.020	-	<0.020	<0.020	<0.020	<0.020	<0.020
Hexachlorobenzene	µg/g	<0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachlorobutadiene	µg/g	<0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachloroethane	µg/g	<0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010
Methoxychlor	µg/g	<0.020	-	<0.020	<0.020	<0.020	<0.020	<0.020
General Chemistry								
Conductivity	mS/cm	0.121	-	0.28	0.262	0.681	0.595	0.365
pH	st units	7.33	7.97	7.43	7.35	7.03	7.56	7.4
Sodium adsorption ratio (SAR)	-	<0.10	-	0.27	0.4	<0.10	0.34	0.36

Notes:

m BGS Metres below ground surface.
 µg/g Micrograms per gram
 mS/cm Millisiemens per centimeter
 < Not detected at the associated value.

Table A.1

**Summary of Soil Analytical Data
Risk Evaluation
295 Mountain Road, Collingwood, Ontario**

Investigative Location		BH7	BH8	BH9	BH10	BH11	BH12
Sample ID		BH7-1	BH8-1	BH9-1	BH10-1	BH11-1	BH12-1
Sample Date		2/12/2020	2/12/2020	2/12/2020	2/12/2020	2/12/2020	2/12/2020
Sample Depth		0-0.61 m BGS	0-0.61 m BGS	0-0.61 m BGS	0-0.61 m BGS	0-0.61 m BGS	0-0.61 m BGS
Parameters	Units						
Metals							
Antimony	µg/g	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Arsenic	µg/g	5.9	16.1	9.8	3.8	11.1	3.5
Barium	µg/g	47.5	28	26.7	52.1	25.3	29.8
Beryllium	µg/g	0.54	<0.50	<0.50	<0.50	<0.50	<0.50
Boron	µg/g	14.4	11.7	8.4	11.3	10	10.9
Boron (HWS)	µg/g	0.41	1.33	0.61	0.13	0.64	0.51
Cadmium	µg/g	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chromium	µg/g	20	11.1	12.9	18.9	13.1	14.3
Chromium VI	µg/g	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Cobalt	µg/g	7.4	3.9	5.1	7.3	4.6	4.4
Copper	µg/g	15.1	21.3	14.2	15.6	13.4	9.9
Cyanide	µg/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Lead	µg/g	16.8	95.6	37.7	7.1	39.6	9.9
Mercury	µg/g	0.0297	0.0571	0.035	0.0149	0.0336	0.0357
Molybdenum	µg/g	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Nickel	µg/g	16.2	9.3	11.8	16.1	10.4	9.3
Selenium	µg/g	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Silver	µg/g	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium	µg/g	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Uranium	µg/g	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vanadium	µg/g	29.1	16.3	18.8	27.8	19.7	25.1
Zinc	µg/g	44	39.3	31.1	33.1	32.4	40.5
Pesticides							
Aldrin	µg/g	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
gamma-Hexachlorocyclohexane (Lindane)	µg/g	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
alpha-Chlordane	µg/g	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Chlordane	µg/g	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
gamma-Chlordane	µg/g	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
op-DDD	µg/g	<0.020	0.487	0.028	<0.020	0.043	<0.020
pp-DDD	µg/g	<0.020	1.85	0.18	<0.020	0.282	<0.020
Total DDD	µg/g	<0.028	2.33	0.208	<0.028	0.325	<0.028

Table A.1

**Summary of Soil Analytical Data
Risk Evaluation
295 Mountain Road, Collingwood, Ontario**

Investigative Location		BH7	BH8	BH9	BH10	BH11	BH12
Sample ID		BH7-1	BH8-1	BH9-1	BH10-1	BH11-1	BH12-1
Sample Date		2/12/2020	2/12/2020	2/12/2020	2/12/2020	2/12/2020	2/12/2020
Sample Depth		0-0.61 m BGS	0-0.61 m BGS	0-0.61 m BGS	0-0.61 m BGS	0-0.61 m BGS	0-0.61 m BGS
Parameters	Units						
Pesticides (cont.'d)							
op-DDE	µg/g	<0.020	0.078	<0.020	<0.020	<0.020	<0.020
pp-DDE	µg/g	0.236	12.8	2.37	0.029	2.97	<0.020
Total DDE	µg/g	0.236	12.9	2.37	0.029	2.97	<0.028
op-DDT	µg/g	<0.020	0.053	<0.020	<0.020	0.04	<0.020
pp-DDT	µg/g	0.045	0.429	0.149	<0.020	0.41	<0.020
Total DDT	µg/g	0.045	0.481	0.149	<0.028	0.449	<0.028
Dieldrin	µg/g	<0.020	0.094	0.025	<0.020	0.07	<0.020
Endosulfan I	µg/g	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Endosulfan II	µg/g	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Endosulfan	µg/g	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
Endrin	µg/g	<0.020	<0.040	<0.020	<0.020	<0.020	<0.020
Heptachlor	µg/g	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Heptachlor epoxide	µg/g	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Hexachlorobenzene	µg/g	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachlorobutadiene	µg/g	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachloroethane	µg/g	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Methoxychlor	µg/g	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
General Chemistry							
Conductivity	mS/cm	0.529	0.793	0.614	0.236	0.754	0.581
pH	st units	7.48	7.23	7.12	7.22	6.98	7.16
Sodium adsorption ratio (SAR)	-	0.13	<0.10	<0.10	0.32	0.33	0.28

Notes:

m BGS Metres below ground surface.
 µg/g Micrograms per gram
 mS/cm Millisiemens per centimeter
 < Not detected at the associated value.

Table A.2

**Summary of Groundwater Analytical Data
Risk Evaluation
295 Mountain Road, Collingwood, Ontario**

Sample ID		BH1	BH2	BH3	BH108	BH/MW108	BH110	BH/MW110
Sample Date		2/19/2020	2/19/2020	2/19/2020	2/19/2020	6/26/2020	2/19/2020	6/26/2020
Parameters	Units							
Volatile Organic Compounds								
Acetone	µg/L	-	-	-	-	<30	-	<30
Benzene	µg/L	-	-	-	-	<0.5	-	<0.5
Bromodichloromethane	µg/L	-	-	-	-	<2	-	<2
Bromoform	µg/L	-	-	-	-	<5	-	<5
Bromomethane	µg/L	-	-	-	-	<0.5	-	<0.5
Carbon Tetrachloride	µg/L	-	-	-	-	<0.2	-	<0.2
Chlorobenzene	µg/L	-	-	-	-	<0.5	-	<0.5
Chloroform	µg/L	-	-	-	-	<1	-	<1
Dibromochloromethane	µg/L	-	-	-	-	<2	-	<2
Dichlorobenzene, 1,2-	µg/L	-	-	-	-	<0.5	-	<0.5
Dichlorobenzene, 1,3-	µg/L	-	-	-	-	<0.5	-	<0.5
Dichlorobenzene, 1,4-	µg/L	-	-	-	-	<0.5	-	<0.5
Dichlorodifluoromethane	µg/L	-	-	-	-	<2	-	<2
Dichloroethane, 1,1-	µg/L	-	-	-	-	<0.5	-	<0.5
Dichloroethane, 1,2-	µg/L	-	-	-	-	<0.5	-	<0.5
Dichloroethene, 1,1-	µg/L	-	-	-	-	<0.5	-	<0.5
Dichloroethene, cis-1,2-	µg/L	-	-	-	-	<0.5	-	<0.5
Dichloroethene, trans-1,2-	µg/L	-	-	-	-	<0.5	-	<0.5
Dichloropropane, 1,2-	µg/L	-	-	-	-	<0.5	-	<0.5
Dichloropropene, cis-1,3-	µg/L	-	-	-	-	<0.5	-	<0.5
Dichloropropene, trans-1,3-	µg/L	-	-	-	-	<0.5	-	<0.5
Dichloropropene, cis & trans-1,3-	µg/L	-	-	-	-	<0.5	-	<0.5
Ethylbenzene	µg/L	-	-	-	-	<0.5	-	<0.5
Ethylene dibromide	µg/L	-	-	-	-	<0.2	-	<0.2
Hexane	µg/L	-	-	-	-	<5	-	<5
Methyl Ethyl Ketone	µg/L	-	-	-	-	<20	-	<20
Methyl Isobutyl Ketone	µg/L	-	-	-	-	<20	-	<20
Methyl-t-butyl ether	µg/L	-	-	-	-	<2	-	<2
Methylene chloride	µg/L	-	-	-	-	<5	-	<5
Styrene	µg/L	-	-	-	-	<0.5	-	<0.5
Tetrachloroethane, 1,1,1,2-	µg/L	-	-	-	-	<0.5	-	<0.5
Tetrachloroethane, 1,1,2,2-	µg/L	-	-	-	-	<0.5	-	<0.5
Tetrachloroethene	µg/L	-	-	-	-	<0.5	-	<0.5
Toluene	µg/L	-	-	-	-	<0.5	-	<0.5

Table A.2

**Summary of Groundwater Analytical Data
Risk Evaluation
295 Mountain Road, Collingwood, Ontario**

Sample ID Sample Date		BH1 2/19/2020	BH2 2/19/2020	BH3 2/19/2020	BH108 2/19/2020	BH/MW108 6/26/2020	BH110 2/19/2020	BH/MW110 6/26/2020
Parameters	Units							
Volatile Organic Compounds (cont.'d)								
Trichloroethane, 1,1,1-	µg/L	-	-	-	-	<0.5	-	<0.5
Trichloroethane, 1,1,2-	µg/L	-	-	-	-	<0.5	-	<0.5
Trichloroethene	µg/L	-	-	-	-	<0.5	-	<0.5
Trichlorofluoromethane	µg/L	-	-	-	-	<5	-	<5
Vinyl chloride	µg/L	-	-	-	-	<0.2	-	<0.2
Xylenes, total	µg/L	-	-	-	-	<1.1	-	<1.1
Metals								
Antimony	µg/L	0.11	0.23	<0.10	<0.10	-	<1.0	-
Arsenic	µg/L	0.34	0.39	0.72	0.28	-	1.3	-
Barium	µg/L	26.1	80.5	51.2	111	-	38.4	-
Beryllium	µg/L	<0.10	<0.10	<0.10	<0.10	-	<1.0	-
Boron	µg/L	52	87	23	48	-	110	-
Cadmium	µg/L	<0.010	<0.010	<0.010	<0.010	-	<0.050	-
Chromium	µg/L	<0.50	<0.50	0.73	<0.50	-	<5.0	-
Chromium VI	µg/L	<0.50	<0.50	<0.50	<0.50	-	<0.50	-
Cobalt	µg/L	0.22	0.27	0.48	<0.10	-	<1.0	-
Copper	µg/L	0.87	0.41	1.91	1.51	-	6.4	-
Cyanide	µg/L	<2.0	<2.0	<2.0	<2.0	-	<2.0	-
Lead	µg/L	<0.050	<0.050	0.818	<0.050	-	<0.50	-
Mercury	µg/L	<0.0050	<0.0050	0.0074	<0.0050	-	<0.0050	-
Molybdenum	µg/L	2.07	1.99	0.619	0.959	-	25.1	-
Nickel	µg/L	3.09	0.86	1.61	1.86	-	<5.0	-
Selenium	µg/L	0.427	0.339	0.551	0.083	-	<0.50	-
Silver	µg/L	<0.050	<0.050	<0.050	<0.050	-	<0.50	-
Sodium	µg/L	9560	26500	15000	323000	-	385000	-
Thallium	µg/L	0.019	<0.010	0.012	<0.010	-	<0.10	-
Uranium	µg/L	1.64	1.43	3.11	1.92	-	3.24	-
Vanadium	µg/L	<0.50	<0.50	1.29	0.63	-	<5.0	-
Zinc	µg/L	<1.0	<1.0	2.6	1.5	-	<10	-

Table A.2

**Summary of Groundwater Analytical Data
Risk Evaluation
295 Mountain Road, Collingwood, Ontario**

Sample ID Sample Date		BH1 2/19/2020	BH2 2/19/2020	BH3 2/19/2020	BH108 2/19/2020	BH/MW108 6/26/2020	BH110 2/19/2020	BH/MW110 6/26/2020
Parameters	Units							
Pesticides								
Aldrin	µg/L	<0.010	<0.010	<0.010	<0.010	-	<0.010	-
gamma-Hexachlorocyclohexane (Lindane)	µg/L	<0.015	<0.350	<0.200	<0.010	-	<0.010	-
alpha-Chlordane	µg/L	<0.040	<0.040	<0.040	<0.040	-	<0.040	-
Chlordane	µg/L	<0.057	<0.057	<0.057	<0.057	-	<0.057	-
gamma-Chlordane	µg/L	<0.040	<0.040	<0.040	<0.040	-	<0.040	-
op-DDD	µg/L	<0.030	<0.030	<0.030	<0.030	-	<0.030	-
pp-DDD	µg/L	<0.030	<0.030	<0.030	<0.030	-	<0.030	-
Total DDD	µg/L	<0.042	<0.042	<0.042	<0.042	-	<0.042	-
op-DDE	µg/L	<0.0080	<0.0080	<0.0080	<0.0080	-	<0.0080	-
pp-DDE	µg/L	<0.0080	<0.0080	<0.0080	<0.0080	-	<0.0080	-
Total DDE	µg/L	<0.011	<0.011	<0.011	<0.011	-	<0.011	-
op-DDT	µg/L	<0.030	<0.030	<0.030	<0.030	-	<0.030	-
pp-DDT	µg/L	<0.030	<0.030	<0.030	<0.030	-	<0.030	-
Total DDT	µg/L	<0.042	<0.042	<0.042	<0.042	-	<0.042	-
Dieldrin	µg/L	<0.050	<0.050	<0.050	<0.050	-	<0.050	-
Endosulfan I	µg/L	<0.030	<0.030	<0.030	<0.030	-	<0.030	-
Endosulfan II	µg/L	<0.030	<0.030	<0.030	<0.030	-	<0.030	-
Endosulfan	µg/L	<0.042	<0.042	<0.042	<0.042	-	<0.042	-
Endrin	µg/L	<0.040	<0.040	<0.040	<0.040	-	<0.040	-
Heptachlor	µg/L	<0.010	<0.010	<0.010	<0.010	-	<0.010	-
Heptachlor epoxide	µg/L	<0.010	<0.010	<0.010	<0.010	-	<0.010	-
Hexachlorobenzene	µg/L	<0.010	<0.010	<0.010	<0.010	-	<0.010	-
Hexachlorobutadiene	µg/L	<0.010	<0.010	<0.010	<0.010	-	<0.010	-
Hexachloroethane	µg/L	<0.010	<0.010	<0.010	<0.010	-	<0.010	-
Methoxychlor	µg/L	<0.150	<0.200	<0.150	<0.050	-	<0.050	-
Petroleum Hydrocarbons								
PHC F1	µg/L	-	-	-	-	<50	-	<50
PHC F2	µg/L	-	-	-	-	<50	-	<50
PHC F3	µg/L	-	-	-	-	<400	-	<400
PHC F4	µg/L	-	-	-	-	<400	-	<400

Table A.2

**Summary of Groundwater Analytical Data
Risk Evaluation
295 Mountain Road, Collingwood, Ontario**

Sample ID		BH1	BH2	BH3	BH108	BH/MW108	BH110	BH/MW110
Sample Date		2/19/2020	2/19/2020	2/19/2020	2/19/2020	6/26/2020	2/19/2020	6/26/2020
Parameters	Units							
General Chemistry								
Conductivity	mS/cm	0.798	0.652	0.719	2.35	-	2.01	-
pH	st units	7.53	7.82	7.6	7.46	-	8.12	-
Chloride	µg/L	16300	17000	7590	465000	-	298000	-

Notes:

ug/L Micrograms per litre.
mS/cm Millisiemens per centimeter
< Not detected at the associated value.

Attachment B



Reference: County of Simcoe Interactive Mapping Application - 1989 Imagery

Phase II ESA Property Boundary

CVD Monitoring Well Location (all chemical concentrations in soil reported *below* the applicable table 6 standards)

CVD Monitoring Well Location (chemical concentrations in soil reported *above* the applicable table 6 standards)



Legend

CVD Borehole Location (all chemical concentrations in soil reported *below* the applicable table 6 standards)

CVD Borehole Location (chemical concentrations in soil reported *above* the applicable table 6 standards)

Existing Peto MacCallum Monitoring Well



CHUNG & VANDER DOELEN
ENGINEERING LTD.
311 Victoria Street North
Kitchener / Ontario / N2H 5E1
519-742-8979



BOREHOLE LOCATION PLAN
295 MOUNTAIN ROAD
COLLINGWOOD, ONTARIO

Date:	March 2020
Scale:	1:850
File No.:	E19858
Figure:	2